WHAT MAKES A REPORTER HUMAN?

A Research Agenda for Augmented Journalism

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Qu'est-ce qui fait qu'un journaliste est humain ? Un programme de recherche pour un journalisme augmenté

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A RESEARCH AGENDA FOR AUGMENTED JOURNALISM

Abstract. — The objective of this article is to lay out a research agenda, named "Augmented Journalism", to explore the future of news journalism in the context of Artificial Intelligence (AI). The article will determine what the critical epistemic components of this novel paradigm would be. "Augmented journalism" puts the focus on human-machine interaction, and the main question that arises from this context is "What makes a reporter human?" A broad intradisciplinary approach to human capabilities is needed, not just in the social sciences, in particular sociology, journalism studies, and psychology, but also in technical skills (computer science and user design), as well as in the operational context (media economics and management studies). The vision presented here stems from years of research into journalism practice, AI tools for news, news media business models and the Silicon Valley mindset. The underlying logic is that the future of journalism lies in its capacity to create value for the various sectors of stakeholders, from consumers to policy makers. The project will explore what makes the work of journalists valuable, what part consists of "human" capabilities, and how news work can be augmented with AI in order to stay relevant, but efficient.

Keywords. — intelligence augmentation, artificial intelligence, journalism, value, human, automation, capabilities

Carl-Gustav Lindén, Qu'est-ce qui fait qu'un journaliste est humain ? Un programme de recherche pour un journalisme augmenté

Résumé. — L'objectif de cet article est d'établir un programme de recherche, appelé « journalisme augmenté », pour explorer l'avenir du journalisme dans le contexte de l'intelligence artificielle (IA). L'article cherche à déterminer les composantes épistémiques essentielles de ce nouveau paradigme. Le « journalisme augmenté » met l'accent sur l'interaction homme-machine en posant la question fondamentale « Qu'est-ce qui fait qu'un journaliste est humain » ? Une approche interdisciplinaire des capacités humaines est nécessaire, puisant non seulement dans les sciences sociales, en particulier la sociologie, les études journalistiques et la psychologie, mais aussi dans les compétences techniques (informatique et user design), ainsi que dans le contexte opérationnel (économie des médias et études de gestion). La thèse présentée ici est le fruit d'années de recherche sur la pratique du journalisme, les outils d'IA pour les actualités, les modèles économiques des médias d'information et les travaux de la Silicon Valley. La logique sous-jacente est que l'avenir du journalisme réside dans sa capacité à créer de la valeur pour les différents secteurs des parties prenantes, des consommateurs aux décideurs politiques. Le projet explorera ce qui fait la valeur du travail des journalistes, la partie propre aux capacités « humaines » et la manière dont l'AI peut améliorer le travail d'information afin que celui-ci reste pertinent, mais efficace.

Mots clés. — intelligence augmentée, intelligence artificielle, journalisme, valeur, humain, automatisation, capacités

> Commerce is our goal here at Tyrell. More human than human is our motto.
> (Eldon Tyrell – Joe Turkel – in Ridley Scott's film, *Blade Runner*, 1982)

The scientific and societal objective of this paper is to explore the future of news journalism in the context of Artificial Intelligence (AI) and to lay out a research agenda tentatively named "Augmented Journalism". The paper will determine what the critical epistemic components of this novel paradigm would be. The focus is on human-machine interaction, and the main question that arises from this context is "What makes a reporter human?" A broad intradisciplinary approach to human capabilities is applied here for this scientific endeavour. This includes not only the social sciences, in particular sociology, journalism studies and psychology, but also technical skills (computer science and user design). The operational context (media economics and management studies) also has to be included. The vision presented here stems from years of research into related fields such as journalism practice, AI tools for news, news media business models and the Silicon Valley modus operandi. The expected results and impact of such a research agenda will be a set of critical factors that will deepen our understanding of the future of journalism and the configuration or reorientation of the human capabilities needed in an environment where "smart" machines increasingly handle routine tasks. The underlying logic is that the future of journalism lies in its capacity to create value for the various sectors of stakeholders, from consumers to policy makers. This paper will explore what makes the work of journalists valuable, what part consists of "human" capabilities, and how news work can be augmented with AI in order to stay relevant, but efficient.

Journalists as computers

This paper opened with a pop culture quote from the influential film, *Blade Runner*. The business magnate and tech wizard Eldon Tyrell is referring to Rachael, the most successful android – in the film called a replicant – that his Tyrell Corporation has ever produced (Rhodes & Westwood, 2007). Tyrell's replicants come equipped with false memories from childhood and lack the awareness that they are not "real" humans. Instead, the replicants are enslaved, bio-engineered machines with a limited lifespan, but they become the face of humanity, while their human counterparts exemplify inhumane qualities (prejudice, insensitivity, and heartlessness) (Clay, 2018). According to Carl Rhodes and Robert Westwood (2007), Eldon Tyrell's apathy towards Rachael, condensed in the quote as "more human than human", reveals both his inhumanity and the low state society has

reached. This brings us to the other side of the coin. In his 2017 commencement speech at the Massachusetts Institute of Technology, Apple's CEO Timo Cook said, "I'm more concerned about people thinking like computers, without values or compassion, without concern for consequence" (Reuters, 2017). In this context, the somewhat strange question "What makes a reporter human?" becomes intriguing. What is the response to machines equipped with cognitive features replicated from humans?

Current scholarly debates on journalism are starting to pay attention to how cutting-edge technologies affect news work. Automation and Artificial Intelligence (AI) or Intelligence Augmentation (IA) are seen as key triggers of a quantitative turn in journalism (Coddington, 2015). Intelligence Augmentation refers to the effective use of information technology in augmenting human capabilities. Data-driven journalistic practices, together with practices of computational journalism involving automation and algorithms, necessitate a reconsideration of the roles and relations within human-machine interaction, especially human capabilities. If, earlier, humans (journalists) acted as communicators and machines functioned as mediators, the new technical reality re-assigns the roles in such a way that a machine, at least partly, steps into a formerly human role. I argue that a new professional paradigm has emerged that is based on human-machine interaction. The paradigm which, – inspired by Doug Engelbart (1962), Éric Scherer (2010) as well as Francesco Marconi and Alex Siegman (2017) – I term "Augmented Journalism" requires a sustained and critical assessment of the reconfiguration of human and machine roles in news work. In developing this theoretical framework and research agenda, I draw inspiration from the perceived dichotomy between Augmented Intelligence, where humans are in charge, and Artificial Intelligence where cognitive functions are replaced by "smart" machines.

The main objective of such an agenda would be to conceptualise and establish the epistemological dimensions of Augmented Journalism, thereby responding to the key question "What makes a reporter human?" The second objective would be to explore how knowledge workers, in this case journalists, respond to the development of AI in their work environment. This empirically-driven research needs to investigate the process of human-machine interaction and its impact on journalistic practices, norms and values. The concept of Augmented Journalism could provide the firm methodological and theoretical basis that is required for understanding the critical role of data-driven journalism, automation and AI/IA in contemporary society.

Research on AI/IA and journalism

Research on AI/IA and journalism is still a small field with a limited number of published articles (for an overview see Lindén & Milosavljević, 2019). The most recent contribution is a collection of expert opinions edited by Seth C. Lewis

and colleagues (2019) and two overviews of the field regarding the capability of media and journalism to develop and implement smart systems (Beckett, 2019), also in public service media (Jääskeläinen & Olij, 2019). There is research on specific features of AI and journalism, for instance texts generated by Natural Language Generation systems (Dörr, 2016; Leppänen et al., 2017; Linden & Tuulonen, 2019; Sirén-Heikel et al., 2019), recommendation systems (Beam, 2014; Liang et al., 2006), bias detection in texts (Ali et al., 2010; Mathioudakis et al., 2019), content moderation with machine learning (Jiang & Han, 2019; Roberts, 2019), and story-finding and news worthiness or augmented creative writing (Carlson, 2018; Huovelin et al., 2013; Magnusson et al., 2016; Plattner et al., 2016; Zachos et al., 2018).

However, there is almost no research on a crucial aspect, namely the data that drives AI applications in newsrooms. Skills for working with numbers, large and small data sets, public records, and data visualisations are essential in news organisations today (Boyles & Meyer, 2017; Rogers et al., 2017; Weber et al., 2018). The literature on newsroom strategies for data management is still scarce, for instance when it comes to news text generation, where unhindered access to structural data is a crucial element of operations (Karlsson, 2019). Some strategies for exploring, evaluating and utilising data have been described in the literature, for instance with software that enables journalists to encode news events and stories directly as data (Caswell et al., 2015; Caswell & Dörr, 2019).

Certain specific features of newswork provide a challenge. Looking at the potential for AI in news reporting, Jonathan Stray notes that investigative journalism is a hard problem for AI, for a number of reasons. One important aspect is the unique character of each investigation and the lack of structured data, which makes it hard to create computer models (Stray, 2019).

Journalists as knowledge workers

In this paper, journalists are placed in the broad professional category of knowledge workers, people who "have high degrees of expertise, education or experience, and the primary purpose of their jobs involves the creation, distribution, or application of knowledge" (Davenport, 2005: 10). The fundamental role of knowledge workers is to provide access to knowledge and experience that non-specialists lack. Journalists help the audience overcome the problem of limited understanding or information assymetry by providing updates, insights, and entertainment. They are both knowledge producers and distributors, and journalism is one of, if not the most important knowledge producing institutions in society. However, the production and distribution of knowledge and experience is changing and professional craftmanship is susceptible to being replaced by para-professionalism, knowledge engineering, embedded knowledge, machine-generated expertise and other new and cheaper forms (Susskind & Susskind,

2015: 262). Through the Internet and Google's ambition to "organise the world's information and make it universally accessible and useful", people suddenly have easy access to affordable expertise, including "free" news.

War of metaphors

Part of the rationale for a new research agenda is the need to establish a competing narrative to AI, making sure that we always start from the demand that humans are in charge. It should be noted that, despite 70 years of discussion, there is still disagreement on how exactly to define artificial intelligence. In this paper, I rely on two similar definitions that underline the human side of AI, with a human-centered future (Broussard et al., 2019):

– AI is a scientific discipline, like mathematics or biology. This means that AI is a collection of concepts, problems, and methods for solving them (*Elements of AI*, 2018).

– Most basically, AI is a collection of ideas, technologies, and techniques that relate to a computer system's capacity to perform tasks normally requiring human intelligence" (Brennen et al., 2018).

There is also a personal background. In 2011, I met the famous computer scientist Doug Engelbart in Palo Alto, just a few years before he died. In a seminal paper (1962), he aimed to establish a competing concept to AI, namely Intelligence Augmentation. Our encounter had a lasting impact on my thinking, which until then had been mostly framed by the exceptionalist model of Silicon Valley. Accordind to the latter, behind the acronym AI we will find the narrative – reinforced by Hollywood films such as *Blade Runner*, already referred to –, of a world of autonomous machines that will make human workers redundant. According to this grand narrative, reinforced by strong visual elements, smart systems will take over human decision processes. There is a risk that techno-determinism and dystopias unnecessarily frame the debate on the future of journalism and communication, something I already personally sense when confronted with damaging metaphors such as "robot journalism" (Lindén & Dierickx, 2019).

Indeed, the current hype wave of "artificial intelligence" is mostly driven by Silicon Valley myths and ideology. We know that computation transforms almost every aspect of cultural life, but the stories we tell about it, i.e. "the balance of myth and reason, will play a major role in determining what we can know or think" (Finn, 2017: 2). Dystopian metaphors affect the capability to think rationally and creatively. Talking about the future of professions to different groups, Richard and Daniel Susskind (2015) have experienced that journalists seem "to be resigned" while teachers are "skeptical", lawyers "mostly conservative", and doctors "dismissive", when faced with the emergence of machines in the workplace.

The rise of emotions

Over the last few years, the role and dynamics of affects have attracted researchers' attention (Davies, 2018; Deuze & Prenger, 2018; Wahl-Jorgensen, 2018). The United States and the United Kingdom are politically in an emotional turmoil that is spreading throughout Europe. Considering journalism research, emotions as a topic of interest has largely been absent, and when mentioned, it is regarded as exceptionalism and as a deviation from the norms of journalism. Even though they are integrated into sociological research, feelings, affects, moods and emotional states are excluded from the core of journalism research. According to the normative ruling ideal, journalists should be detached, neutral and objective (Hanitzsch, 2007). However, it would probably be time to admit that journalists too are human beings.

This development brings us to the question of human capabilities in journalism, one of the key concepts of this paper related to the research on the potential for augmentation. Skills are valuable, but they are the tactical knowledge or expertise needed to achieve work outcomes within a specific context. Thus, they are only to a limited extent flexible and transferable when the environment changes. John Hagel and colleagues (2019) divide capabilities into two categories; innate, which are capabilities that we are born with, and developed. Innate capabilities are not fixed but can be developed and adapted under the right conditions. Most people have the potential to improve them through experience and practice. In an environment of constant disruption, continuous and rapid learning is essential.

Table 1. Skills change, but capabilities endure (source: Hagel et al., 2019)

Innate but can be amplified	Developed through experience and practice
Imagination: Seeing through a variety of lenses that challenge present assumptions of what is possible.	Emotional intelligence: Understanding others' emotions and experiences and how they shape human interactions.
Empathy: Understanding and considering others' feelings, thoughts and experiences.	Teaming: Collaborating effectively across spatial, organisational, and cultural boundaries.
Curiosity: Seeking out new information and experiences; striving for understanding; asking questions.	Social intelligence: Understanding interpersonal dynamics and behavioural impacts of human interactions.
Resilience: Persisting despite challenges, obstacles and disruptions.	Sense-making: Creating meaning and awareness out of collective experience.
Creativity: Innovating and applying improvisation; using resources in unexpected ways.	Critical thinking: Analysing, evaluating, synthesising, and reconstructing information.
	Adaptive thinking: Recognising new patterns and applying patterns in new contexts.

Looking at the proposed developed capabilities, we see that critical thinking is already at the core of journalistic work. Also, the "lone wolf" ideal of journalism

is giving way to teaming and group work, even though journalists still very much want to be in charge. Let us see how the other capabilities are relevant. Firstly, the concept of sense-making provides a way of shifting the focus away from journalism as a practice to the creation and materialisation of meaning for a paying audience or, as we would conceptualise it, "sensemaking-as-a-service". According to Karl E. Weick (1993: 635), the basic idea of sensemaking is that "reality is an ongoing accomplishment that emerges from efforts to create order and make retrospective sense of what occurs". Our research task therefore includes conceptualising journalistic content as social constructions of meaning. Media work is treated as a social institution in itself "interacting with other institutions within the wider social system" (Hansen, et al., 1998, 19) and existing in a symbiotic arrangement with news sources and the audience. We are not inventing a new concept here because, for instance, John Hartley (1996) has already noted that news is "the sense-making practice of modernity".

Picture 1. Value-based approaches in media
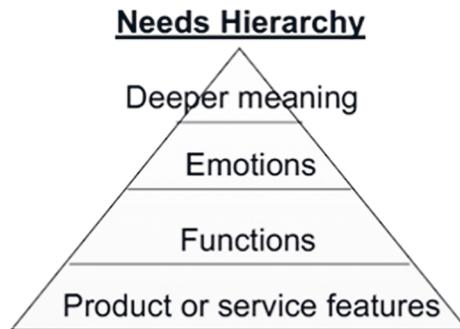
Emotions are a core part of sense-making but they are also connected to emotional and social intelligence, which becomes crucial in the world of journalism due to the changing media business model. Indeed, around 75-80% of all digital ad revenues are nowadays going to Google and Facebook. Advertising revenues from print have declined and digital ad revenues are slowly materialising to replace them (Cornia et al., 2017). The focus on paying readers also requires a deep understanding of their needs, with "deeper meaning" at the top of the needs hierarchy in this picture (Carlson & Wilmot, 2006). Insights about user needs form the basis for strategies to create value, which underlines a foundational shift in journalism itself, a move towards a new value proposition (Meijer, 2013).

However, with the notion of user value being closely connected to emotional and social intelligence, new problems arise. Journalists tend to stay away from closer encounters with the very public they are actually there to serve (Holton et al., 2016). Traditionally, journalists have shown little interest in engaging with

the audience, and this question has not been in the forefront for the media industry until lately, even as social media and other online platforms allow better possibilities for audience engagement. In modern newsrooms, AI tools fuelled by user data tell the journalist and managers what content engages the reader and what he or she is prepared to pay for. Audience metrics has become a new mantra for the newspaper industry. Still, without the human capabilities of journalists for understanding others' emotions and experiences and how they shape human interactions (emotional intelligence), as well as for understanding interpersonal dynamics and the behavioural impacts of human interactions (social intelligence), the usefulness of metrics is limited.

Our thesis in this paper proceeds from the belief that the core elements of journalism – story telling in different formats, critical thinking, verification, human values, ethics, autonomy and integrity – become even more important at a time when "smart" machines are entering every part of society and professional life. Journalism should continue to be a critical but constructive force in democratic society. Human values and capabilities remain at the core. With the changing business model of the media, new hybrid forms of journalism, media and communication work are evolving. Journalists need to adapt to a reality where skills in innovation, entrepreneurship, service design, technology, social networks and conceptual development are going to be in great demand. As we know, journalism is quickly moving from product to service, from the industrial logic of manufacturing to the curation and moderation of knowledge, and entertainment distributed in interpersonal networks, both local and global. Personally, I believe that maintaining core values but reinventing journalism as "sensemaking as-a-service" with a strong component of emotional and social intelligence is worth discussing.

Proposing research questions

A research agenda for augmented journalism would focus on three parts. Firstly, instead of asking what machines *can do*, we should ask what they *should do* and what tasks humans, in this case journalists, should focus on. What tasks are too critical and important to be handed over to machines? This means breaking down journalistic work into the actual information artefacts and micro processes, because the issue is less about what jobs will be automated, and more about what parts of jobs will be automated (Caswell, 2015). In my opinion, research need to address three questions:

– *RQ1: What makes a reporter human?* The response to this question has two parts: (1) How can the fundamental principles of journalism be decomposed or deconstructed? (2) What are ultimately the human components of journalism that cannot or should not be automated? This will be the pathway to many different new uses of journalism, new business models for journalism, and new openings for sense-making in journalism.

– We also need to create a map of the emerging field, which leads to a second potential research question: *RQ2: What does the transformation of journalism work mean in the age of datafication, digitisation and artificial intelligence?* (1) What is going on? Who or what is driving the change and why? (2) How have journalists historically adapted to new technology? (3) How are journalists now thinking about Artificial Intelligence? (4) What does the future(s) of journalism look like?

– Thirdly, we need to explore theories that help us develop a new paradigm: *RQ3: What are the components of the research agenda for "Augmented Journalism"?* (1) What are the epistemological dimensions, certainties, beliefs, dilemmas and structures of knowledge? What theories do we draw upon? (2) How are technology, skills and human capabilities related? (3) How can augmented journalism be operationalised in research? How can it be tested?

Expected research results

So, going forward, looking at the anticipated scientific impact, the potential for scientific breakthroughs and for promoting scientific renewal, I propose the following: The expected results and impact will be a set of epistemological dimensions for a research agenda called "Augmented Journalism". This will help us better engage with the research topic "the future of journalism" and the configuration or reorientation needed in an environment where "smart" machines increasingly handle routine tasks. The underlying thinking is that the future of journalism lies in its capability to create value for the different sectors of stakeholders, from consumers to policy makers. This value is connected to user needs for emotions and deeper meaning. This means that normative theory, i.e. what journalists "should do", is not well equipped for dealing with emotions or other "non-rational" expressions of journalistic work.

Conclusion

In this paper, I present a proposition for a research agenda that I call "Augmented Journalism". The main idea is to produce new knowledge on what makes the work of journalists valuable, what part consists of "human" capabilities, and how news work can be augmented with AI to stay relevant, yet efficient. Artificial Intelligence (AI) or Intelligence Augmentation (IA) is already transforming journalism around the world, affecting the news value chain, from news gathering to content processing, creation and distribution. AI/IA also provides a technological challenge that is different from previous transformations as it is not just about new hardware, such as radio or television, but a whole new human-machine interaction system. In a few years' time the first working prototypes of neural computer-interfaces connected to our brains will be here. However, there

is very little research on the real nature of this transformation. Of course, this is the view from a production perspective on journalism; augmentation is also a part of new ways of consuming media content, for instance through augmented reality, but this is a development not covered in this paper.

Even though it would be naive to think that the rapid development of learning algorithms will not lead to more advanced combinations of AI and journalism, journalists have shown a strong capacity for adaptation and even mitigation of new technology. Elsewhere I have asked, "Why are there still so many jobs in journalism after decades of newsroom automation?" (Lindén, 2017). I argue that besides the general conclusion that creative jobs such as journalism are at low or no risk to automation, journalism as ideology, i.e. understanding how journalists give meaning to their work (Deuze, 2005), will probably also have a strong mitigating effect in the future. This means that journalists are somewhat insulated against change because of their specific environment and the nature of their work. Journalists are working in a "complex and contradictory set of macro-sociological influences" and make a good case study for understanding "occupational discourses in times of rapid economic and cultural change and widespread professional delegitimation" (Anderson, 2014).

There is potential for a scientific breakthrough, for instance by reframing the predominantly pessimistic academic debate on the impact of AI to a more constructive scenario. This research agenda could also provide indications on the impact of journalism ideology, the social cement of the occupation, and the value of maintaining some desired characteristics of the status quo. Returning to the cynical quote from Tyrell, "more human than human", we should expect that it is humans, in our case journalists, and not versions of Rachael that should be more human. We can certainly expect more from machines than from ourselves if the goal is perfectly efficient and optimised processes, and the answer is certainly yes, machines such as the journalistic version of Rachael cannot be as problematic as humans. But journalists need to be on "Team Human", where uniquely human things such as imagination, chance, mistakes, and efficiencies continue to matter "even if they are undesired by or incompatible with technology" (Leonhard, 2016: 166). In other words, journalists need to stand up for both their needs as humans - even though machine thinking would be easier because of technology -, as well as for the need to prioritise relationships with other humans over screens and machines.

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