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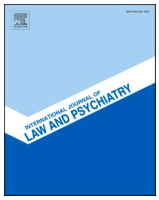

New technology, psychiatry, and the law: Panic, prudence, possibility

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ABSTRACT

Throughout human history, all new technology has been met with surprise, anxiety, panic, and – eventually – prudent adoption of certain aspects of specific technological advances. This pattern is evident in the histories of most technologies, ranging from steam power in the nineteenth century, to television in the twentieth century, and – now – 'artificial intelligence' (AI) in the twenty-first century. Each generation believes that the technological advances of its era are quantitatively and qualitatively different to those of previous generations, but the underlying phenomenon is the same: the shock of the new, followed by more gradual adjustment to (and of) new technology. These concerns are apparent today in relation to AI, which reflects interesting but incremental advances on existing technologies, rather than stand-alone developments. The usual concerns with all technologies (e.g., that they will replace certain aspects of human function) are, perhaps, more concerning in fields such as mental capacity law, which often applies to people with impaired decision-making capacity who might be especially vulnerable to technologies which appear capable of encroaching disproportionately on decision-making or other areas of core human function. This paper approaches this topic from an historical standpoint, noting both previous technological panics in the past and the possibilities offered by AI today, provided it is approached in a proportionate, prudent, and person-centered way, underpinned by appropriate ethical guidance and active ethical awareness in clinical and legal practice.

1. Introduction

Throughout human history, all new technology has been met with surprise, anxiety, panic, and – eventually – incremental adoption of certain aspects of each new technological development (Orben, 2020). This pattern is not new. It reflects human nature more than it reflects the specifics of any particular technological advance or, indeed, technological advancement in general.

It is little surprise that the emergence of so-called 'artificial intelligence' (AI) in recent decades has adhered closely to this pattern. Reactions have varied widely, ranging from dystopian to utopian (Suleyman & Bhaskar, 2023), with a startlingly small number of commentators landing on the middle-ground, seeing certain benefits but remaining generally calm and pragmatic as we navigate the new terrain (Bootle, 2023).

While there is still considerably more heat than light on the subject of AI, it is apparent that the technology is a significant incremental advance on existing applications (e.g., Internet search engines). But while AI is certainly 'artificial', it is far from clear whether or not it is truly 'intelligent'. Moreover, and regardless of its intelligence or otherwise, the current publicity surrounding AI is, most of all, a triumph of marketing. Technology giants are stirring panic based on a mix of modest technological progress, waves of apocalyptic hysteria, and canny existential button-pushing (Kelly, 2023). Nobody ever became wealthy by assessing technology rationally or underestimating the human proclivity to panic. The current hubris about AI taps into all of these trends and impulses, to the benefit of technology companies.

The issues and uncertainties about AI become more acute and concerning, however, in relation to certain population groups. These include, but are not limited to, people who are vulnerable to undue influence in decision-making, people whose decision-making capacity is impaired for any reason, and people with severe medical and mental illnesses who might be especially open to suggestion, manipulation, and exploitation. The usual concerns with all technologies (e.g., that they will replace certain aspects of human function) are therefore more pressing in fields such as mental capacity law, which often applies to people with impaired decision-making capacity who might be especially susceptible to technologies with the potential to encroach excessively on decision-making or other areas of core human function.

This paper approaches this topic in the context of psychiatry and

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mental capacity legislation. It takes an historical perspective, noting previous, similar panics about technology in the past, as well as the possibilities offered by AI today, provided it is approached in a proportionate, prudent, and person-centered way, underpinned by appropriate ethical guidance and ethical awareness in clinical and legal practice.

2. Panics, pressures, and the patterns of history

James Foulis Duncan (1812–1895) was a prominent Irish asylum doctor who served as president of the King and Queen's College of Physicians in Ireland from 1873 to 1875, and president of the Medico-Psychological Association (MPA) in 1875 (Kelly, 2016). In his presidential address to the MPA in 1875, Duncan warned members that there was 'an amount of brain work' happening at that time that exceeded anything previously known (Duncan, 1875; p. 336). The reason? Technology in general and steam power in particular. Previously, Duncan said, people 'did not hatch eggs by steam, or make calculations by a machine […] They disliked new-fangled ways' (p. 329). This new level and intensity of brain activity, Duncan claimed, greatly increased the risk of mental illness.

Although Duncan's warnings were especially vivid and grim, he was by no means the first person to greet new technology with concern about its effects on humanity in general and its imagined impact on the human mind. The same pattern is evident in the histories of most known technologies, ranging from steam power in the nineteenth century, to television in the twentieth century, and – now – AI in the twenty-first century. Each generation believes that the technological advances of its era are quantitatively and qualitatively different to those of previous generations, but the underlying phenomenon is the same: the shock of the new, followed by more gradual adjustment to (and of) new technology. Initial, hysterical fears are not realised.

In 1935, sixty years after Duncan's warnings about steam power, Gruenberg addressed the then pressing issue of 'radio and the child', which was the most recent panic sweeping across parts of society (Gruenberg, 1935). Gruenberg argued that each new medium or instrument (e.g., film, radio) brings challenges that cannot be resolved on the basis of previous experiences or existing codes of conduct, so new approaches are needed each time. Radio, she wrote, left 'parents more helpless' than cinema, because 'no locks will keep this intruder out, nor can parents shut their children away from it' (p. 123). Many children now devoted 'an imposing total of hours to the radio', she opined, with negative effects on 'family conversation' and 'reading', among other matters (pp. 124–125).

This concern about children's use of mass media has been a constant feature of public and professional responses to technological advances (Herrman, 2017). Similar worries were expressed about the perceived effects of film, radio, television, and computers on children as each new medium emerged (Wartella & Robb, 2008). In 1941, Preston found that, 'in a study of 200 children, addiction to movie horrors and radio crime was found to be detrimental to the general health', with evidence of 'nervousness' and problems with sleep among those with 'addiction' (Preston, 1941; p. 168). On the other hand, 'elimination of movie horrors and radio crime was found in homes of high standards of child training throughout', suggesting the redeeming possibility of 'improved physical condition and subsidence of symptoms' if appropriate steps were taken to address the scourge of movies and radio crime.

Drotner, in an overview of 'panic discourses and dilemmas of modernity', 'argues that media panics are intrinsic and recurrent features of modernity', which "represent a complex constellation of generational, cultural and existential power struggles through which adults seek to negotiate definitions of character forming ('Bildung') in order to balance fundamental dilemmas of modernity" (Drotner, 1999; p. 593). Drotner suggests that opening a dialogue between adults and juveniles can help to create a space for learning and understanding in this regard – with a real possibility that adults will learn as much as children, if not more, rather than the other way around.

Orben, too, in a valuable review of the field, argues that while the history of such concerns (about novels, radio, smartphones, etc.) can be regarded with amusement in retrospect, these concerns command a significant cost in terms of research investment and policy debate – costs which are both ineffective and inefficient at the relevant times (Orben, 2020). Orben writes that academic study of this matter tends to start afresh with each new technology, with no identifiable theoretical baseline established for next time. This continual, repetitive cycle slows down policy interventions which might otherwise optimise the benefits of new technology for society. This cycle also frustrates the potentially positive role of psychology in steering and navigating technological change for the benefit of all.

This balanced perspective is not entirely new. The promise of new technology is often mentioned, albeit fleetingly, in the midst of waves of panic. Even Duncan, in 1875, noted that, despite his belief that steam power and other technological advances increased the risk of mental illness, the benefits of such developments could not be denied: 'even if it were possible for the world to return to the condition it was in a century ago', he doubted if anybody would 'give up the advantages of our present state' (Duncan, 1875; p. 336). Gruenberg, in 1935, noted that 'many parents report that the radio establishes a bond of common interest' and might even prevent family quarrels in the home (Gruenberg, 1935; p. 124). Too often, however, balanced views are washed away by waves of techno-panic, existential handwringing, and fearmongering about the possible effects of technology (usually on 'other' people).

3. Fears, evidence, and populations at risk

In the face of repeated cycles of panic with each new technology, and minimal sustained articulation of practical benefits, it is useful to (a) recognise disproportionate responses to new technology (either negative or positive) when they occur, and take corrective action where appropriate, and (b) identify if there are people who are truly more at risk of the adverse effects of technological developments than others, and seek to ameliorate those risks. The second task is often linked with the possibility that new technologies will re-shape certain aspects of human thought and function to an unacceptable degree or in an undesirable way, especially among certain groups.

These issues are particularly pertinent in fields such as mental capacity law, which often applies to people with impaired decision-making capacity who might be especially vulnerable to technologies which appear to encroach on decision-making. While AI holds the real possibility of assisting people with impaired decision-making capacity to access, process, and understand information, there is also the possibility of AI overreach into shaping thoughts or controlling communication to an excessive extent. While the precise ways in which this might occur are not yet clear, or what the solutions might be, helpful information is emerging from research into the impact of AI on different population groups. Not everyone is affected equally. Everybody does not respond in the same way.

In workplace settings, for example, there is growing evidence that the benefits of AI are not evenly distributed across workforces: for instance, it appears that productivity benefits with AI are more likely to accrue to the least skilled workers, rather than high-skill ones (Harford, 2023). In one study, Brynjolfsson and colleagues examined 'the staggered introduction of a generative AI-based conversational assistant using data from 5,179 customer support agents', and found that the greatest boosts in productivity were seen among low-skilled workers:

> Access to the tool increases productivity, as measured by issues resolved per hour, by 14% on average, including a 34% improvement for novice and low-skilled workers but with minimal impact on experienced and highly skilled workers. We provide suggestive evidence that the AI model disseminates the best practices of more able workers and helps newer workers move down the experience curve.

> In addition, we find that AI assistance improves customer sentiment, increases employee retention, and may lead to worker learning. Our results suggest that access to generative AI can increase productivity, with large heterogeneity in effects across workers (Brynjolfsson, Li, & Raymond, 2023).

This finding of 'heterogeneity' in the impact of AI is crucial. Like most technology, the effects of AI depend on the pre-existing abilities and skills of the person using it. This highlights the importance of unpacking each AI application in each situation, identifying the precise type of AI involved, assessing the skill set of the person using it, and examining the real-life outcome of adding AI to the situation. For people with impaired decision-making capacity, this means identifying their particular strengths and limitations, using those aspects of AI which can help address these issues, and studying outcomes to ensure that there are benefits rather than paradoxical adverse effects from the technology.

In terms of risks, Malik, writing about AI in the *Observer* in 2018, noted a report suggesting that what we face 'is not an existential threat to humanity but sharper forms of the problems with which we are already grappling':

> AI should be seen not in terms of super-intelligent machines but as clever bits of software that, depending on the humans wielding them, can be used either for good or ill. Even where AI can be clearly used for malicious ends, however, we need a more nuanced debate […] The danger in becoming too obsessed by the threat of AI is that we fail to see that many of the 'solutions' are equally problematic (Malik, 2018).

In the context of people with impaired decision-making capacity, these 'clever bits of software' can, at least in theory, be used to boost decision-making skills and hopefully optimise or improve decision-making capacity, possibly in conjunction with other forms of decision-making supports provided in mental capacity legislation. But is there any evidence that AI in particular can help with cognition in practice?

A clinical research base is starting to emerge. Graham and colleagues, for example, wrote about AI approaches to predicting and detecting cognitive decline among older adults (Graham et al., 2020). They noted the particular promise of this technology in terms of personalising understanding of cognitive decline, which is an approach that would hopefully permit early detection of emerging cognitive impairment. It is not an enormous leap to say that earlier, better understandings of the bio-psycho-social contributors to cognitive decline could facilitate early intervention in individual cases, remedying the remediable elements of cognition loss, optimising remaining function for as long as possible, and preserving decision-making capacity for longer. More research is needed, but the ideas and technologies are in place to move this possibility forward. AI can be part of that process.

4. Regulation of AI in the contexts of healthcare and mental capacity legislation

Despite advances in AI technology, it remains the case that AI cannot think independently of humans or independently of human-generated information. The history of computing research, however, shows that neural nets often outperform expectations, sometimes dramatically so, which means that future regulatory challenges should be anticipated as best as possible (Rothman, 2023). We cannot know the future (even with AI), but we can plan as best as possible for likely developments over the years to come.

There is growing evidence and understanding of potential roles of AI in various specific circumstances in psychiatry, including potential use of AI language models in suicide risk assessment, although further work is needed in this area (Elyoseph & Levkovich, 2023). Predicting risk of violence is another area in which machine learning offers certain possibilities, although caution is required when interpreting results of studies to date (Parmigiani, Barchielli, Casale, Mancini, & Ferracuti, 2022). Both of these areas, among others, are likely to see significant research attention over the years ahead.

In terms of legislation, the European Union has proposed an Artificial Intelligence Act which will likely help with certain issues at an overarching level but is unlikely to provide the level of fine-grained detail that is required across certain areas of healthcare and for issues relating to mental capacity (Henshall, 2023; O'Carroll, 2023). More specific regulation is needed, especially for people with fluctuating or impaired decision-making abilities for periods of time.

In 2021, the World Health Organization (WHO) published a document titled *Ethics and Governance of Artificial Intelligence for Health: WHO Guidance* outlining the need for greater regulation of AI in healthcare, if the risks of AI are to be minimised and its benefits optimised:

> WHO recognizes that AI holds great promise for the practice of public health and medicine. WHO also recognizes that, to fully reap the benefits of AI, ethical challenges for health care systems, practitioners and beneficiaries of medical and public health services must be addressed. Many of the ethical concerns described in this report predate the advent of AI, although AI itself presents a number of novel concerns (World Health Organization, 2021; p. xi).

The WHO goes on provide relevant suggestions and advice, including 'elements of a framework for governance of artificial intelligence for health', centered on 'governance of data', 'control and benefit-sharing', 'governance of the private sector', 'governance of the public sector', 'regulatory considerations', 'policy observatory and model legislation', and 'global governance of artificial intelligence' (World Health Organization, 2021; p. iv). The WHO recognizes different levels and types of needs:

> Regulation could differ according to risk, such that those who are especially vulnerable, including people with mental illness, children and the elderly, are protected from misinformation and bad advice from health applications that exploit rather than assist (World Health Organization, 2021; p. 106).

This consideration is essential: recognising that both the risks and the potential benefits of AI will differ across various population groups, depending on the strengths and needs of each individual. These strengths and needs are likely to change over time. Healthcare professionals are well placed to monitor these changes and to ensure that use of AI is open, appropriate, therapeutic, and regularly reviewed.

In 2023, the WHO published a further resource titled *Regulatory Considerations on Artificial Intelligence for Health* which presented 'an overview of regulatory considerations on AI for health':

> This overview is not intended as guidance or as a regulatory framework or policy. Rather, it is a discussion of key regulatory considerations and a resource that can be considered by all relevant stakeholders – including developers who are exploring and developing AI systems, regulators and policy-makers who [are] in the process of identifying approaches to manage and facilitate AI systems, manufacturers who design and develop AI-enabled medical devices, and health practitioners who deploy and use such medical devices and AI systems (World Health Organization, 2023; p. xi).

Against this background, the WHO document recommended 'that stakeholders take into account the following considerations as they continue to develop frameworks and best practices for the use of AI in health care and therapeutic development': (a) 'documentation and transparency'; (b) 'risk management and AI systems development lifecycle approaches'; (c) 'intended use, and analytical and clinical validation'; (d) 'data quality'; (e) 'privacy and data protection'; and (f) 'engagement and collaboration' (World Health Organization, 2023; pp. xi-xii). Further details are provided about each topic in the publication.

These principles can be usefully engaged if AI is to be applied in the

context of mental capacity legislation in general and the assessment of decision-making capacity in particular. In many jurisdictions, legal criteria for a lack of decision-making capacity include a number of components which might be amenable to influence (either positive or negative) by AI. In England and Wales, for example, the Mental Capacity Act, 2005 specifies that 'a person is unable to make a decision for himself if he is unable (a) to understand the information relevant to the decision, (b) to retain that information, (c) to use or weigh that information as part of the process of making the decision, or (d) to communicate his decision (whether by talking, using sign language or any other means)' (Section 3(1)).

Based on this definition, AI applications such as large language model-based chatbots (e.g., ChatGPT) can potentially help a person to (a) understand information, by providing information in different formats or at a different pace (although AI can also provide incorrect information with apparent authority); (b) retain information, by providing reminders of previous reading or prompts to re-examine material (although AI can also provide different answers to the same questions on various occasions, necessitating memory and critical cognitive awareness); (c) use information, by providing information in accessible formats, and weigh up information, by adding context (although AI can also introduce misleading or irrelevant considerations); and (d) communicate a decision, by facilitating both verbal and non-verbal communication, and by using the 'other means' of communication mentioned in the legislation (although structuring communication can easily verge into agenda-setting and content selection if AI is not limited, monitored, and managed).

Many of the risks in this process can be minimised, and benefits optimised, through awareness of the 'considerations' outlined by the WHO, including 'documentation and transparency', 'risk management', 'clinical validation', monitoring 'data quality', 'privacy and data protection', and promoting 'engagement and collaboration among key stakeholders' (World Health Organization, 2023; pp. xi-xiii). These principles do not differ dramatically from the pre-existing ethical principles of good medical practice, but their application in the context of AI will require some attention and adjustment, as is the case with every new technology and every novel development in clinical practice in the past.

Finally, most recent researchers in the field of AI in psychiatry note the need for caution, especially in areas such as risk assessment (Parmigiani et al., 2022). More high-quality trials are also needed in fields such as chatbot-delivered psychotherapy (Lim, Shiau, Cheng, & Lau, 2022), especially in light of attrition rates in existing studies (Jabir et al., 2024). It is clearly important to balance potential benefits with risks of harm when considering these technologies over the years ahead (Blease & Torous, 2023).

5. Conclusions

Every generation believes that the technological changes it witnesses are not only incrementally bigger than those of previous generations, but vastly greater to the point of existential threat (Kelly, 2023). Humans have believed this about everything from steam engines to nuclear power, from the printing press to the Internet. With each turn of the technological wheel, we believe that this time is different, more, and worse. And yet, despite this fearmongering, and notwithstanding the changes that technology has brought to society, we remain stubbornly capable of critical thought, uniquely prone to conscious self-reflection, and endlessly driven to develop yet more technology.

Recent discussions about AI have demonstrated these tendencies and resiliencies yet again, and also show how we project certain, unsettling aspects of human nature onto technology. We constantly argue that computers, smartphones, social media, or AI are having negative effects (e.g., making young people more distractible), even though a great deal of this rhetoric is a form of displacement, a cognitive manoeuvre that seeks to attribute apparent problems to technology rather than human nature. People have always been distractible, people have always worried that we are getting more so, and the middle-aged have always denounced the young. This is human nature. As McCarthy-Jones points out:

> It is harder to concede that the roots of our problems grow from the stony rubble of our prideful, wrathful and slothful hearts […] If social media vanished tomorrow, the eternal problem of our fallen nature would remain (McCarthy-Jones, 2023; pp. 16–17).

This paper approached the issue of existential techno-panic in the context of AI, especially as it might relate to decision-making capacity and mental capacity legislation. It commenced from an historical standpoint, noting previous panics about technology in the past as well as the possibilities offered by AI today, provided it is approached in a proportionate, prudent, and person-centered way. There are clear needs for appropriate ethical guidance and ethical awareness in clinical and legal practice pertaining to AI, especially among people with fluctuating or impaired decision-making capacity. Such guidance is being produced, and the requisite awareness is growing.

Finally, it is important to remain cognisant that AI was created by humans, and humans are more creative than AI (Kennedy, 2023). AI does not change the essence of human nature, and – in the end – it does not show any sign of disproving Bernard Levin's comment in *The Times* newspaper in 1978 that 'the silicone chip will transform everything, except everything that matters, and the rest will still be up to us' (Levin, 1978). It always is.

Animal and human rights

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Ethical statement

The local research ethics committee does not require that this paper requires ethics approval.

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Brendan D. Kelly: Writing – review & editing, Writing – original draft, Resources, Project administration, Methodology, Formal analysis, Conceptualization.

Declaration of competing interest

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References

Blease, C., & Torous, J. (2023). ChatGPT and mental healthcare: Balancing benefits with risks of harms. *BMJ Mental Health, 26*, Article e300884. https://doi.org/10.1136/bmjment-2023-300884

Bootle, R. (2023). Ignore the doom-mongers, AI will actually give us more leisure time. *Daily Telegraph*, (12 June). https://www.telegraph.co.uk/business/2023/06/11/ignore-the-doom-mongers-ai-will-give-us-more-leisure-time/ Accessed 23 November 2023.

Brynjolfsson, E., Li, D., & Raymond, L. R. (2023). *Generative AI at work (NBER working paper no. 31161)*. National Bureau of Economic Research. https://doi.org/10.3386/

w31161 (Accessed 23 November 2023. (© 2023 by Erik Brynjolfsson, Danielle Li, and Lindsey R. Raymond).
Drotner, K. (1999). Dangerous media? Panic discourses and dilemmas of modernity. *Paedagogica Historica, 35*, 593–619. https://doi.org/10.1080/0030923990350303
Duncan, J. F. (1875). President's address at the annual meeting of the Medico-Psychological Association, held August 11th, 1875, at the Royal College of Physicians, Dublin. *Journal of Mental Science, 21*, 313–338. https://doi.org/10.1192/bjp.21.95.313
Elyoseph, Z., & Levkovich, I. (2023). Beyond human expertise: The promise and limitations of ChatGPT in suicide risk assessment. *Frontiers in Psychiatry, 14*, 1213141. https://doi.org/10.3389/fpsyt.2023.1213141
Graham, S. A., Lee, E. E., Jeste, D. V., Van Patten, R., Twamley, E. W., Nebeker, C., … Depp, C. A. (2020). Artificial intelligence approaches to predicting and detecting cognitive decline in older adults: A conceptual review. *Psychiatry Research, 284*, Article 112732. https://doi.org/10.1016/j.psychres.2019.112732
Gruenberg, S. M. (1935). Radio and the child. *The Annals of the American Academy of Political and Social Science, 177*, 123–128. https://doi.org/10.1177/000271623517700118
Harford, T. (2023). The glimmer of hope in the AI revolution. *Financial Times*, (3/4 June). https://www.ft.com/content/74c63f77-f543-4be0-9cd9-2f5f40ba6f17 Accessed 23 November 2023.
Henshall, W. (2023). E.U.'s AI regulation could be softened after pushback from biggest members. *TIME*, (22 November). https://time.com/6338602/eu-ai-regulation-foundation-models/ Accessed 25 November 2023.
Herrman, J. (2017). The return of the techno-moral panic. *The New York Times Magazine*, (5 December). https://www.nytimes.com/2017/12/05/magazine/the-return-of-the-techno-moral-panic.html Accessed 23 November 2023.
Jabir, A. I., Lin, X., Martinengo, L., Sharp, G., Theng, Y. L., & Tudor Car, L. (2024). Attrition in conversational agent-delivered mental health interventions: Systematic review and meta-analysis. *Journal of Medical Internet Research, 26*, Article e48168. https://doi.org/10.2196/48168
Kelly, B. D. (2016). *Hearing voices: The history of psychiatry in Ireland.* Irish Academic Press.
Kelly, B. D. (2023). The existential threat of new technology is just good marketing. *Financial Times*, (10/11 June). https://www.ft.com/content/efa84fc1-0461-4552-835c-6b5d8d56516e Accessed 23 November 2023.
Kennedy, E. (2023). Humanity surpasses AI in creativity and spirituality. *Financial Times*, (3/4 June). https://www.ft.com/content/6028acf5-772d-4853-97a5-3459acbbd5bb Accessed 23 November 2023.
Levin, B. (1978). The questions that machines cannot answer. *Times*, (3 October).
Lim, S. M., Shiau, C. W. C., Cheng, L. J., & Lau, Y. (2022). Chatbot-delivered psychotherapy for adults with depressive and anxiety symptoms: A systematic review and meta-regression. *Behavior Therapy, 53*, 334–347. https://doi.org/10.1016/j.beth.2021.09.007
Malik, K. (2018). Worry less about the march of the robots, more about techno panic. *Observer*, (25 February). https://www.theguardian.com/commentisfree/2018/feb/25/worry-less-about-march-of-robots-more-about-techno-panic accessed 23 November 2023 (Courtesy of Guardian News & Media Ltd.).
McCarthy-Jones, S. (2023). *Free thinking: Protecting freedom of thought amidst the new battle for the mind.* Oneworld Publications.
O'Carroll, L. (2023). EU 'in touching distance' of world's first laws regulating artificial intelligence. *Guardian*, (24 October). https://www.theguardian.com/technology/2023/oct/24/eu-touching-distance-world-first-law-regulating-artificial-intelligence-dragos-tudorache Accessed 23 November 2023.
Orben, A. (2020). The Sisyphean cycle of technology panics. *Perspectives on Psychological Science, 15*, 1143–1157. https://doi.org/10.1177/1745691620919372
Parmigiani, G., Barchielli, B., Casale, S., Mancini, T., & Ferracuti, S. (2022). The impact of machine learning in predicting risk of violence: A systematic review. *Frontiers in Psychiatry, 13*, 1015914. https://doi.org/10.3389/fpsyt.2022.1015914
Preston, M. I. (1941). Children's reactions to movie horrors and radio crime. *Journal of Pediatrics, 19*, 147–168. https://doi.org/10.1016/S0022-3476(41)80059-6
Rothman, J. (2023). Metamorphosis. *New Yorker*, (20 November). https://www.newyorker.com/magazine/2023/11/20/geoffrey-hinton-profile-ai Accessed 26 November 2023.
Suleyman, M., & Bhaskar, M. (2023). *The coming wave: AI, power and the twenty-first century's greatest dilemma.* Bodley Head.
Wartella, E., & Robb, M. (2008). Historical and recurring concerns about children's use of the mass media. In S. L. Calvert, & B. J. Wilson (Eds.), *The handbook of children, media, and development* (pp. 7–26). John Wiley & Sons, Inc.. https://doi.org/10.1002/9781444302752.ch1
World Health Organization. (2021). *Ethics and governance of artificial intelligence for health: WHO guidance*. World Health Organization. https://www.who.int/publications/i/item/9789240029200 (web archive link, 23 November 2023) Accessed 23 November 2023 (Licence: CC BY-NC-SA 3.0 IGO: https://creativecommons.org/licenses/by-nc-sa/3.0/igo/).
World Health Organization. (2023). *Regulatory considerations on artificial intelligence for health*. World Health Organization. https://iris.who.int/handle/10665/373421 (web archive link, 23 November 2023) Accessed 23 November 2023 (Licence: CC BY-NC-SA 3.0 IGO: https://creativecommons.org/licenses/by-nc-sa/3.0/igo/).