Human still in the loop: editors reconsider the ideals of professional journalism through automation

Short title: Human still in the loop

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This is an original manuscript / preprint of an article published by Taylor & Francis in *Digital Journalism*, 7(8), 1098-1116. [Published online: 15 May 2019], available online: [http://www.tandfonline.com/\[doi: 10.1080/21670811.2019.1601576\]](http://www.tandfonline.com/[doi: 10.1080/21670811.2019.1601576])

Suggested citation:

Milosavljević, M. and Vobič, I. (2019). Human still in the loop: editors reconsider the ideals of professional journalism through automation. *Digital Journalism*, 7(8), 1098-1116, doi: 10.1080/21670811.2019.1601576

Abstract

The study investigates how automation novelties in the newsroom both challenge and maintain core values of journalistic professional ideology. On the basis of semi-structured interviews with editors of legacy news institutions in the United Kingdom and Germany the study reveals the rationale of the changing journalism-technology relation as well as the dynamics of the re-articulation of journalism's core ideals. Despite increasing relevance of automation for news production human journalists are still regarded as dominant agents in the routinisation of journalism and the re-articulation of its purpose. The interviewed editors' narratives suggest that they observe technological innovations through wider social, institutional and professional perspectives and appear to be aware that either euphoric or dystopic stances might lead to misconceiving the implications of early automation novelties. On one hand, the editors perceive automation as an opportunity to augment journalism through the combined agency of human actors and automated systems as a way to address the crises of social relevance and business viability. On the other, according to interviewees, automation challenges the ideologisation of professional journalism with respect to the retention of its boundaries and the authority of journalists in contemporary social communication.

Keywords: journalism, automation, professional ideology, legacy news institutions, qualitative interviews, Germany, United Kingdom

Introduction

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Throughout its modern history, implementations of new technologies in journalism have been concerned with issues of control over the processes of legitimating knowledge, representing social realities, and defining norms of participation (Hardt 1998). Alongside material developments, technological innovations have always involved discursive processes, through which journalism's internal and external boundaries have been re-articulated (Carlson 2016, 360), and a consensual professional ideology among journalists re-consolidated (Deuze 2005, 444). These issues remain central to the recent implementations of automation in news production, as algorithmic processes have been introduced to and are utilised in (1) gathering and assembling data, (2) creating news narratives, figures or graphics, and/or (3) publishing and distributing news items with different levels of human involvement beyond the programming of rule-based processes. The precept of "what can be automated will be automated" (van Dalen 2012, 651) implies changes to the role of humans in journalism. In future transformations of the journalism-technology relation "human-in-the-loop" perspective – allowing changes to the outcome of automated systems – might be at least accompanied with if not overcome by the "human-out-of-the-loop" development. .

As a response to the increasing complexities of the human-machine divide (Lewis and Westlund 2016), and an unprecedented rise of quantitatively oriented journalism (Young and Hermida 2014; Lewis 2015; Anderson 2015; Coddington 2015; Splendore 2016; Carlson 2017a), epistemological differences and commonalities among data, computational, algorithmic and automated journalism have been discussed and established (Anderson 2013; Dörr 2016; Coddington 2015; Carlson 2015; Splendore 2016). Such transformations call not only for continuous interrogation of the boundaries between various quantitative forms of journalism, but also for reconsideration of the fundamental questions: *what* is journalism, *how* is it done, and *why*? These questions are currently vital, as journalism faces a "double-legged crisis" of civic adequacy and financial viability that threatens the public relevance and financial resources of legacy news institutions (Blumler 2010, 440). In this respect the "posthuman future", argues Carlson (2017a), is not being discussed as a dystopian vision of journalism, but as a realistic promise of a "hybrid state" (226), in which both machine and human fingerprints will be all over what is now understood as professional journalism – defining its creation and distribution, as well as its ideologisation. The main goal of this study is to investigate how recent implementations of automation both challenge and maintain core values of journalistic professional ideology in legacy news institutions.

Our exploration is positioned at the intersection of contemporary debates on the boundaries of professional journalism and their discursive maintenance (Peters and Broersma 2013, 2017; Carlson and Lewis 2015), and recent explorations into automation and its manifold implications for journalism (Anderson 2013; Coddington 2015; Splendore 2016; Carlson 2017a). In this context, we refer to automation not just within the narrow context of algorithms that automatically generate stories from structured data readable by machines (Graefe 2017), but within the wider context of automated gathering and assembling of information, generation of various textual and visual types of content, as well as, decision-making and delivery aspects of journalistic output. Within the changing journalism-technology relation we approach journalistic professional ideology as a belief system that defines appropriate practices and values (Nerone 2013, 447), preserves communal boundaries (Zelizer 1993, 220), and functions to self-legitimize journalism's authority (Deuze 2005, 446).

By analysing the decision-making rationale behind technological innovations in newsrooms and reconsidering the core ideals of professional journalism, we contribute to the rare scholarly accounts that explore responses by journalists who have practical experience of automation (e.g. Young and Hermida 2015; Thurman, Dörr and Kunert 2017). On the basis of semi-structured interviews with editors of legacy news institutions in the United Kingdom and Germany, from news agencies and public broadcasters to commercial general and specialised

news outlets with regional, national or/and international reach, this study reveals the dynamics of ideologisation introduced by automation novelties and how those dynamics can throw light on our understanding of journalism's self-conception in the processes of knowledge production, representation of social reality and participation in political life.

Journalistic Professional Ideology and Automation - Reconsidered

Although journalism has manifested in various ways depending on specific historical, social and technological contexts, the “hegemonic model of journalism” (Nerone 2013), which had been modelled distinctly in different countries since the late 19th century, gradually developed an “international existence” (447). This model continuously gained prominence throughout the last century with journalists imagined as autonomous and public-spirited verifiers of factual information, acting on a timely basis as the “super-ego of the news industry” (451). A consensus on what is (understood as) a shared professional ideology among journalists has been constructed incrementally through the transnational negotiation of commonalities in the system of ideas and ideals – “both through internal struggles for control within journalism institutions and external struggles between institutions and society for legitimacy in social and political arenas” (Russell, Laufer and Wasko 2015, 303). Although this ideology “typifies more or less universal similarities” and maintains journalism's position in society and its sense of self-awareness (Deuze 2005, 446), the internal context-related variations of journalism and its contradictions are challenged with the implementation of automation novelties.

It seems that automation novelties in professional journalism are part of “an earlier and ongoing turn to the digital” (Young and Hermida 2015, 381), when – not without opposition and controversy – the boundaries of professional journalism are re-negotiated, and its place in social communication altered, even disputed (Peters and Broersma 2013, 2017; Carlson and Lewis 2015). The variety of quantitatively oriented journalism forms has epistemological implications for each stage of news production (Splendore 2016) and – as in the case of multimedia journalism a decade ago – simultaneously challenges the ideal-typical values of journalistic professional ideology (Deuze 2005, 452). In their discussion on the journalism-technology relation Lewis and Westlund (2016) argue that journalism is becoming technologically specific, while being “defined by, embedded in, and understood through the particular structural and sociocultural characteristics of technology” (342).

Although we bring into focus the “relative dependence on technology” that is apparent in various journalism forms (Lewis and Westlund 2016, 342), we go beyond simplistic technological-reductionism. In this sense, we explore the implications of automation for professional journalism – not only for how journalists relate to and operate technology (material aspects), but foremost how they relate to themselves as news creators and what they perceive as journalism (discursive aspects). By drawing from the work of Mark Deuze (2005), we first reconsider the five constructed ideals of professional ideology (public service, objectivity, autonomy, temporality, and ethics) and identify their internal contradictions deriving from the specific material grounding and structural position of journalism. Then we discuss each value with respect to automation novelties in quantitative forms of journalism and their implications for the “fantasy” of the hegemonic model (Nerone 2013, 453).

Public service: problems of personalisation

The public service ideal relates to journalism's particular linkage with people, and is rooted in what emerged as the high-modern paradigm based on a belief in linear progress, absolute truths and human emancipation (Hallin 1994, 160). In this context, Nerone (2015, 2) writes

that journalists believe “they should and do make” democracy work by providing information to the people, who then discuss it, resonate on it, make up their minds and participate in public life. In other words, by “doing it for the public” (Deuze 2005, 447) journalists aim for a heterogeneous citizenry with shared public culture and serve as an “integrative force” for public debate (Dahlgren 2009, 147). Although high-modern journalism has been waning for some time now (ibid.), the public-service ideal continues to help journalists claim social responsibility against commercial and political pressures (Coddington 2015, 73), but also to reinforce the *status quo* in journalism (and beyond) while endorsing a more responsive attitude towards the people (Deuze 2005, 448).

While the wave of quantitatively oriented forms, foremost data and computational journalism, contribute to the public-service ideal with its potential to strengthen journalism’s capacity to make social institutions more legible to the public (Coddington 2015, 332), some ways of implementing automation in news production and delivery weaken it by striving for “pluralized personalisation” (Carlson 2017a, 231). For instance, automated journalism promises the “horizontal expansion” of numbers of news items, and the creation of “multiple – even personalised – versions of any story” (ibid.). Discussions on automation revive the problems inherent in the personalisation of an individual’s engagement with journalism (Thurman and Schiffers 2012), as well as traditional debates on the fragmentation of the public sphere, and the role of journalism in this processes.

Objectivity: the promise of algorithms

The ideal of objectivity relates to the detachment with which journalists approach and depict social realities (Maras 2013, 7–11), and is historically rooted in the broader cultural “scientific naturalism” movement of the early 20th century, stressing the relevance of methods in giving evidence of facts (Splichal 2015, 858). Although objectivity has a problematic status in contemporary thinking concerning the “impossibility of value-neutrality”, and is being revisited through concepts like fairness, detachment, and impartiality (Deuze 2005, 448), these reconsiderations do not affect its ambiguous structural and discursive implications. While the promise of objectivity is still alive in journalistic professional ideology, it has always been characterised by its paradox (Splichal 1999, 299–300): as journalists attempt to provide impartial renderings of the world, they become partial through their reproductions of the existing social order.

With the introduction of automation, the ideal of objectivity and its reconsiderations meet a larger discourse that “contrasts inherent human subjectivity with the unthinking automated objectivity of computer programs” (Carlson 2017b, 10), although the journalistic search for sources and information through algorithmic systems is filtered in a particular manner (Thurman et al. 2016). The “promise of algorithmic objectivity” is a “carefully crafted fiction” (Gillespie 2014, 179) by large corporate players providing search engines, online social networks and other platforms, contributing to the image of algorithms as hands-off, while they are actually constructed by a particular knowledge logic (168). Unlike the objectivity of journalists, which leans on institutionalised norms and trained expertise, the objectivity of algorithms is based more on a “technologically inflected promise of mechanical neutrality” (181). Carlson (2017b, 14) asserts that “belief in computational objectivity further conceals journalistic judgment as avoidable through the intervention of algorithms or it perpetuates a crisis of journalistic authority by foreclosing on the value of human subjectivity for journalistic accounts”. Both journalistic and algorithmic judgements are entangled in objectivity discourses around automated journalism (10), which emerges as a site of struggles for authority maintenance in knowledge production.

Autonomy – with algorithmic power

The ideal of autonomy reflecting normative assumptions of classical liberalism has been central to journalism's professionalisation project in the last century (Waisbord 2013, 43–72). The underlying premise that journalists require autonomy from power to contribute to democratic life has served their struggle to detach from and counter business, politics, and publishers, but has also faced criticism for, paradoxically, reproducing a proximity to the elite in their everyday accounts (ibid.). On one hand, the news media nurture their “rationalized” (dis)connection to politics as they privilege official voices in the news (Schudson 2005, 216), and reproduces the “fiction” of the news-business divide when journalism faces the contemporary issues of native advertising and entrepreneurial journalism (Coddington 2015, 68–69).

The ideal of autonomy with respect to automation can be reconsidered in the context of what Splendore (2016, 348) calls “the increasing intervention of machines” – both when informed by human agencies and when they work autonomously. The intrinsic crux of “algorithmic power” is “autonomous decision-making”, in which rules may be articulated by programmers or be dynamic based on machine-learning data (Diakopoulos 2015, 400). These power dynamics that are novel and relate to the autonomy ideal on level of individual's news creation, where – as in the case of multimedia journalism – journalists will have to “at least learn to share autonomy” (Deuze 2005, 456) with other (human and non-human) agents. Changes can be observed also from a broader perspective, as a new knowledge logic is being articulated through algorithms as “socially constructed and institutionally managed mechanisms for assuring public acumen” (Gillespie 2014, 192).

Temporality: faster and anticipatory

The ideal of temporality reflects the historical salience of time in the creation and distribution of news, where time has primarily been understood as mechanical, rather than socially constructed (Rantanen 2009, 1–3). Professional journalism builds its vitality through the construction of “the news of the day” (Nerone 2013, 453–454). The digitalisation of journalism, however, has re-enforced the 24-hour news cycle, which was introduced by satellite and cable television in the 1990s, by privileging immediacy over more traditional forms of reflection, and by naturalising the “instantaneous present” (Phillips 2012, 81–98). While the ideal of temporality has recently been problematised in research, most notably by the “slow journalism” movement (Le Masurier 2015), the contemporary notion of speed can be approached by professional journalists “as both an essentialized value and a problematized side effect of newswork” (Deuze 2005, 449).

The implementation of automation touches upon the notion of time, because it promises faster journalistic creation as well as contextualisation of news events. Namely, algorithms save time in news production because they can scan and structure large amounts of data, enabling journalists to focus on analytic or investigative work (Anderson 2013). Additionally, automated journalistic practices provide finished products or parts thereof, such as narratives, figures, charts or graphics, “faster than is humanly possible”, or at “lightning speed” (Cohen 2015, 110–111), and increase workplace productivity, at least to a degree (Splichal and Dahlgren 2016, 10). Concurrently and at the present rather hypothetically, “algorithmic timing” entails prediction, interruption and anchoring, while using algorithms “to suggest when an event is likely to happen, the time frames, the memories to recall” (Ananny 2016, 107). Similarly, Linden (2017, 133) writes about “anticipatory journalism” that is focused more on predictive than reactive routines, and as such saves time and effort, making news production more efficient.

Ethics: a shift of responsibility

Groping for common journalism ethics was at the heart of the professionalisation process in the last century (Deuze 2005, 449). While discussions on the universal code of conduct persist, the ethical diversity describes the situation of global journalism better than unity and consensus (Waisbord 2013, 188). Also central to the ideal of ethical conduct in journalism is what McManus (1997, 5) critically calls “fantasy” rather than “fact”: the idea that journalists solely control what becomes news. Placing this responsibility on the shoulders of individual journalists deflects and isolates criticism for ethical violations from systemic problems on individual violators, and preserves the public image and authority of professional journalism (Coddington 2015, 71–72).

Several fresh ethical challenges have emerged where journalism and automation meet, as algorithms are composed of both “human intentionality and material obduracy” (Anderson 2013, 1016), and are gaining relevance in “prioritization, classification, association and filtering” of information (Diakopoulos 2015, 400). Dörr and Hollbuchner (2016, 11) identify a “shift of responsibility” in journalism. Namely, the individual human journalist is not the prime moral agent anymore as other actors (journalistic and non-journalistic) are involved in news production, such as algorithms with delegated agency, in-house and outsourced programmers, data collectors and miners (ibid.). The consequential rise of the importance of news institutions as moral agents calls for a re-consideration of the meaning of ethical conduct in journalism, particularly in regards to “algorithmic transparency” (Diakopoulos and Koliska 2016) and “algorithmic accountability” (Diakopoulos 2015).

Methodology

As shown above, the core ideals of professional journalism – public service, objectivity, autonomy, temporality and ethics – are being interrogated and reinvented discursively. This rethinking accompanies the material aspects of all phases of news production. Studying the material along with the discursive aspects of implementing automation to news production “can help to illuminate how these technologies reproduce, embody, or alter” professional ideology (Young and Hermida 2015, 384). Therefore, we set the **main research question**:

RQ1: *How are core ideals of professional journalism rearticulated with respect to automation novelties in legacy news institutions?*

To tackle this question, we adopted the method of qualitative interviews with journalistic actors from legacy news institutions, who head digital news departments and/or lead innovation projects in their newsrooms; thus, they are not only newsroom decision-makers, but also opinion-makers within their working environments and beyond. As Table 1 shows, the interviewees work for news institutions from the United Kingdom and Germany with regional, national or/and international reach, and have different scopes and functions within the media sphere. Interviews with these actors enabled us to explore the decision-makers’ perceptions, with a focus on the implications of automation for the ideals of professional journalism, and to dissect the typical commonalities and differences of two traditionally distinct and transnationally influential spheres – Anglo-Saxon and Continental-European journalism.

Table 1: Interviewees

Editorial position, news institution	Date	Time and type	In-text reference
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Associate editor and management editor, <i>Financial Times</i>	20/09/2016	47 min, Skype	(intFT1)
Head of interactive news, <i>Financial Times</i>	18/07/2016	69 min, in-person	(intFT2)
Technology editor, <i>Guardian News & Media</i>	19/07/2016	37 min, in-person	(intGuardian1)
Executive editor of digital, <i>Guardian News & Media</i>	19/07/2016	37 min, in-person	(intGuardian2)
Editor-in-charge, <i>Reuters.co.uk</i>	20/07/2017	38 min, in-person	(intReuters)
Mobile and new formats editor, <i>BBC News Online</i>	13/06/2017	28 min, Skype	(intBBC)
Editor-in-chief of digital media, <i>Frankfurter Allgemeine Zeitung</i>	05/05/2017	43 min, Skype	(intFAZ)
Head of innovation projects and new media, <i>Deutsche Welle</i>	30/03/2017	32 min, Skype	(intDW)
Head of <i>Bayerischer Rundfunk</i> data team, <i>ARD</i>	15/05/2017	37 min, Skype	(intARD)
Head of <i>Taz.de</i> , <i>Tages Zeitung Berlin</i>	25/04/2017	23 min, Skype	(intTAZ)
Head of data journalism, <i>Spiegel Online</i>	21/04/2017	31 min, Skype	(intSpiegel)
Editor-in-chief of <i>SZ.de</i> , <i>Süddeutsche Zeitung</i>	10/04/2017	Email	(intSZ)

With the exception of an “asynchronous interview” conducted via electronic mail (James and Busher 2012, 180–181), conversations were planned and conducted in person or via Skype, as semi-structured interviews (Berger 2014, 160). One of the authors (Marko Milosavljević) performed the role of interviewer with a “written list of questions”, but maintained “the casual quality found in unstructured interviews” (ibid.). The interview guide was adopted with “flexibility” regarding interviewees’ personal and institutional backgrounds and the phrasing and order of questions and main topics, which allowed the interviewer “to lead the interaction in unanticipated directions” (King and Horrocks 2010, 35), while still tackling the research questions. Each interview provided (1) background information of the interviewed editor (demographic questions), (2) information on implementations of automation to news production (experience and knowledge questions), and (3) interrogation of automation with respect to core ideals of professional journalism (opinion questions) (Patton 1980/1990).

Some interviews were performed in person in London, in the offices and newsrooms. Although we were aware of the weaknesses and ethical issues of “internet interviews” (James and Busher 2012), we opted for Skype exchanges (and in one case an email exchange) with selected editors, due to unfortunate discrepancies between editorial and research timetables. In addition to the interviews that were done in-person, supplementary conversations as well as off-the-record discussions also took place with the interviewees in order to provide fuller understanding of the subject matter. At some news institutions, this was combined with short observations of particular processes and workflow in the newsrooms.

In-person and Skype interviews were conducted in English, voice recorded, transcribed in full, and analysed through “meaning condensation” in four steps (Kvale 1996, 192–194). The interviews were first carefully read to get the sense of depth and comprehensiveness of each conversation and topics within them. Then, the meaning units were determined, followed by a thematisation of the statements, with respect to specific issues from the interviewees’ viewpoints and positions. Finally, while we interrogated the meaning

units within each interview and across them, theoretical reconsiderations from the first part of the study were employed to tackle the manifold aspects of automation in journalism. The interviewees did not ask for anonymity, but stressed that their opinions were personal, and not the official positions of the news institutions for which they work.

Results

“Automation light” (intARD), “early stage”, “experimental stage” (intDW), and “fairly minimal” (intGuardian2) are phrases used by interviewees to describe adopted automation novelties, indicating the current function of automation, and the perception of technological innovation as a linear progression or scale. However, deeper analysis reveals complex reconsiderations of technology, reflecting understandings of innovation as a non-linear process, bounded by particular professional, institutional and social contexts.

According to the editors, nine out of ten news institutions have experimented with or implemented automation in news production in some manner, with *Süddeutsche Zeitung* the only exception – at least for now. Others present attempts or examples of automation at their news institutions as ways to “augment” (intGuardian2; intFT2) certain phases of news production, in which the human factor remains central (Table 2). The interviewees generally agree that “robot journalism” is “over-blown” (intGuardian2) or “kind of a hype topic” (intDW), and assert that automated production with no human intervention into final news narratives does not fall within the scopes and profiles of their news institutions.

Table 2: Automation in news production according to interviewees

News production phase	Function of automation
<i>Gathering and assembling</i>	Automatically “monitoring” and “prioritising” content on news agencies and social media (<i>Taz.de</i>) Using “automated bots” to send thousands of emails to a certain group of actors in order to gather a large number of responses (<i>ARD</i>) Developing automated online verification tools (<i>Deutsche Welle</i>) Using Google Refine to make cleaning and transforming large datasets “much easier” (<i>Guardian</i>)
<i>Creating</i>	Using automated prediction and text generation tools before the US presidential elections in 2016 (<i>Deutsche Welle</i>) Adopting automated visualisations on the basis of official data streams of football matches in order to enhance analyses (<i>Spiegel</i>) Automating highly repetitive tasks in chart and graphics creation to speed up production (<i>Taz.de</i> , <i>Financial Times</i>)
<i>Publishing and distributing</i>	Using algorithms to personalise the news experience on the basis of online user behaviour (<i>BBC</i> , <i>Frankfurter Allgemeine Zeitung</i> , <i>Financial Times</i>) Making editorial decisions on the basis of timely traffic metrics and related topics metadata (<i>Guardian</i> , <i>Reuters.co.uk</i>) Making recommendations on the basis of automated tagging of “meta keywords” in stories (<i>Deutsche Welle</i>) Automatically adapting produced content for delivery on different platforms (websites or social media) with human interference (<i>Guardian</i> , <i>Reuters.co.uk</i>)

Below we address the main research question by analysing and discussing the editors’ re-articulations of professional journalism ideals with respect to automation. Although the interview discussions on automation have been focused on news creation of respective outlets, they have not been limited to them and went beyond walls of their newsrooms. Therefore, the results section reconsiders their articulations of ideals with respect to their first-hand

experience with automation as well as their knowledge of adaptations outside their news institutions.

Public service: strengthening and weakening through automation

In the editors' reconsiderations, the public-service ideal is juxtaposed in opposition to personalisation, while automation can strengthen the former and is enabling the latter. Public service is regarded as a central constituent ideal of journalism, and there are two streams of thought on how automation affects journalism's public purpose.

Some, often using the "filter bubble" argument (intBBC; intFAZ), stress that the advancing automated personalisation of news creation and delivery might weaken public service in the long run. Yet, in this context some explicate a "mixed model" (intBBC) or "tricky balance" (intFT2) between public purpose and personalised appeal, placing it in accordance with the news-business divide, which is often equated with the human-algorithm division.

[W]e cannot flip away from something which isn't a major story, of major significance just because it's not proving that popular with the consumer audience. So we do still have to have that sort of judgement about what is in our judgement in the public interest. (intReuters)

[A] human being when he's writing for other human beings, you know, it might not be the biggest, it might not be the most powerful, it might be something relatively small but because it's happening, it's important, right, it's a story. There's an element of journalism, that's just not capturable algorithmically. (intGuardian2)

I mean of course in an extreme case you might end up with just the news that everyone deserves and that would then be a constant feedback loop of stories scraped from Twitter or Facebook, being written by algorithms and given a sexy headline and pushed out. [...] I think there is a danger that you end up in that sort of loop of the most popular stories being the most trivial stories. (intFT1)

Some stress, however, that public service can be strengthened through automation – not only in terms of saving time for journalists to do analytical or investigative journalism, but also by enabling them to gather large sums of data or analyse public datasets more easily.

I think you can use this as part of your toolset as a journalist, and with any other tool you can use it either to enhance public interest and to help to find out things about the public you don't know: public spending, public tax fraud, whatever. You're doing it as an investigative journalist, or you can use it to betray your users, of course. It's just a tool. You, as a journalist, are responsible for how you use those tools. (intARD)

Objectivity: algorithms are not objective

The interviewees went beyond naïve conceptualisations of objectivity and the corresponding value-neutrality of journalism, and moved closer to multi-perspectivity as being crucial to people's meaningful grasp of the social reality. The editors more or less agreed that the automation of news production is socially constructed, and algorithms are "not objective at all" (intSpiegel),

Because there are so many decisions that are lying in the background of these algorithms. [...] When we decide which parts of articles are ... which parts of the datasets we use for automated news, we also draw decisions that are not objective at all and the data itself also is not objective. (intSpiegel)

Automation depends on programs, journalistic automation on linguistic routines, and you can set these routines up to be more impartial and objective or less. [...] In short, the objectivity and impartiality of automated journalism depends mostly on the goals and technique of its creator. (intSZ)

I honestly think that's bullshit, because these algorithms can only work if they are fed by people and if they are used by people. And if they're good, they're learning from the people who feed them and people who read them. So, the picture might be technically impartial and objective, but it's not in ... in the content that will be presented in the end. (intTAZ)

Similarly, the head of interactive news at the *Financial Times* equates computed and “human” algorithms as constructed in particular institutional and social contexts.

An algorithm is a set of encoded human choices and as such it's no more neutral than the sort of subconscious algorithm that we have already. You know, the decision-making that leads to this version of the print product or the current version of the homepage, whatever it looks like, it's also an algorithm of sorts, it's a set of institutional norms and processes that lead to certain stories being valued and other stories being devalued. [...] This is a really well-understood algorithm and we're kind of taking that and encoding it in computer code. I think it's really important that we teach people that those algorithms are no more neutral than the human algorithms, for lack of a better phrase, we've always had. (intFT2)

Autonomy: automation affecting decision-making

While they reconsider the ideal of autonomy mainly in the context of struggles with commercial pressures and not the political ones, the interviewees do not think it has been considerably eroded in their working environments. This is in contrast to the “high-profit area of journalism” (intTAZ), which relies on highly standardised news creation, even content farming and news aggregation. The editor-in-chief of online at *Süddeutsche Zeitung*, where they are conservative in their implementation of automation in news production, nevertheless describes algorithms as a “support” in the decision-making process.

My experience is that algorithms can surely support editorial decision by pointing in interesting directions, but leaving the decision to the editor. That's a data-informed vs. a data-driven approach. Machines only can do it data-driven, and I think that that's not good enough, as data is never good enough to replace editors' choices. (intSZ)

Editors from the *Guardian* and *Reuters.co.uk* see analytics and metrics as testing tools or indications of “what is going to perform” (intReuters), and stress that they have not jeopardised their editorial autonomy.

I think if my traffic started to drop off or didn't perform as well as, for instance the US traffic or somewhere else's traffic, then my boss would come to me and say: “Are you

not using those tools well enough?" Because the tools are there to help me in my decisions but no, there is no overall "you must move this around according to what is clicking". (ibid.)

When asked whether editorial autonomy could decrease as a consequence of automation in decision-making processes, the associate editor and management editor at the *Financial Times* responded that it "has possibly already eroded to a certain degree" and may contribute to the waning of journalism's public relevance. In this regard, some old problems might have deepened.

[I]t's a kind of turbo-charged version of that original question of how you weigh up newspaper sales versus news value. I think that the autonomy of the editor has always depended on the type of publication, it has always been somewhat in play depending on that. [...] The danger of that seems to be that as you're making more data-based decisions, people get too wooed by the data and forget that over the long-term people might not want the same story again and again. (intFT1)

Temporality: automation "freeing up" journalists

According to the interview data, the relation with time has a central place in the interviewees' conception of journalism, although temporality is articulated distinctively regarding the profile of the news media or of a story.

When asked how the functions of automation in journalism shape the ideal of temporality, the editors more or less agreed that it would be possible to produce more news items in less time, but that those items would be "very schematic" ones (intFAZ), meaning that the current automated creation of finished news products is applicable only to a degree.

I imagine that for wire agencies it is highly relevant to gather news very quickly and to get automatised help in the prioritisation of what is the next issue they have to present to their customers. For daily newspapers, since they are presenting today's news tomorrow, I don't imagine that speed is much of an issue. [...] There is, of course, the idea of "OK, now we have this website and we could do more there", but ... you don't necessarily have to go that way. [...] But if you would, of course, automation could help. (intTAZ)

The executive editor at the *Guardian* stresses a reasonably constrained application: "To go from algorithm to story online? Yeah, I think it's actually fairly limited. I think the much more interesting bit is the augmentation piece that maybe an external user, viewer, reader wouldn't necessarily see in its raw form."

Editors acknowledge that augmentation with implementation of automation tools "frees up" journalists (intBBC; intDW; intFT2). Interviewees indicate that time, and with it labour, can be saved on highly routine or repetitive tasks, leaving journalists free to engage in more complex analytical, creative and investigative work, or what the editor of mobile at BBC calls "proper journalism".

Can we do that so we can get those things produced faster and free up specialists' time to do more advanced work that will actually help our readers more in the longer run? That's certainly how I think about it, I think that's how everybody currently thinks about it. (intFT2)

Ethics: between transparency and control

Although, as the editor-in-chief of *SZ.de* stresses, “we cannot yet oversee” the extent and complexity of the ethical implications automation brings to journalism, the editors interviewed more or less agree that control needs to be retained over algorithms.

The editors refer to recent examples of ethically questionable automated decision-making in professional journalism and social media with respect to the distribution of fake stories, advertising placements, and the selection and display of photos. “[T]here are immense decisions and I don’t see a machine, at the moment, taking that decision off my shoulders,” argues the editor-in-chief of digital media at *Frankfurter Allgemeine Zeitung*. Likewise, the head of innovation projects and new media at *Deutsche Welle* asserts the need to “have human editors in the loop monitoring” automation “still for some time to come”. A similar argument is provided by *SZ.de*’s editor-in-chief:

I don’t believe in an automation revolution, but in an evolution of automation – meaning, there’s always an editor next to the machine controlling it, even if this control weakens over time when the algorithms get better. (intSZ)

In this context, the executive editor of digital at the *Guardian* uses the example of Google Ads displaying advertisements for ski resorts next to news stories about snow storms. “[A] human being would look at that and go ‘Oh my God, how could you put a ski resort right there?’ but a computer would look at that and say it’s completely appropriate.” (intGuardian2). The associate editor at the *Financial Times* also stresses the differences between algorithmic and human logics in this respect:

The assumption with news is that obviously it is mainly humans who are reading it, clearly in some cases in financial news, even that’s not the case, because there will be some algorithms that will deliberately be talking to algorithms about the earnings report. [...] But in most cases, if you’ve still got a human at the other end, you still have to please them in a way that it makes it different than ‘I just want the raw data’. (intFT2)

Further, some emphasise the central importance of “transparency” (intARD) and “clarity of purpose” (intBBC) in automation applications to decision-making, as well as “algorithmic literacy” among journalists and their audiences (intSpiegel).

It’s also a good way to give our readers an impression on how algorithms in the public sphere work. So, I think we should also be like, familiar with these methods and be transparent about the tools that we are using in the decisions that we make so that people really [...] get some kind of algorithm literacy here. (ibid.)

[U]sing algorithms and data with those algorithms means that you have to control the way the data is collected, you have to understand those algorithms collecting this data, you have to build a context around the data when you publish it and you have to be transparent about your sources and you have to show how you work with the data and perhaps also you have to make transparent the decisions that lie behind those algorithms. (intARD)

Discussion and Conclusion

The study shows that most of the British and German news institutions studied have implemented automation into their news production, with the *Süddeutsche Zeitung* the sole

exception at the time of writing. They have done so diversely, but have a common element: the degree to which human agency remains central in the implementation and adoption of technology. Human journalists are regarded not only as still-in-the-loop, but also as dominant agents in the routinisation of journalism and the re-articulation of its purpose. Although the integration of technology into daily work feeds technological reductionism in journalism's historically evolved discourses about itself (Örnebring 2010, 58), the interviewed editors' narratives suggest that they observe technological innovations through wider social, institutional and professional perspectives and appear to be aware that either euphoric or dystopic stances might lead to misconceiving the implications of early automation novelties. Additionally, the interviewees do not take the core ideals of professional journalistic ideology for granted, but consider them to be in flux. When they discuss automation novelties, they address and reflect the internal contradictions of the ideals that are inherent to the hegemonic model of journalism.

On one hand, the interview analysis shows that the editors perceive automation as an opportunity to *augment* journalism through the combined agencies of human actors and automated systems. This is one way to address the journalism's crisis of civic adequacy and financial viability (Blumler 2010). On the other, in reconsiderations of the ideal-typical values of professional journalism, automation appears to challenge the process of *ideologisation* of journalism, regarding the retention of its boundaries and the authority of journalists in social communication. The intersection of these processes is reflected in the interviewees' reconsiderations of the core ideals of professional journalism:

- **Public service.** While the ideal is conceived as fundamental to journalism's social purpose, the implementation of automation potentially strengthens public service through easier analysis of big data, and weakens it through the personalisation of news.
- **Objectivity.** As there is a move beyond simplistic conceptualisations of objectivity towards the more complex notion of multi-perspective news, the automation novelties are not observed as neutral, but embedded in prevailing social relations and dominant representations of reality.
- **Autonomy.** An ideal worth striving for, autonomy is considered mostly in the context of struggles with commercial pressures in journalistic decision-making, which accompany the implementation of automation in professional journalism in a more complex and vivid manner, rather than deriving from the technology itself.
- **Temporality.** Automation novelties reproduce professional journalism's defining relation with the notion of time, as they accelerate routine processes in news production, leaving journalists free for more complex work or reproducing profit-oriented news creation with little public value.
- **Ethics.** Human agency is considered to be vital with respect to automation novelties in professional journalism in its strives for control over and transparency of the creation and adoption of algorithms in its conduct, in order to retain its public authority and credibility.

Due to its analytical scope and design, the study only touches upon the implications of automation novelties for the phases of news production. However, it contributes to the existing scholarship on journalists' conception of automation (e.g. Young and Hermida 2015; Thurman, Dörr and Kunert 2017) by introspecting the ongoing discursive negotiation and ideological preservation of professionalisation among editorial decision-makers in newsrooms. The interviewees' narrations of journalism ideals provide valuable insights that allow us to place the findings in the context of what Nerone (2015) identifies as "journalism's crisis of hegemony", which has accompanied the transformation of the media infrastructure since the late 20th century. The findings further indicate that professional journalism struggles

as an epistemic practice to correspond to contemporary always-on, omnipresent and multi-epistemic streams of information and interpretation, most notably social networks (Dahlgren 2009), and as an industry to reinvent its business models in the context of “platform capitalism” (Srnicek 2017) and novel ways of audience commodification (Fuchs 2012). “This does not mean that the values and ideas which make up journalism disappear”, argues Nerone (2015, 324), “but it does mean that they cease to exercise hegemony over news media and the news environment, and that they lose their power in the public sphere” (ibid.). The identified “human-still-in-the-loop” perspective overcomes the confines of the objectivity ideal, while the intersection of the processes of augmentation and ideologisation helps us envision the “posthuman future” of journalism (Carlson 2017a, 226), with its centres and margins as well as in terms of its production and ideals. Journalism’s internal and external struggles today will pave the way for new hegemonies to emerge, with hybrids between human journalists and automated systems, many of which are yet to be invented.

The results further show the fluidity of today’s media and journalism, where technological development and a drastically disruptive environment are producing unforeseen conditions, and rendering the borders between human and automated interventions and actions increasingly blurred. Our research indicate that journalism professionals are aware of the issues, but that optimism prevails, at least to a degree, in certain key aspects (such as temporality), while scepticism and caution is expressed in others (such as objectivity). Any expectations, and attempts to identify key characteristics of new features in the journalism-automation relation in all phases of news production, need to take into account these limitations. These findings indicate that much more needs to be done to better understand the transformations taking shape – not only regarding technology and changes it fosters, but also with respect how journalism is understood by journalists and others. Historicising of the journalism-technology relation, diversification of theoretical perspectives on technological innovation, and combining different methodological traditions are crucial to a comprehensive and continual exploration of the difficult relation between journalism and automation.

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Funding

This research was partly supported by the Slovenian Research Agency, ARRS; Javna Agencija za Raziskovalno Dejavnost RS.