Working title:

Imagination, algorithms and news: developing AI literacy for journalism

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In this contribution, we frame the normative dimension of artificial intelligence and journalism using a taxonomy of:

- the business of news and journalism as a profession which tends to overemphasize instrumental rather than imaginative approaches to AI;
- industry and academic discourse problematizing all-powerful technology yet struggling to come to terms with urgent underlying ethical issues related to AI; and
- the historical fallacy of perfection articulated with machines as exemplified in the expectations of AI, blinding us to the mutual construction of humanity and technology (and, in so doing, journalism and AI).

Taken together, these insights contribute to the development of AI literacy, which we define as the knowledge and beliefs about artificial intelligence which aid their recognition, management, and application. We consider literacy as a way of describing a process of deliberation, reflection and transparency, not as an end point, let alone technological solution – as for example digital literacy often tends to be seen in the context of the problem of disinformation campaigns online.

Artificial intelligence literacy is not simply knowing about AI, but also understanding and appreciating its normative dimension, as much as it is linked to impact and action: being able to identify ways to apply AI responsibly, creatively and efficiently. The three key components of AI literacy are:

- knowledge about artificial intelligence (including its genealogy, moving beyond fantastic or dystopian claims about impact and effects, and understanding AI in the world as a subject of critical journalism);
- the ability to recognize instances (such as particular workflow processes, stories and packages) where AI might be usefully and creatively applied – and when it should be avoided;'
- skills to help, coach or teach others when strategically understanding, imagining, developing and implementing AI.

We base our intervention on our long-standing track record of investigating and participating in journalism's technological transition (especially since the mid-1990s), Charlie's work on the global Journalism AI initiative (JournalismAI; a project of LSE's journalism think-tank Polis), and Mark's on-going 'life in media' research project (as documented in a series of books and articles since 2008). The work of the LSE JournalismAI project (and similar projects elsewhere) identified a huge AI knowledge deficit within the new industry, both in terms of general understanding and specialist expertise. Although this deficit is being addressed, we signal a danger is that it is not changing fast enough to reduce the risk of falling behind, exacerbating (digital) inequalities, and increasing the real danger of journalism being captured by technology (and the tech sector), rather than recognizing its history as interdependent with a range of technologies (including data, algorithms, and computational thinking), and being able to creatively and ethically use machines to be better at delivering upon its public promise.

Journalism and the News Industry

Artificial Intelligence (AI), broadly conceived, is an umbrella term for a range of technologies such as automated statistical data analysis, machine learning, and natural language processing. Rather than a new development or sudden turn in the history of computational technologies, elements of AI have a long history in general, and within journalism in particular (Anderson, 2018). Developments under the umbrella of AI are therefore neither inevitable, nor external to journalism as a profession – the work of journalists is in many ways intimately correlated with, and generative to, the role of AI in the news industry.

AI is good at dealing with simple, repetitive tasks at scale, yet suffers from a wide range of ethical problems when it comes to dealing with complex tasks as AI systems are vulnerable to manipulations and mistakes, tend to be systemically biased, amplifying and exacerbating existing inequalities. In the context of journalism, AI features in a variety of ways, inspiring a range of perspectives and processes that are often confused and get mangled up in debates about the industry and the profession and its technological futures.

First and foremost, AI is a *workflow* issue in journalism, involving a hybrid process where reporters and editors in various ways interact with self-learning systems. This occurs across the media production pipeline. AI can be involved in story ideation, newsgathering, content creation and the dissemination, consumption and monetization of journalism. Story ideas can be generated through AI-infused systems, and story topics can be co-determined by formulas calculating which issues resonate most among those visiting a website or using a specific application. Anytime information for stories is gathered online, a reporter encounters AI. In the production and postproduction of news stories and

packages, AI informs the way software works, assists in the analysis and visualization of data (through statistical programs), and contributes to the different ways in which stories and headlines get published and distributed across (online) platforms.

Because AI plays such a pervasive and systemic role it also requires *reorganization* of the newsroom in terms of recruitment, establishing inter-departmental relations, training and roles – all of which raises strategic questions for management. It supercharges a new field of journalistic labour related to engaging and understanding audience behaviour and needs through personalisation, exploring new revenue opportunities, interactivity, and collaboration (including crowdsourcing and crowdfunding).

AI is also a *topic* for journalism in a world where algorithms are ubiquitous. Data, algorithms and computer programming shape people's lives, and therefore continually feature in issues that warrant journalistic investigation. All specialist journalists from politics to health will have to understand how AI is becoming a vital component of their field and how it might inform and inspire new stories or issues directly related to the use of data and AI systems

AI can also to be considered as a distinct *influence* on journalism. Given the general absence of sophisticated AI literacy and dedicated resources within the news industry, a legitimate concern is that the news media will lose influence (to tech companies and policymakers) in shaping the development of AI in ways that can support journalism in the public interest.

AI is also a structuring element in the *business* of journalism. Clearly, if the news industry wants to survive and thrive in a near-future economy largely determined by surveillance capitalism, machine learning and technical intermediaries, it needs both an informed and imaginative in AI strategy – not just in terms of monetization (as mentioned earlier). Examples could include collaborations or even mergers between media, telecommunication and technology companies – something quite common in the games and music industries (such as in the production of franchises of mobile games like Pokémon, and musical genres like K-Pop). We see much promise for such a collaboration logic to add value to journalistic work beyond its existing editorial and market logics informing and inspiring decision-making processes across the news industry.

Overall, AI is as an *amplifier* of all existing issues that benchmark contemporary journalism and its role in society, including how it wins (and loses) trust, how it covers and exemplifies diversity and inclusion, and how it assumes responsibility for the key challenges we all face in the 21st century. In all of this, we need to be wary of overemphasizing instrumental rather than imaginative approaches to AI. As a first step, the persistent notion of AI as an all-powerful technology needs to be dispelled.

AI as All-Powerful Technology

Former Google engineer Anthony Levandowski, along with some other technology enthusiasts working in Silicon Valley, in 2017 founded the religious company Way of the Future, whose main mission was to "develop and realize a God based on artificial intelligence and through understanding and worship of this God contribute to the betterment of society" (the church closed again in 2021). This example is but the tip of the iceberg of how technology and machines throughout human history have consistently been assigned some sort of all-powerful status. The equation of all things AI with perfection, coupled with assumptions of how things, people and society change accordingly, is part of a historic fallacy in our making sense of machines (Deuze, 2023).

Speculative, futuristic and tech-industry inspired notions of all-powerful AI (see, most notably, Kissinger, Schmidt and Huttenlocher, 2021) color and shape the tech framing and presentation of the technology, making it that much harder to unpack the always messy infrastructure, complex genealogy, and all-too-human design of AI - including its programming, computing, how it is trained, what it costs to operate, and its environmental impact. Instead, we are left wondering whether (and when) we will become obsolete as humans while accepting the inevitability of AI outcomes as envisioned by a relatively unregulated technology industry. This is a blind spot in debates about AI. The issue of AI is not so much one of replacing imperfect humanity with exquisite machines, but rather brings forth a range of urgent historical-ethical concerns, such as technology bias, machine-driven exploitation of human labor, loss of human dignity at work governed by automated systems and technical intermediaries, the role of technology in the climate crisis, and the on-going erosion of privacy - all of which particularly affect society's least privileged individuals and communities.

We are reminded of the tendency of all systems related to computing and automation to produce what Jacques Ellul once called a 'technique': ways of doing things that primarily serve the needs of machines, rather than the function what the technology was designed for. Examples of this can be found everywhere, and in journalism for example relate to proprietary content management systems present in any news organization. These systems enable and standardize much of the work, yet also provide any number of complexities and constraints that can only be addressed in terms of the software. Journalists end up following routines designed to 'help' these systems rather than such systems making their work more easy or efficient. Important foci in this area are not so much that - for example - journalists now choose different topics to cover (or cover topics differently), but rather how news organizations come to serve their computer systems rather than their constituencies.

Overall, the normative story of AI and automation in journalism should not be a story of technology, but one of people: the people who train the AI, the people navigating through these systems to report

and relate to audiences, and the people developing relations of trust with journalism and journalists through a variety of platforms.

Displacement and Augmentation

Fixating on technology – the artificiality of AI – in both scholarly and industry debates sometimes borders on fetishism, which a historical tendency of the field, akin to the 'shiny new toy syndrome', always focusing on the next Big Thing, on high profile companies and their eccentric business leaders at the expense of more historical, nuanced, local, contextual and situational analyses.

There is a paradox in much of the reaction from journalists to AI. The common fear and pervasive debates about whether robots will take people's jobs and replace human labour tacitly admits that much newswork is automatable. There is already a history of this displacement by AI that has remained invisible: Google search replaced much of the arduous labor of research for journalists, for example. It might be questionable that so much basic inquiry for facts or sources gets handed over to a technology, but it is undeniable that it has increased efficiency, convenience and capacity. At the same time, those hostile to the machines claim that much of journalism is innately 'human' as it involves judgement, creativity and adept skills that are not programmable. This binary reductionism is borne partly of limited AI literacy.

A less defensive approach admits that much journalism is mundane, repetitious and formulaic, and accepts the logic of AI replacement for those routinized tasks (albeit with suitable editorial oversight). It also recognizes the long history of journalism and technology interdependence and co-construction, shifting the perspective from one of reacting to (the inevitability of) AI to creating imaginative approaches with the help of AI that serve the public, enhance civic learning, and provide a better service to communities.

As the technology evolves the range of replaceable or augmentable tasks will grow. The radically hopeful AI literate response recognizes that this creates new roles for the human journalist such as algorithm editor, and sets out to outline a deliberate (yet critical-reflexive) strategy to explore the creative potential of the technology, and creates or shapes AI of its own. Such a mindset also seeks to imagine additional things that humans could do augmented by the machine that potentially saves them time and effort - such as investing in more real-world and grassroots reporting, more human to human interaction, more creative experimentation with storytelling formats and topics, more investigation and structured reflection. The AI literate response seeks to imagine the things that AI can do or enable that is not currently possible or practical, such as searching through vast data sets. For example, computational journalism inspired rapid developments in the dynamic field of data journalism and

data visualization, enhancing ways in which journalists can make stories come to life in terms of their potential impact on communities.

We would advocate to take all of this a step further: what new human journalism practices are there that don't just broaden or deepen the existing production model, but serve to re-imagine it and its outcomes? We have written about the role of emotion in journalism before (Beckett and Deuze, 2016) with a similar premise: beyond highlighting how emotion – like technology – has always played a formative role in newswork and, when considered carefully, can significantly enhance journalism's potential, it can (and perhaps should) also lead to re-imagining what journalism could be. This is not just about giant, well-resourced newsrooms with R&D units who can exploit the full scale of AI, but also about the rapid rise of smaller, often specialist digital start-ups who use AI tools and systems to carve out their niche and achieve sustainability, not necessarily (nor inevitably) reliant on giant tech companies in the United States or subservient to omnipresent state control (as in China).

Beyond displacement there is a wealth of opportunity for AI in journalism, importantly including those related to critical awareness of the various ways in which AI tends to amplify existing social and digital inequalities when left to technology companies and software-as-a-service industries. There is an uncanniness in the way many in the industry tend to look at journalism through the lens of AI, which opens opportunities for positional reflexivity – ways of knowing ourselves in the context of machines. It is this kind of AI literacy that we would advocate for journalism (and journalists) to develop.

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