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Automated Journalism in UK Local Newsrooms: Attitudes, Integration, Impact

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ABSTRACT

Automated journalism is increasingly used in news production in UK local newsrooms. Although scholars have been discussing the disruptive potential of automation for journalism, little is known about how local media practitioners deploy and perceive automated journalism. This study aims to help fill this research gap using semi-structured interviews with media practitioners from four local news companies that use automated journalism provided by the news automation service RADAR and with employees from RADAR itself. Our findings show that local journalists evaluate this type of automated journalism based on several occupational *influences*, that they *integrate* it into news reporting in various ways, and that their use of automated journalism has an *impact* on journalistic output and newsroom performance. Our evidence also shows that whilst most media practitioners perceive the relevance of automated journalism for local news reporting as limited and, instead, emphasise the importance of human agency in the journalism workflow, what they report is conversely a shift in their practices which actually suggests that automated journalism has greater impact than they are currently willing to acknowledge.

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Introduction

Automated journalism is beginning to make its mark in UK local newsrooms, where it is primarily deployed to make the news production process more efficient (Arias-Robles and López López 2021). Few local news companies have the economic means to develop in-house automation expertise and are accessing automated journalism via the news agency RADAR (Reporters and Data and Robots), which has become the largest provider of automatically produced local news stories across the UK (Urbs Media 2018). Currently, the use of automated journalism in local news is at a very early stage. However, scholars have been discussing how the increasing use of automation in news production might already be transforming the craft of journalism (Guzman 2019). And as the capabilities of automated journalism improve, it is predicted that the technology will become a

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significant factor in the transformation of the news media landscape, including at a local level (Diakopoulos 2019).

As the deployment of automated journalism in local news is only just beginning, the question of how local journalists perceive and make use of the technology needs further scholarly attention. Until now, most studies have been based on conversations with media practitioners from national and international newsrooms and have focused only on certain aspects of journalistic work (e.g., Milosavljević and Vobić 2019a; Thurman, Dörr, and Kunert 2017).

This study aims to help fill this research gap using semi-structured interviews with local journalists and editors from the UK who use automated journalism and also with employees at RADAR. This method allows for an in-depth investigation of local media practitioners' engagement with and approaches to automated journalism. Our findings show that media practitioners evaluate this mode of news production using a range of criteria and that they mainly deploy the automated journalism provided by RADAR for story research and publishing news quickly. Practitioners also report that they engage with automated journalism in various ways during article development and that the use of automated journalism has increased both their news outlets' publishing of data-driven news as well as the range of topics covered. Lastly, practitioners have suggested to us that using automated journalism has a positive effect on newsroom performance, for instance by increasing their outlet's competitiveness compared with those that do not use this mode of news production.

We also observe that practitioners perceive the impact of automated journalism on local news reporting as rather limited, a perception accompanied by a limited appreciation of data journalism. Instead, they continue to emphasise the importance of human agency in the journalism workflow. Emphasising human engagement supports what they see as a key objective of local journalism, which is to create a meaningful relationship with the local community through human interaction. Our findings show that the human element in news reporting is nevertheless being augmented by automated news production in local news settings.

Automated Journalism: State of Development

Automated journalism is in practice a process of human–computer collaboration in newsrooms, in which algorithms are used to “convert numerical data, images, or text into written or audio-visual news items with various levels of human intervention beyond the initial programming” (Thurman, Stares, and Koliska 2022, 5). This process is achieved with the help of *natural language generation* (NLG) models that “automatically produce human (natural) language from a computational representation of information” (Dörr 2016, 700). Automated journalism can take advantage of the increased public availability of structured data and can take the form of a template-based variant or of a machine-learning variant. In the template-based variant, human journalists create a text template into which data is inserted automatically based on a set of pre-defined rules (Graefe and Bohlken 2020). This process allows for the production of a diverse set of data-driven stories based on one pre-written text. The more autonomously operating machine-learning variant takes advantage of sophisticated NLG models to automatically create news text and insert fitting data points (Danzon-Chambaud

2021). Accordingly, automated journalism has been deployed mainly in news domains that generate large amounts of structured data, such as finance, traffic, weather, and sports (Haim and Graefe 2017).

Regardless of the level of technological sophistication, automated journalism, as of now, has been used mainly for descriptive and repetitive reporting, as the technology is not yet capable of producing commentary or analysis automatically (Caswell and Dörr 2018). Research suggests that the linguistic quality of the automatically produced text remains limited, especially when only little human input is added (Graefe and Bohlken 2020). Nevertheless, scholars emphasise that the technological capabilities of automated journalism will improve and that it will be a significant factor in the transformation of the news media landscape in years to come (Diakopoulos 2019).

Automated Journalism in UK Local Newsrooms

In the UK, as in the rest of Western Europe, local news companies have been struggling with declining readerships and falling revenue (Costera Meijer 2020). Many newsrooms have reduced staff numbers to remain competitive, leaving smaller teams of journalists trying to maintain the same quantity and quality of news reporting (Nielsen 2015). Nevertheless, scholars argue that local journalism remains relevant for readers as it contributes to the connectedness of communities and represents an important factor in their “social, political and cultural life” (Gulyas, O’Hara, and Eilenberg 2019, 1846). Local news provides various democracy-sustaining functions as well as a platform for citizen representation (Nielsen 2015). It thereby creates points of engagement that audiences often feel national news brands fail to provide (Jenkins and Jerónimo 2021).

In these economically challenged times, data-driven automated journalism may enable business efficiencies because it requires rather limited input, after the initial programming, and guarantees increased output as it converts structured data automatically into text, a process that can be scaled (Arias-Robles and López López 2021; Carlson 2015). Furthermore, automated journalism provides a gateway into data-driven reporting for local journalists who can, thus, make use of the increasing abundance of publicly available data (Nocera et al. 2021).

RADAR has become the largest supplier of automatically produced local news in the UK (Urbs Media 2018). The news agency, which is partly owned by the Press Association, is based on the principle that local newsrooms benefit from access to data-driven stories about issues relevant to the local news agenda. At RADAR, data journalists create template-based automated journalism using software from Arria NLG based on data sets that contain information that can be broken down into local contexts. For each data set, the journalists create a story template into which the local data is automatically inserted. The automation approach allows RADAR to scale its production of data-driven news articles and to provide a variety of locally specific data-driven stories using only one story template. Several local news companies already subscribe to the RADAR news-wire and are provided with ready-made reporting generated through this process of automated journalism (Arias-Robles and López López 2021). Local news companies can thereby take advantage of automated journalism without having to invest resources into its development.

Automated Journalism's Disruptive Potential

The increasing use of automated journalism in newsrooms has sparked discussion about the technology's transformative potential for the practice of journalism because its operating principles allot a substantial role to algorithms (Guzman 2019). Generally, scholars acknowledge such computational applications as meaningful "technological actants" in the news cycle that have become increasingly intertwined with the "roles, boundaries, and processes of news work" (Lewis and Westlund 2015, 33). By its very nature, automation software influences journalists' approaches to news production, because it causes them to adapt their workflow to the practical requirements of the technology (Wu, Tandoc, and Salmon 2019a). The technology, therefore, has the potential to contribute substantially to the composition of the media message, raising questions about human agency in the production process of news (Carlson 2015) and adding to "tensions around the impact that technological innovation has on what journalism is, how it is done, and why" (Milosavljević and Vobič 2019a, 1112).

These tensions are often aggravated by the fact that many news companies acquire automation software from technology providers that are external to the news media industry (Wu, Tandoc, and Salmon 2019a). Thus, although news automation can become an integral part of the journalistic workflow, journalists who work with it seldom have authority over or knowledge about its conceptualisation. Therefore, the deployment of automated journalism in the newsroom has raised questions regarding journalists' ability to reflect on algorithmic accountability (Diakopoulos 2015) and newsrooms' practices of transparency when using this means of news production (Diakopoulos and Koliska 2017).

Against this background, scholars have been enquiring into how disruptive automated journalism could potentially become for the profession of journalism (e.g., Miroshničenko 2018) and have acknowledged that the application of automated journalism creates a kind of hybrid context between the news media and the technology sector (Dörr and Hollnbuchner 2017). To identify potential consequences for the practices of journalism, scholars have mainly turned to media practitioners who work in *national* and *international news production contexts* to get an insider's perspective. Research, for instance, has investigated practitioners' use of automated journalism with regard to ethics (Diakopoulos and Koliska 2017), professional values and ideology (Milosavljević and Vobič 2019a), managerial decision-making (Kim and Kim 2016; Milosavljević and Vobič 2019b), and transparency (Montal and Reich 2017).

Early on in the adoption of automated journalism, practitioners were concerned about the potential threat that the so-called robot journalist could pose for human-led news production (Graefe, 2016). But today most studies' findings show that media practitioners are inclined to downplay the disruptive potential of the technology. Instead, they "maintain that they still hold the reins in all stages of the news production process" (Wu, Tandoc, and Salmon 2019b, 1440) and emphasise the continuing importance of the human element in news reporting (Thurman, Dörr, and Kunert 2017). The question remains, however: How do *local media practitioners* perceive and make use of automated journalism and how well does this data-focused mode of news production fit local news reporting? As data-driven news reporting is becoming increasingly relevant in local newsrooms (Stalph, Hahn, and Liewehr 2022) and automated journalism is starting to gain traction in local reporting, these research interests need more scholarly attention..

Based on these considerations, this study aims to investigate how local media practitioners approach and engage with automated journalism. Furthermore, as research indicates that media practitioners from national and international news production contexts have been inclined to downplay the disruptive potential of the technology, a further research objective is to investigate whether this perception also holds true for local media practitioners. The inquiry is framed by two research questions:

RQ1. How do local media practitioners approach and engage with automated journalism?

RQ2. How impactful do local media practitioners perceive automated journalism to be for their profession?

Method

To explore these questions, we conducted semi-structured interviews with eleven media practitioners (five women and six men) from the UK; we chose a qualitative approach, which is well suited to exploring practitioners' perceptions of innovation in journalism (Arias-Robles and López López 2021). Our sample consisted of four journalists and five news editors that use RADAR's automated reporting regularly and work in different local news companies (Newsquest, JPI Media, MNA Media, Social Spider) as well as two employees of RADAR. Our sampling was done purposively to include interviewees who have practitioner experience with this mode of news production. Since this variant of automated journalism is still far from being commonplace in local newsrooms in the UK, identifying experienced practitioners required substantial research. We are satisfied that the sample size offers a fair reflection of current practice. Following McCracken's (1998) discussion of the factors that contribute to the validity of a semi-structured interview study, we assessed that our baseline number of interviewees should be greater than seven. The sample was diverse with regards to the selection of the news companies, which differ in geographical location, business size, and business model, thus allowing us to get a broad perspective of the British local news market.

We created an extensive interview guide that explores the practitioners' relationship with and experience of automated journalism, through the various lenses of the production process, organisational impacts, business impacts, ethics, the media-audience relationship, and practitioners' professional relationship with data.

The interviews were conducted between September 2021 and March 2022 via video-call (Zoom), lasting between 42 and 65 min, and were transcribed verbatim. The practitioners' statements were analysed through several iterations in MaxQDA using inductive category formation (Mayring 2015), for recurring themes, which were then grouped into categories. It was decided to retain anonymity for the practitioners, reporting their job titles in a general way, and also not identifying individual newsrooms. The study procedure was approved by the Institutional Review Board of the Social Science Faculty at LMU Munich for compliance with ethical guidelines.

Results and Discussion

Our first research question (RQ1) aims to investigate how local media practitioners approach and engage with automated journalism. From the interviews, we identified

that local media practitioners *evaluate* automated journalism using several occupational *influences*. They *integrate* automated journalism into news reporting in a variety of ways. And that the use of automated journalism *impacts* journalistic output and newsroom performance. For our second research question (RQ2), we found that whilst most local media practitioners perceive the relevance of automated journalism for news reporting as limited and, instead, emphasise the importance of human agency in the journalism workflow, conversely, their reported practice suggests that automated journalism has greater impact than they acknowledge. In the following section, we present and discuss our findings in detail.

Influences

Various factors influence the local media practitioners' approach to and evaluation of RADAR's automated journalism, including publishing pressure, readership, availability of data, and the attitudes of practitioners towards data-driven reporting and third-party software providers.

Publishing Pressure

Perhaps unsurprisingly for employees of busy local news outlets, interviewees reported that they were always under pressure to publish against tight deadlines, as "local newspapers are generally more stretched now than they have been at any other point in history" (Editor 6); this aligns with scholarly accounts (Nielsen 2015). The decline in print readerships has led local news companies to develop digital-first business strategies to try to compensate for decreasing print revenue, often to the disadvantage of editorial staff who have to fill roles at both news outlets in parallel (Jenkins and Jerónimo 2021). The journalists in our sample also identified business models that focus on publishing "as many different articles as possible onto the website" (Editor 4), which causes publishing pressure, especially in newsrooms that publish online and offline daily. This need for larger quantities of stories is an issue that many local newsrooms struggle with, as "sometimes not a lot can happen in a small town" (Journalist 2).

On the managerial level, publishing pressure produces demands to make newsrooms more efficient, which in turn creates a need for "finding or producing content more cheaply and at scale but maintaining the quality and the uniqueness that our readers and our audience expect" (Editor 1). Practitioners made it clear that automated journalism helped alleviate some of these pressures, because the RADAR service supplied them with "unique stories for all of our websites and for all of our papers", with these stories requiring only a "minimal amount" of "creation" (Editor 1).

Readership

Local news outlets place great value on their proximity to the local readership, and approaches to automated journalism reflected practitioners' ideas about readers' expectations of the reporting. For some, this meant that they approached the technology with caution: "For us, it'll be a case of trying to look at the technology, work out how useful it is for us and then building up a level of trust that it won't get us in trouble, that it won't make us look foolish in front of our readers and that it won't undermine trust in us fundamentally as a business" (Editor 5). Several practitioners felt that readers would be sceptical

of their use of automated journalism and that “there would be some suspicion from readers if they thought that they were being talked to by AI” (Editor 3). Such assumptions might have influenced how transparently the newsrooms communicate the authorship of their articles to the public, a finding in line with previous research that has identified transparency as a general issue relating to the use of “algorithmic systems” in newsrooms because such systems “challenge the norm of transparency due to the opacity in their automated decision-making capabilities” (Diakopoulos and Koliska 2017, 810).

Availability of Data

The media practitioners reported that data-driven automated journalism may not match the local focus of their reporting. As Editor 2 stated: “I think it’s definitely easier to get a data set for national content, (...) it’s much quicker to get and much more readily available”. The availability of high-quality, structured data is a prerequisite for automating the production of news text (Graefe, 2016) and a shortage of structured data would reduce the quantity of automated stories provided by RADAR in certain local areas, which could suggest an unequal distribution of automated journalism in the UK. This was most notably observed by news editors, who had oversight over various newsrooms and suggested that “we do find that RADAR’s coverage of certain areas of the UK is better than others”, with, for instance, “data in England being far more plentiful than in the rest of the UK” (Editor 3).

Although data at the local level can be difficult to obtain in some areas, scholars emphasise that local authorities have increased their supply of publicly available data, which has allowed an increase in local data-driven reporting (Arias-Robles and López López 2021). This observation was also made by one interviewee, who stated that even though regional differences in the availability of data exist, “in the UK, we’re quite lucky, there’s a fair amount of data that comes out that is broken down to what we call local authority level, the local government level” (Editor 3).

Attitudes to Data-driven Reporting

For all of the local media practitioners we interviewed, the use of the RADAR wire was their first encounter with automated journalism and, for many, with data-driven news reporting more generally. In line with previous research findings (Borges-Rey 2016), some editors stated that local journalists were generally rather reluctant to acquire data-journalistic skills, as they were often not “comfortable dealing with numbers” (Editor 3). Furthermore, research shows that in many local newsrooms the development of skills in data-driven journalism has depended on “the journalists’ own initiative” (Stalph, Hahn, and Liewehr 2022, 12), as news companies often lack the resources for training. Generally, there are only a few local journalists with data-literacy skills in the UK (Arias-Robles and López López 2021), a fact also observed by our sample: “A skillset for journalists who are comfortable working with data has always been something that has lacked a little” (Editor 6). Some practitioners reported that “data journalism was something that I covered as part of my university training” (Journalist 1) or emphasised that having data journalism skills “can add depth as well to your work” (Journalist 5). However, most practitioners focused on traditional news reporting, which meant that they “may not be skilled enough to get at the data” themselves (Journalist 5).

Practitioners' opinions about automated journalism were influenced not just by limited experience of data-driven reporting, but also by their opinions on the value of data for local journalism. Some stated that "data journalism is becoming much more important than it ever has been" (Journalist 5) and that data has a place in local journalism because "data is relevant" for local news events (Journalist 2). Echoing findings from studies with practitioners from national and international newsrooms (Thurman, Dörr, and Kunert 2017; Wu, Tandoc, and Salmon 2019b), some local media practitioners stated that automated journalism is no longer perceived as the robot threat it was once was and that RADAR's service aligns automated journalism with more traditional "third-party copy" from a news agency (Editor 1).

However, some practitioners also maintained that "data doesn't really sell papers" (Journalist 2) and that in journalism "it's more about telling a story rather than just reporting the numbers" (Journalist 1). Some journalists observed that the automation of news work was still engaged in with reluctance, partly "because there's a worry that automation may take people's jobs" (Journalist 1), and partly because there "are always concerns, how robust is the technology, will it do what we want it to do, will there be a detrimental effect on the end product?" (Editor 5). These statements, however, did not imply practitioners' rejection of automated journalism. They rather emphasised its limitations for local news reporting, as "a paper cannot be filled with just data stories. So, you'll always need reporters to fill the gaps or develop the story further" (Journalist 2).

Attitudes to Third-party Software Providers

RADAR is associated with the Press Association, a well-known and trusted news brand in the UK. As a consequence, journalists did not give much thought to the origin and workings of the automation procedure; "I think because it's run by PA, which is a service we use a lot in the newsroom anyway, it just feels very reliable" (Journalist 1). In fact, most practitioners did not know how automating news production at RADAR works, with this process described as "a bit of a black box" (Journalist 5). Most understood their role as "consumers" of automated content who did not "necessarily see the mechanism by which [RADAR] constructs [automated journalism]" (Journalist 4). Unknown automated journalism providers, however, were met with greater scepticism. For instance, Editor 5 stated that when their newsroom was approached by "companies outside the journalism industry" that were "more vague" in the description of their service, characterising it generally as "content creation and curation", then the "level of confidence that we have in their ability to deliver consistently" was reduced, hindering further collaboration.

Evaluation

Local media practitioners evaluated the automated news provided by RADAR with regard to its newsworthiness, its "localness", the quality of the writing, the presence of a human angle, and the presentation of data.

Newsworthiness

In general, practitioners thought the topics covered by automated journalism were relevant to the local readership: "So, it's things like health authority information, it's local authority information, it's the police information, it's planning, it's transport, crime, information

about all manner of things which directly impacts on our readers' lives" (Editor 1). This reinforces the idea that the news domains most suitable for automated journalism—those that generate large amounts of structured data (Haim and Graefe 2017)—are often also critical for the local news agenda. Whilst some interviewees felt that data-driven stories only rarely have the potential to become front-page stories, there was a sense that these types of stories still added value and did "go in the paper because they're really good in that they provide local statistics" (Journalist 2). However, the cover stories and leading articles would still be dominated by "the traditional areas" of news reporting (Editor 5).

“Localness”

In line with the local character of the publications they work for, media practitioners emphasised that putting a local focus on their reporting was crucial to "people's understanding of the world immediately around them" (Editor 6). This meant it was quite common for journalists to need to edit the automated stories provided by RADAR, to ensure there was a more localised angle. The practitioners reported that even though the automated stories report local data, RADAR's template-based production approach could make stories sound too generic for a local readership (Journalist 5), as the approach had to accommodate a multitude of locations at once. A more local focus is achieved by, for instance, including quotes from local authorities that "won't have been provided in the RADAR story" (Journalist 1). Some interviewees spoke about wanting the statistics to be even more locally focused. And one journalist thought the choice of events that are covered by automated reporting was "dictated by the national news cycle", which took away from the local focus (Journalist 3).

Interestingly at least one of the practitioners felt that automated reporting actually added to the localness of the news agenda, because with the local data "you can drill down into town-specific areas and provide a picture of what is happening" (Editor 2). This account supports findings from previous research involving local journalists in Germany, in which data-driven reporting is described as "another instrument for telling local stories" (Stalph, Hahn, and Liewehr 2022, 15), adding value to local journalism, especially when paired with traditional techniques of news reporting such as interviews.

Quality of the Writing

Unsurprisingly, media practitioners scrutinise how automated journalism stories are written. Mostly, the quality of the stories was evaluated as satisfactory, and practitioners observed that the articles were readable and "functional" (Journalist 4). However, journalists also suggested that the automated stories often need further work in order to become "future articles" (Journalist 3) and feel "more human" (Journalist 4), and that, at times, the reporting could be "a bit dry" (Editor 3). These observations correspond with findings from a study of US journalists who evaluated template-based automated journalism and concluded that "it is the creative part of journalism that cannot be automated" (Wu, Tandoc, and Salmon 2019b, 1450). One interviewee from our sample even stated that the automated articles "have no narrative", because they are "purely facts-driven", which can make them "sound a bit listicle" (Journalist 3).

Human Angle

Practitioners stated that a crucial element in telling stories for local audiences is the presence of individual accounts, which were mostly missing in the automated reporting. So,

whilst the data might provide a general local context, the story needed extra work to add a human angle to help audiences connect with the story. In several instances, journalists thought that individual accounts should complement the presentation of data because “on their own these statistics are not very human interest” (Journalist 2). The data becomes “more relevant in the sense that these aren’t just numbers, there’s people attached to them” (Journalist 3). Research has shown that community representation is an important reason for readers to consume news locally (Costera Meijer 2020). This notion was also shared by our interviewees, who argued that “part of journalism is making people understand through human experience” (Journalist 4). As Journalist 3 said, “what attracts me to journalism is speaking to people, finding out their stories, and writing about their stories”.

Presentation of Data

Many of the media practitioners thought the automated journalism stories were too data-heavy, and had to be revised to be received well by readers. Because the automated reporting was “statistics-led”, the stories could be “quite mundane”, to the extent that they could include “loads of numbers bombarding readers” (Journalist 2). Previous research has found that media practitioners perceive the local audience as having “an aversion to numbers and statistics” (Stalph, Hahn, and Liewehr 2022, 14), a notion shared by our sample of interviewees. Practitioners also evaluated some of the automated reporting as being too complicated with too many numbers used in the text, which meant they would have to “make it a bit more digestible for the audience” (Journalist 1). Some interviewees also spoke of having to “interpret [the statistics] for our readers so that they understand why it’s significant or whether it’s significant” (Editor 5).

The media practitioners were less worried about the reliability of the data being used in automated journalism, trusting the data originating from government sources, which journalists thought was “the most reliable” (Journalist 5) data, because the research had been done “by professionals” (Journalist 1). Even though the interviewees rarely traced back the data sources, some of them stated that they felt reassured by the fact that the news articles provided links to their sources, which made it “always clear in RADAR stories where the research is from” (Journalist 2).

Integration

On a practical level using RADARs automated content did affect local media practitioners’ workflows, including how they accessed, selected, and researched automated stories, checked data sources, and post-edited the automated stories.

Accessing and Selecting Automated Output

What is clear from the range of interviews across different organisations, each newsroom organised access to the RADAR newswire differently. While some practitioners reported that they were “the only person using RADAR” (Journalist 3), others said that “it is shared quite equally” (Journalist 2) in the newsroom. In the former case, data-driven journalism remained restricted to single actors in the newsroom, which could cause what has been termed “the consideration of [data journalism] as a ‘ghetto’ in local journalism (Arias-Robles and López López 2021, 643). In order to mitigate this risk, one news

company created a regional data-journalism task force that oversaw the distribution of data-driven stories to the local newsrooms: "So every week I will send out an email to all the newsrooms and I tell them what RADAR will be looking at in the coming week, so they know to look out for it" (Editor 3).

Furthermore, newsrooms differed in the way they deploy automated journalism output for local reporting, with this deployment closely tied to the *newsworthiness* of stories. While some practitioners reported that they use RADAR stories mainly for certain types of stories, such as "diary data releases, so everything that's on the governmental calendars" (Editor 3), others said that "generally we use everything that comes out on the wire" (Editor 2). In some instances, practitioners mentioned that *publishing pressure* influences "how desperate we are for stories" and, thus, how stories are selected: "I think sometimes we'll happily say no it's not very interesting we'll leave it. But then the following week if it's a bit quiet on the news front we might decide it's a really good story and go after it in any case" (Editor 5).

Checking Data Sources

While most practitioners trusted the data used in the automated reporting, some said that they sometimes check the data sources "for professional security" (Journalist 1). In some instances, scrutiny of the data was something that editorial management recommended, because "it's important that we have that culture of being critical of data" (Editor 5). However, previous studies show that, in many cases, local journalists are not provided with the resources to develop the necessary skillset to work with data critically (Arias-Robles and López López 2021). As Journalist 1 stated, "we wouldn't be able to report on some of the stories without the RADAR service, simply because we wouldn't have the time to sit down and go through the data ourselves". For most practitioners, time considerations meant they took RADAR data and output on trust.

Using RADAR as a Research Tool

Interviewees reported that having access to a newswire that provided them with data-driven stories gave them reassurance that they had their "finger on the pulse" and that they were "covering the issues that are mattering to the town" (Editor 2). In this sense, the automated journalism wire becomes a valuable research asset mitigating local journalism's limited and increasingly stretched resources. In other words, the RADAR service represented a research tool for topical stories: "I mean it's actually become a really helpful source of stories. But we treat it more as a source of stories rather than stories in their own right" (Editor 5). One practitioner observed that they used the automated journalism output "to find sources of data" (Editor 3). This highlights the relevance of data-driven story origination for local journalism. Gaining access to reliable and readable public data sources also opens up new research avenues for the discovery of news stories and creates "timely news stories of interest to local communities" (Nocera et al. 2021, 1).

Post-editing

In some cases, practitioners reported that they could publish the automated news stories right away, without modification, which was a helpful means of counteracting *publishing pressure* and helped to save resources: "In many of our newsrooms the content will be

used as it arrives from RADAR untouched and that's fine because it presents a story, it's readable, it's relevant" (Editor 1). However, in most cases, media practitioners suggested that they need to further develop the automated news stories before publishing them so they can *factor in the readers' needs*.

Overall, the automated stories were mostly seen "as a template" (Journalist 4) or a "really good starting point for a bigger story" (Journalist 1), with elaboration required. Editor 3 summed it up: "If there's a particularly strong story, we alert the editors that they might want to take a closer look and get a local reporter to look at this issue, gather reaction from local figures, and make it a bit more of a story."

Most commonly, practitioners would work on how numbers are presented in the text, because "sometimes it can be very statistic-heavy" (Journalist 2). Although, in the automated news stories, "the data's very helpful with finding comparisons, looking at previous years, looking at different areas, how the patterns change", local reporting often does not require this level of detail when reporting numbers and "wouldn't necessarily need to focus so much on comparison of figures" (Journalist 1).

Sometimes, journalists reported they would need to contextualise the information presented in the automated stories, because "maybe they'll have mentioned a specific word that I think readers might not understand so I'll put a brief line underneath about the definition of this" (Journalist 2).

In several instances, practitioners maintained that they would need to break up the text by adding human interest elements: "So it's not all statistics we'll put a face and a name to the article, we'll put a picture in, we'll tell her story and then we'll back it up with the statistics" (Journalist 2). As Stalp, Hahn, and Liewehr (2022) note, local media practitioners value such a complementary approach, because enhancing quantitative data with personal accounts can make it "more intelligible" (15). By adding interviews to the data-driven reporting, the journalists could give individuals "the opportunity to tell the story behind the figures" (Editor 2) and could help interpret the data for the readership, explaining "a bunch of reasons around it" (Journalist 4).

Quite often the local focus in the automated stories would need to be given greater emphasis, because "unless you contextualise that [the story] within the local area, it's probably of limited interest to the public" (Journalist 4). Therefore, "if we were just running [the story] as it appeared in the feed, I think our readers would probably be a little underwhelmed" (Editor 5).

Impact

Media practitioners had various opinions about how automated journalism impacts their profession. We identified differences between their intuitive answers and our own analysis of what the interviewees actually reported as impacts when it came to the publishing of news content, the organisation of the newsroom, the journalistic skillset, and the media companies' performance.

Perceived Impact

When we asked for an intuitive statement about the impact of automated journalism on their work as journalists, the majority of practitioners stated that for local journalism

the impact of automation was less disruptive than for their national counterparts. Firstly, because the focus on data-driven reporting is not yet very strong in local journalism and “more than 90% of the work we do doesn’t rely on a data service like RADAR” (Journalist 1). Secondly, because practitioners were convinced that the technology is not “quite there yet in terms of what you can do with it” (Journalist 4), as it still heavily depends on human input. As Editor 5 stated, “So I don’t think we’re anywhere near the point that we will reach with AI in journalism, I think there’s a long way to go with that.” As of now, automated journalism is merely regarded as a helpful tool, “an addition that has really helped what we do without taking away from the role of journalists” (Editor 3).

Although some scholars claim that some automation technology could disrupt journalistic ideology (e.g., Miroshnichenko 2018), our findings support previous studies that show practitioners themselves feel less threatened by the idea of automation technology replacing them in the production process of news (Wu, Tandoc, and Salmon 2019a).

Whilst the intuitive response to the direct question about the impact of automated journalism claimed little disruption, the practitioners’ descriptions of what impact there had been on working practices made it clearer that the use of automated journalism had actually impacted journalistic work and output in a range of ways.

Organisational Impact

Some of our practitioners claimed that the RADAR newswire acted as an additional resource that went some way to alleviating stress for the editorial team, because “it’s just like having another reporter who has almost done the legwork on something for you” (Editor 2). Being provided with “a constant stream of content for our titles” allowed journalists “to relax a bit” (Editor 3). In this sense, automated journalism had helped to “paper over some of the cracks that have been created in local journalism by the loss of people” (Journalist 4).

In most instances, practitioners acknowledged that the use of the automated articles mitigated *publishing pressure*, because it “definitely saves time in the sense that we’d have to do FOIs to get the same information which can take up to a month to come back to, so it’s great in that regard” (Journalist 2). Thus, data-driven reporting could be conducted in a time-effective manner. Our findings support evidence from previous research with news editors from national and international newsrooms who reported that automated journalism allows journalists “to leave time-consuming and highly routinised tasks to technology” (Milosavljević and Vobič 2019b, 11).

Performance-related Impact

The evidence from our sample of media practitioners suggests too that their use of automated journalism “has paid off significantly” and is “an efficiency driver”, because it has “helped our performance for the relatively small investment that we make into it” (Editor 1). Others stated that the use of automated journalism had increased their competitiveness with rival publishers who had not signed up to the service, allowing them at times to provide “a different angle on stories” (Editor 5). This aligns with previous research findings which have shown that an anticipated increase in business performance is a crucial incentive for the deployment of automated journalism in newsrooms (Kim and Kim 2016).



Editors who are responsible for several local newsrooms reported that the economies of scale made possible by the template-based, data-driven mode of reporting supported production performance: "The reason RADAR works for us is that you can look at one topic and there can be figures for 150 different areas" (Editor 3).

Furthermore, practitioners suggest that data-driven reporting was suitable for both print and online audiences, which meant that the RADAR newswire was a useful source of news stories for both platforms. As Editor 2 explained, "for our website, we use what comes from RADAR in its entirety and then we use the very best of that content for the next day's paper". However, in terms of popularity with news audiences, many practitioners still feel that data-driven reporting was most helpful in "maintaining content volume" rather than generating a "huge audience", because "the kind of stories that RADAR provide aren't big, exciting, sensational stories that are going to get lots and lots of page views"; instead, their value with regard to performance lay "at the level of constant readership" (Editor 1).

For some, the collaboration with RADAR inspired future-oriented thinking about greater investment in automated journalism: "The future for us is to work with RADAR on new sources of information and developing new types of automated news products, which give our readers extra engagement" (Editor 1). And importantly for one media company, the collaboration opened up new business opportunities in locations that had not been covered before; "On the sites that we've launched in the cities which are just online only, they're looking into ways where the RADAR content would just appear automatically on the website" (Editor 3).

Journalistic Skills

Although some journalists recalled that data-driven reporting was part of their training (e.g., Journalist 1), most had only limited experience in working with data before they started using automated stories. Being "very inexperienced", they could find researching and analysing data a considerable challenge, as it would take them "a really long time" (Journalist 3). This notion was also shared by most editors, who observed that local journalists were generally rather reluctant to work with data, because "not a lot of journalists have a head for figures" (Editor 2).

Unsurprisingly, several practitioners reported that working with automated stories increased their data-literacy skills. As Journalist 2 explained, using RADAR's automated journalism not only "provided access and knowledge about areas of statistics and particularly governmental data, health data that perhaps I wouldn't have known about personally", it also taught them "about different sources of data" and how to "find data from there" (Journalist 4). Editor 2 observed that reporters who used the automated journalism stories regularly were "definitely more confident in dealing with data now". Journalists' confidence in dealing with data was further enhanced by the fact that the automated stories would already include the local data, which allowed journalists to skip the time-consuming step of searching for and extracting data, and to start to work with the figures right away: "If you've got a data set provided by RADAR where you can just go and check the figures for your country or particular town by the click of a button, that's amazing really and I think that's been quite revolutionary on some scales" (Editor 2).

As a result of their positive experience with the data used in the automated journalism stories, some practitioners said they would be curious to get access to other news

automation providers as well “to see how a competitor would write their stories” (Journalist 2). Editor 1 even reported that for the strategic development of their local news company, “the emerging field of data analysis, data reporting, using non-traditional skills that weren’t part of the newsroom before, is getting increasingly relevant and ties in very closely with our use of content that is automatically generated”.

News Content and Output

As another significant result of this facilitated access to data, several practitioners said that their data-driven reporting had increased dramatically, to a point where “I think readers will have noticed that data journalism is playing more of a role in the local news that they’re consuming; hopefully they don’t think it’s too much” (Editor 3). Similarly, some media practitioners observed that using the automated stories made their reporting “a lot more varied” (Journalist 2), because “I now have those really hard fact-led stories” (Journalist 3). Their use of the automated news stories also gave them “the opportunity to produce data journalism on more varieties of topics” (Journalist 1).

Several media practitioners thought that using data would add validity to their reporting, because the figures “can support a particular point of view or a particular topic” and thus “we are able to talk with a bit of confidence on certain issues” (Editor 5). Thus, data would add “credibility” to the reporting and make it seem more topical (Editor 2).

In spite of their regular and, at times, intensive use of the RADAR service, in almost all cases the media practitioners we interviewed chose not to disclose the use of automated journalism to the audience, which aligns with previous research (Diakopoulos and Koliska 2017). They made this choice, firstly, because “in the readers’ eyes that would diminish the work on the story” (Editor 2), as people consider journalism to be “a human practice”, and “if the public were to pick something up and say this has been created by an algorithm, they would feel less engaged with it. They would feel cold to it” (Journalist 4). Secondly, because the template-based mode of production did not seem to require transparency: “While the data set generally has come from the tool, from RADAR, there’s always been a person who’s done something with it” (Editor 2) and “the thinking is that there are humans behind it too” (Editor 3). However, there is a recognition that as the technology advanced, there would at some point “be an element of automation that we may need to talk to our readers about” (Editor 5).

Conclusion

From our interviews we can see that automated journalism is becoming actively integrated into the news workflows of some UK local newsrooms. The template-based automated journalism provided by RADAR represents an efficient means of integrating data-driven news reporting into the economically challenged local journalism sector (Arias-Robles and López López 2021).

Overall, our findings show that a successful implementation of automated journalism is still strongly dependent on human input, even beyond the substantial human input of the template-based production mode; a finding in line with previous research (Caswell and Dörr 2018; Graefe, 2016). Although the media practitioners in our sample saw potential in this variant of news production, they perceived automated journalism currently only having a limited impact on local news reporting. A majority of the media practitioners

in our sample were not interested in investigating the role algorithms play in the production process of automated journalism. Instead, they understood their relationship with automated journalism as that of a “consumer” (Journalist 4) for whom the workings of RADAR remain “a bit of a black box” (Journalist 5). Our findings suggest that this consumer attitude could be reinforced by the practitioners’ trust in the template-based operating principles of RADAR, which guarantee substantial human oversight of the production of news and suggest only limited technological autonomy, as well as by the underlying trust they place in the PA brand associated with this variant of automated journalism. These insights suggest that the practitioners do not interpret the impact of algorithms in the production of automated journalism as very disruptive for the journalistic profession and that they see the role of technology as rather limited compared with the central role of the human journalist.

Practitioners in our sample observed that they mostly benefit from deploying automated journalism in the way it has supported newsroom performance. The RADAR service can alleviate publishing pressure by delivering trusted newsgathering and supporting the management of production resources in the newsroom. Furthermore, for some journalists, using automated output increased their engagement with data-driven reporting, which increased both the publication of data-driven reporting and the diversity of topics published.

However, practitioners also stressed automated journalism’s limitations for local news reporting given the need for additional reporting to capture the essential local ingredient of human stories. These limitations result in a current perception that automated journalism output, before post-editing, offers limited potential for creating meaningful connections with the local readership. Local distinctiveness remains critical for local practitioners.

Nevertheless, it is fair to argue that in spite of its limitations there was a sense from the interviewees that automated journalism did augment their ability to deliver for local audiences. Automated news production has become an additional support for local news reporting, as it is used either as a source of inspiration during research, or as a starting point for story development, or as a means of easily filling the less prominent pages of a newspaper or website. For one media company, automated journalism also opened up the possibility of business expansion. Overall, our findings imply a continuing inclusion of this variant of news automation in local news production.

Of course, this study has necessarily been limited in scope. Due to our focus on this one particular variant of automated journalism, namely the template-based service provided by RADAR, we obtained a specific picture of the use of the technology in local news. Furthermore, the qualitative approach and a relatively small number of interview partners provided an initial exploration of the current approach and engagement with automated journalism in local news reporting, which could profitably be expanded on in future studies.

Our study offers a first insight into how local media practitioners approach and engage with automated journalism. Future quantitatively designed research might deepen our understanding of this human–computer collaboration in the newsroom, which will intensify as the technological capabilities of computational applications improve. Furthermore, academic research designed to investigate the use of automated journalism in local news production could help pave the way for stronger systems that understand and manage human–computer collaboration, to the benefit of local journalism’s sustainability.

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