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Science Communication in the Age of Artificial Intelligence

ARTICLE

"Away from this duty of chronicler and towards the unicorn": How German science journalists assess their future with (generative) Artificial Intelligence

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Abstract

The advent of generative Artificial Intelligence (genAI) is expected to have a significant impact on journalism. In this study, we address whether this development could help mitigate the crisis in science journalism. We conducted semi-structured interviews with 30 German science journalists, asking them about the potential impact genAI may have on the news-making process (i.e., selection, production, and distribution). The results suggest that interviewees anticipate many future benefits associated with genAI, some believe that the technology is unlikely to worsen the crisis in science journalism, while others express concerns about potential negative consequences (e.g., job loss).

Keywords

AI tools in science communication; Digital science communication; Science and media

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1 ▪ Introduction and objective

"Artificial intelligence and the future of journalism go hand-in-hand" [Dhiman, 2023, p. 6]. Tejedor and Vila [2021] even call for an alliance between journalism and Artificial Intelligence (AI). However, the question of how AI and generative AI (genAI)[1] may affect journalism has received mixed evaluations in the research literature so far.

Often, AI and genAI are regarded as a threat to journalism; in contrast, other researchers have pointed out that this technology could save the profession at large [e.g., Borchardt, 2022; Broussard et al., 2019; Deuze & Beckett, 2022; Hansen et al., 2017; Moran & Shaikh, 2022; Soto-Sanfiel et al., 2022; Thurman et al., 2021]. In this context, Sirén-Heikel et al. [2022, p. 355] refer to the *Janus face* of AI in journalism as either "eliminating jobs through automation or improving human work through augmentation." Assessments like this weigh (perceptions of) benefits and risks, and they rightly consider the entire process of making news, from selection to production to distribution [e.g., Beckett, 2019; de-Lima-Santos & Ceron, 2022; Dhiman, 2023; Pavlik, 2023; Sirén-Heikel et al., 2022; Simon, 2022; Tejedor & Vila, 2021].

Naturally, AI and genAI affect journalism as a profession in many countries around the world. Although there has been much reflection and theorization about journalism and AI, there has been comparatively little examination of the views of science journalists. That is why, in this paper, we will focus on *science journalism* as one journalistic beat, in the largest European economy: *Germany*.

Science journalism, especially in Western countries, has often recently been described as being in crisis [e.g., Dijkstra et al., 2024; Guenther, 2019; Schäfer, 2023]. Researchers have identified increasing digitization and changing audience news habits as two major forces behind this crisis. Due to the complexities and scientific (un)certainty involved in science journalism, scholars initially did not expect it to be significantly affected by AI and genAI developments [e.g., Tatalovic, 2018]. However, previous studies have begun to investigate AI tool development catering to the needs of science journalists and how these journalists assess such tools [e.g., Maiden et al., 2023; Vadapalli et al., 2018]. Guenther et al. [2025] found that science journalists largely see AI and genAI as a colleague that can enhance their work efficiency. Dijkstra et al. [2024] explored how AI and genAI affect the quality of science journalism and identified that adoption is still in its early stages, making research into this topic even more relevant. Nevertheless, how individual science journalists, i.e., those directly affected, view AI and genAI, and how they assess their future with this technology, has not been explored in detail [see also Schäfer, 2023, on the role of genAI in science communication]. This study believes that to properly assess future implications, the voices of those affected should be heard. In this setting, the views of individual science journalists on this topic will provide insights into expected effects of AI and genAI on journalism, but also more broadly on society.

1. Analytically, we make a distinction between AI and genAI. Broadly speaking, *AI* refers to a field of computer science aimed at creating machines capable of performing tasks that normally require human intelligence. This often involves automation and extensive data analysis, where machines learn from data or their own performance without being explicitly programmed [e.g., Broussard et al., 2019; Beckett, 2019; Dhiman, 2023; Simon, 2022]. *GenAI* creates original content such as text and images [e.g., Pavlik, 2023], based on patterns and examples, typically derived from large datasets.

Thus, the overarching research question (RQ) of this paper is: *How do German science journalists assess the future impact of (generative) Artificial Intelligence on the journalistic profession at large and on the daily process of making news (i.e., selection, production, distribution)?* Semi-structured interviews with 30 German science journalists from a variety of leading media organizations were conducted to answer this RQ. The insights generated by this research aim to shed light on whether AI and genAI will likely exacerbate the crisis in science journalism or potentially counteract it.

2 ▪ (Generative) Artificial Intelligence and the future of (science) journalism

For some time, social sciences have begun to explore future assessments [e.g., Beckert & Suckert, 2021]. For instance, the *Sociology of the Future* [e.g., Adam, 2011; Selin, 2008] suggests that while the future is generally open, some possibilities are more likely than others, influenced by how people act in the present — individually and collectively. With Luhmann [1976], future presents, defined as anticipated, technologically constituted futures, are particularly relevant, as they can be transformed by people's choices in the present. Thus, assessments of the future have consequences for present actions and, subsequently, future outcomes [e.g., Selin, 2008]. This is why it is important to investigate such future assessments and to ask those best equipped to infer how AI and genAI will continue to affect the science journalism profession: the science journalists themselves.

Research in journalism tells us that AI affects the entire process of news production, and these technologies have already entered newsrooms worldwide [e.g., Beckett, 2019], often assisting with routine tasks [e.g., Deuze & Beckett, 2022]. In Beckett and Yaseen [2023], about 80% of respondents (in that study: 105 news and media organizations from 46 different countries) reported using AI in the newsroom. Thus, the technology impacts journalistic practices, including so-called *applied AI* for solving specific problems [e.g., translation, news recommendation; see also Dhiman, 2023], as well as *genAI* [e.g., content production; Rejeb et al., 2024]. Indeed, AI and genAI affect various steps of the news production pipeline to different degrees. In Beckett [2019, p. 6], "[just] under half of respondents said they use AI for newsgathering, two-thirds said they used it for production, and just over half said they employed AI for distribution."

Especially regarding the *selection* of news, AI and genAI are equipped to identify newsworthy events and propose them to journalists [e.g., Tejedor & Vila, 2021]. Nevertheless, journalists seem to be mixed when evaluating this: some have concerns that there could be a loss of journalistic autonomy; some others think using AI and genAI brings more news diversity regarding topics and voices heard [e.g., Cools et al., 2021]. In news *production*, it is believed that AI and genAI can support or take over tasks, freeing up journalists to work on other things [e.g., Beckett & Yaseen, 2023; Deuze & Beckett, 2022; Pavlik, 2023]. Regarding the *distribution* of news, AI and genAI could help concerning news recommendations [e.g., Beckett, 2019; Broussard et al., 2019]. Naturally, all these points received mixed evaluations.

That is why research has also focused on the potential benefits and risks associated with AI and genAI integration in newsrooms. While both positive and negative aspects exist, journalists in Latin America, for example, see more benefits than risks [e.g., Soto-Sanfiel et al., 2022].

Among the *benefits*, AI and genAI have the potential to increase work efficiency, enhance quality, reduce production costs, identify newsworthy events, write code, analyze data, and recommend content to audiences [e.g., Beckett, 2019; Broussard et al., 2019; de-Lima-Santos & Ceron, 2022; Deuze & Beckett, 2022; Sirén-Heikel et al., 2022; Pavlik, 2023; Soto-Sanfiel et al., 2022; Stray, 2019; Tejedor & Vila, 2021]. This also includes fact-checking [e.g., Beckett & Yaseen, 2023]; overall, the benefits cover the entire pipeline of news production, from selection to production to distribution.

At the same time, perceived *risks* include larger concerns beyond individual journalists' daily work, such as job loss and threats to journalistic independence due to reliance on external AI providers. There are also technological concerns, such as information hallucination and the reinforcement of biases in AI models, and journalistic concerns, such as the loss of journalistic accuracy and the emergence of mechanical writing styles [e.g., Borchardt, 2022; de-Lima-Santos & Ceron, 2022; Deuze & Beckett, 2022; Dhiman, 2023; Pavlik, 2023; Soto-Sanfiel et al., 2022; for an overview: Beckett, 2019; Kunert et al., 2022; Tejedor & Vila, 2021; Wahl-Jorgensen & Carlson, 2021]. These risks also extend across the entire news production pipeline. Naturally, perceptions of these benefits and risks depend on how transparently the technology is used, whether AI guidelines and strategies are available, or whether new roles within the editorial department exist to facilitate adaptation [Guenther et al., 2025; Hansen et al., 2017]. Moreover, these perceptions also influence assessments of how AI and genAI will affect the journalistic profession in the *future*. Future assessments impact the continued (non-)use of AI and genAI, which largely depends on whether perceptions are positive and/or negative and how easy the technologies are to use [e.g., Davis, 1989; see also Henke, 2024; Soto-Sanfiel et al., 2022].

According to Beckett [2019], key areas for a journalistic future with AI and genAI involve advancements in automatic identification of news, improved content, and better personalization and recommendations. However, developments in AI and genAI technology are emerging at a time when established business models in journalism are perceived as disrupted [e.g., Borchardt, 2022; Dijkstra et al., 2024; Sirén-Heikel et al., 2022], and this disruption impacts certain journalistic beats more than others. As mentioned earlier, science journalism, in particular, is viewed as being in crisis [e.g., Dunwoody, 2019; Guenther, 2019; Maiden et al., 2023; Massarani et al., 2021; Schäfer, 2023]. Although science journalism has experienced periods of growth [e.g., Dunwoody, 2021; Guenther, 2019], it has traditionally been seen as a niche field, often regarded as a (costly) add-on [e.g., Brumfiel, 2009]. Due to digitization, the shift of audiences — and advertisers — to (free) online sources of information, and the fact that scientists and science PR have increasingly used direct communication channels (e.g., blogs or social media), many media companies, especially print media, have been severely impacted, leading them to let their science writers go [e.g., Brumfiel, 2009; Dijkstra et al., 2024; Dunwoody, 2021]. Those science journalists who remain, often as freelancers, have taken on additional tasks, leading to work overload. It is in this context that science journalists now confront the development of AI and genAI [see also Dijkstra et al., 2024].

In previous research, Tatalovic [2018] painted a rather negative picture, emphasizing that AI and genAI could potentially outperform science journalists by summarizing knowledge more efficiently, which could render many science journalists obsolete. However, those who remain may have more time to work on larger, in-depth stories, a benefit seen in other journalistic beats as well [e.g., Kunert, 2020; Linden, 2017; Thurman et al., 2017]. In Dijkstra et al. [2024],

some journalists interviewed viewed AI and genAI developments as part of the broader digital transition in journalism. They stated that they mainly use the technology for simple, repetitive tasks and did not feel it would negatively impact their journalistic quality. Maiden et al. [2023] focused on how semi-automation could be useful in science journalism. For instance, the authors tested whether AI and genAI tools could make science journalism more inclusive in terms of voices, scientific fields, and regions, which could mitigate biases in reporting. The interviewed journalists expressed a preference for remaining in control and favored AI that could be personalized. With a focus on supporting science journalism, Vadapalli et al. [2018] tested how AI and genAI could help extract relevant information from scientific articles and translate it into accessible language.

However, what research has not yet answered is how those directly affected perceive their future when selecting, producing, and distributing news with AI and genAI technologies, which is what this study aims to investigate. This receives even more relevance when considering initial audience studies. For instance, in Lermann Henestrosa et al. [2023] audiences' rating of message credibility and trustworthiness did not differ between a science journalistic article attributed to AI and the same article attributed to a human author. This is an interesting finding, given that AI and genAI do not always provide accurate scientific information [for epistemological criteria such as completeness of information and uncertainty in climate change information, see Bulian et al., 2023].

3 ▪ Method

To answer the overarching RQ, this study utilized qualitative interviews with 30 German science journalists and applied qualitative content analysis to the corresponding interview transcripts. The findings presented here are part of a larger research project [see Guenther et al., 2025] , and the methods used were developed in collaboration with 15 journalism students who participated in a master's course co-taught by two of the authors at a *LMU Munich* in Germany.

3.1 ▪ *Sample selection and description*

For sample selection, a list of relevant media sources for science journalism in Germany was compiled, including leading media organizations (see Table 1 for descriptions). The students collected the names of science journalists working for these organizations. To meet the target of conducting interviews with 30 journalists,[2] preferably from different media outlets, the students, in coordination with the researchers, contacted these individuals using a standardized text, inviting them to participate in a 30-minute interview via email and social media. Most journalists agreed to be interviewed; in cases where they declined (mostly due to a lack of time), other journalists from the initial list were contacted until we reached our target of 30 interviewees.

The interviewees represent a variety of leading German media organizations (see Table 1). We anonymized the interviewees' names (referring to each as J with the respective interview

2. Although assessing theoretical saturation in qualitative research is challenging, the authors felt comfortable with the requirement for each of the 15 students to interview two science journalists, leading to a sample size of 30 interviews.

number) as well as the names of their organizations. As shown in Table 1, we achieved diversity in positions, genders, and ages. Most interviewees had both a specific subject they studied at university (which was not necessarily a natural science subject) and completed a journalistic traineeship; many of them worked as freelancers. Furthermore, many of the journalists interviewed had reported on AI before, while a substantial number said they had not. The science journalists also differed in how they used or did not use AI and genAI in the selection, production, and distribution of news [see also Guenther et al., 2025].

Table 1. Information about interviewees.

	Position	Age	Gender
J1	Journalist at regional daily newspaper	40	Female
J2	Journalist for TV, radio, podcast, and social media	30	Female
J3	Data journalist for radio	42	Male
J4	Journalist at newspaper	57	Male
J5	Freelance journalist for public radio and TV	29	Male
J6	Editor at national newspaper	41	Male
J7	Freelance journalist for public radio	41	Female
J8	Freelance journalist for newspapers and news magazines	55	Female
J9	Freelance journalist for newspapers and podcasts	28	Male
J10	Freelance journalist for newspapers and news magazines	44	Male
J11	Journalist for science magazine	43	Female
J12	Journalist and coordinator for public TV	56	Male
J13	Trainee at national newspaper	20s	Female
J14	Journalist at newspaper	28	Male
J15	Freelance journalist for public TV, social media, and podcasts	27	Female
J16	Journalist for science magazine	39	Male
J17	Freelance journalist for radio and news magazine	65	Male
J18	Freelance journalist for radio/podcasts, and news magazines	28	Male
J19	Freelance journalist for radio and newspapers	36	Male
J20	Journalist for science magazine	32	Female
J21	Freelance journalist for TV and social media	26	Female
J22	Journalist for newspapers and science magazines	45	Female
J23	Freelance journalist for science/news magazines, podcasts	25	Female
J24	Freelance journalist for public TV	64	Male
J25	Freelance journalist for public TV	30	Female
J26	Freelance journalist for TV, radio, podcasts, and social media	40s	Female
J27	Journalist for science magazine	45	Male
J28	Journalist for science magazine	49	Male
J29	Journalist at newspaper	51	Female
J30	Journalist at newspaper	25	Female

3.2 ▪ *Interview guide and data analysis*

An interview guide was used for the semi-structured interviews. This guide was developed as part of the master's course, in collaboration between researchers and students. It covered

theoretical considerations, supplemented by research insights [e.g., Broussard et al., 2019; Beckett, 2019; Deuze & Beckett, 2022; Dhiman, 2023; Hansen et al., 2017; Moran & Shaikh, 2022; Pavlik, 2023; Simon, 2022; Stray, 2019]. In this study, we use a subset of questions asked at the end of the interview [for the other parts, see Guenther et al., 2025].

More specifically, we asked them: "How do you think AI and genAI will continue to change science journalism?" and "What tasks should AI and genAI take on in science journalism in the future?" We prepared three follow-up questions to encourage detailed responses: "What about selecting topics?" "What about producing news?" and "What about distributing news to the audience?" Lastly, we also asked: "What tasks should AI and genAI not take on in science journalism in the future?"

The interviews were conducted by the students, two each, after they were trained in several sessions by the researchers and had performed test runs. Pre-tests led to only minor adjustments to the questions and their order in the guide. The interviews took place between December 2023 and January 2024 via Zoom or telephone, and they were recorded with the interviewees' consent. These recordings were then transcribed, mostly using AI (such as Trint). All transcripts were manually checked for accuracy.

For data analysis, the transcripts were examined using MaxQDA24. The category system for the analysis followed a deductive-inductive approach [e.g., Kuckartz, 2014]. Deductively, we derived overarching categories from the guiding questions: future implications for science journalism, including which tasks AI and genAI should perform (in terms of selecting, producing, and distributing news) in the future, and which tasks they should not. Subcategories were then developed inductively based on the material. The qualitative coding was first done by all students on their own interview transcripts (advised by the research leaders), and then, to increase reliability and validity of the whole process, by two of the authors on the 30 interview transcripts in a consensual coding style. Codings and potential disagreements were discussed and resolved in that process. After a final coding instrument was agreed upon, the transcripts were double-checked. For the Results section, the information obtained from the coding procedure was condensed in several iterative steps, and quotes were translated into English.

4 ▪ Results

The results will be presented next, organized by deductively developed categories: general assessments of future implications for the journalistic profession, the tasks AI and genAI should take on in science journalism in the future regarding the selection, production, and distribution of news, and the tasks AI and genAI should not take on in science journalism in the future.

4.1 ▪ *Future implications for the journalistic profession at large*

How do the interviewees perceive AI and genAI continuing to change science journalism? All interviewees believed there would be changes, many of which would apply to journalism as a whole. "Companies that want to still be on the market in five years have to deal with it now. Those who don't, for whatever reason, won't be around in five years" (J11). Most agreed that AI's influence will increase and make their daily work faster and more efficient, particularly

with routine tasks such as transcriptions and translations. Some referred to AI as either an intern, assistant, colleague, helper, or even a "facility manager" (J27). J18 emphasized that it could make journalism as a whole a lot cheaper. J15 stated: "I believe that all the tools emerging in the future will be critically assessed and scrutinized by science journalists, just like by all other journalists, and will hopefully be used responsibly — or not used at all."

Many also mentioned that entire workflows are affected, from selection to production and distribution, involving text, audio, and visualization, mostly for general or breaking news rather than larger pieces. AI was also seen as making research from different parts of the world, such as Africa, more visible, or research from smaller universities, and this could be linked to access and analysis of large data sets (J4), which for J22 was linked to increasing open access practices. A wish shared by many was that through using AI and genAI, science news could become more diverse, more in-depth, and more tailored to the needs of the audience.

A few interviewees expected that high-quality, human-made journalism might experience a resurgence, which could be especially true for science journalism, as quality scientific information will become increasingly important in a complex world, even to combat fake news. "In science journalism, verified sources are highly important. And that is why I believe that quality journalism will experience a hype" (J3). J11 agreed:

> "I fundamentally believe that human-curated content will become more valuable at all levels, including in science journalism, because this shallow soup of content will tend to average out, sounding roughly the same everywhere and failing to truly impress anyone. AI is particularly good at producing this kind of middle-ground, plausible content."

J4 mentioned a potential scenario where both science and journalism would use more AI and genAI, leading to science becoming more journalistic (e.g., through new versions of preprints and podcasts) and journalism more scientific (e.g., in analyzing data). Several journalists pointed out that because AI and genAI are changing the science system (i.e., they are widely used in science itself), there will inevitably be indirect effects on journalism.

These expectations were accompanied by negative assessments, although to a lesser degree: work could become more challenging, more biased, lack diversity (e.g., in topics and writing styles), and require greater media literacy and attention to verified sources of information. "It will be challenging. We will be confronted with challenges and problems we never faced before. We will need to develop greater media literacy" (J2). J19 mentioned that in the future, people might use AI and genAI to inform themselves about science, especially for scientific explanations, which could change the focus of what science journalists write about. In this view, AI would not be a colleague but rather competition:

> "So, it might make things easier in a sense — more accessible for people who aren't science journalists [...], just like Wikipedia has already made things easier. In practical terms, AI will perhaps even take over some work — tasks that are typically part of the job, like summarizing a study and explaining it to the reader. AI can already handle much of this nowadays. It will become a kind of competition for science journalists in that sense."

Some interviewees explicitly expressed fears of potential future job loss, particularly in media companies that are financially struggling (e.g., regional and local journalism: "I believe that, especially in local journalism, where there are significant financial issues, a lot of work could be, and already is, outsourced to AI."). J5 stated: "A risk is, and this is what I am concerned about, that simple science news could be generated by AI on the same level of quality as I write science news, and my job would cease to exist.". It was also emphasized that major science publishing companies could start using AI and genAI to distribute news about new publications, potentially changing how science journalists report. "I do fear that it will start with shorter news pieces that could be AI-generated. For example, when *Nature* publishes a new paper, you can easily use the right prompts to have a news piece written up" (J23). But then, as J28 stated, the job would be to get "away from this duty of chronicler and towards the unicorn" — meaning to find one's own unique place and style of reporting, delivering in-depth background information. "The only chance to survive is to focus on the strengths that humans still have over AI: namely, seeking out or offering the extraordinary — something that AI might not be able to do to the same extent" (J27). Defending his job, J16 emphasized: "I do think that quality journalism is something humans should do, and that humans simply do better." Several others echoed this sentiment, like J6:

> "If you think that manpower will be replaced by AI, well, I don't believe that. At least, I don't see it that way for now. The work I do is fundamentally different from what I know about AI applications so far. The data analyses that AI performs, those detailed tasks, they're nice, it's great that they exist, but essentially, they're little more than a calculator."

Hence, some explicitly stated that they do not fear job loss, as they believe their work could never be replaced by AI or genAI. Others weighed the types of reporting, suggesting that AI and genAI could help summarize new scientific articles but would likely not be suitable for (investigative) background reporting.

Some interviewees predicted that certain aspects of science journalism would remain unchanged. Many aspects of science journalism rely on personal contacts, and J1 suggested that personal conversations will still play a role. In general, the journalists agreed: "Then we just have to be adaptable again. That's something that comes with AI anyway, so people who are flexible enough, who are willing to step out of their role and learn something new, will have fewer problems than those who insist that everything stays the same" (J11).

4.2 ▪ *Future tasks for selection, production, and distribution of news*

Regarding the selection of news, many interviewed science journalists mentioned that AI and genAI should only serve as a helper, making their work more efficient, but should not gain too much power. They mentioned many examples of where AI and genAI can assist them in the news selection process.

> "AI can definitely sift through the flood of information. And one big opportunity is that right now, we often focus heavily on English-language literature and publications. With AI, we could also cover many other countries and publications that we currently don't even consider because we simply don't speak the language" (J5).

J7 echoed this but with more concern. Asked if AI and genAI should take on in the task of selecting news for science journalism in the future, she said:

> "Yes, in principle. But I also ask myself: what does an AI consider exciting? Is it simply what gets published the most? Or does it also evaluate relevance and quality of the work? I think there are many factors involved. Of course, you can look at the source — what journal it was published in, or who published it. Is it a group or an individual who has already done a lot in this field? So yes, I could imagine it being useful. But still, you can't just blindly rely on it."

Some were even more cautious: "I think that even for selecting topics, you need a certain level of expertise to evaluate or understand how a topic is currently being received or discussed. This is especially important because of the biases inherent in AI" (J23). This few was shared by many. Nevertheless, some respondents mentioned that in the future, AI and genAI could assist in identifying trends (e.g., what is currently of interest or grabbing attention), such as on social media, in large data sets, or on preprint servers — perhaps based on impact factors that would then become news. J11 also envisioned something similar but stressed that: "AI does have a certain overview of the entire internet, especially when it's live. I think that's a crucial prerequisite — that it doesn't lag behind by more than ten or twelve days. If it's relatively up to date, then I can imagine it working. But with material from 2021, of course, that wouldn't be possible." The potential future use of AI and genAI also includes working with data, identifying patterns, and programming in general, as stated by many.

For the production of news, most journalists interviewed stated they would only want AI to make their work easier (e.g., transcriptions, translations) and not for genAI to take control: "as a sparring partner, essentially as part of the team, taking on all sorts of tasks that are needed" (J18). But not even this was shared by all science journalists interviewed: "I'm a bit cautious. […] I'm not sure how much work it actually saves, because the scientific studies we analyze are difficult to summarize without first knowing exactly what my focus is, what has already been reported, how this goes beyond that, and how trustworthy the sources cited by the study's author actually are" (J6). For J10, in addition, the quality of genAI's work is currently not good enough (e.g., in terms of writing styles). Some journalists, however, foresaw a future where genAI could produce content independently, provided there is sufficient human oversight. J28 mentioned the possibility of a news ticker based on summaries of scientific articles, with journalists adding context, background, and potentially controversial second opinions. This is in line with J10: "I would say, when it comes to news, if AI does it well, it could certainly handle the news flow. But what AI, in my opinion, cannot do — and what would be irresponsible — is producing in-depth background pieces." In addition to content production, journalists expressed a desire for AI's assistance in finding information (e.g., relevant studies, visuals in archives), identifying important segments in transcripts,

fact-checking, providing lists of experts, creating headlines, summaries, audio sounds, and visuals, performing spell and grammar checks (with improvement suggestions), and converting content into different formats (e.g., from a news article to a social media post). For instance, J26:

> "It could also make certain topics, which might otherwise be difficult to visualize, much more tangible. For instance, you could use AI to enhance visual communication. In climate research, for example, there are many things that play out in the more distant future, which makes them harder to grasp."

In addition, J22 wished for a personalized AI that could be trained on her own content — all the articles she has ever written — so it could learn her style and make suggestions:

> "A tool where you could feed in all your research findings and transcripts, and it would, based on the texts you've written before [...] analyze what kind of information is even relevant. It could make a preselection of the information from which you, as a human, could then write a text. Essentially, it would function like a search engine for your own research archive. For instance, it could filter and show everything personal you could use for a description, or suggest potential introductions based on how you usually craft them."

Regarding the distribution of news, AI and genAI could assist in answering emails from audiences (J9 also mentioned emails from "particularly vain professors"), as mentioned by a few. J14 emphasized that he frequently receives specific questions and thought it would be helpful if technologies could handle such replies: "If AI provides automated responses to repetitive reader inquiries, offering consistent answers or information, I don't see that as problematic." Additionally, AI and genAI could assist in distributing news across various channels to better reach target audiences through personalization (e.g., in content and levels of understanding), including international audiences, due to improved and easier translation of German journalistic products. This was supported by most interviewed science journalists: "I don't like distribution; this can be done by AI" (J18). J4 supported the importance of AI for distribution: "Particularly for reaching different audiences. This applies, for example, to immigrant communities or non-native speakers. It's also about making our science journalism products more accessible to more people and at various levels of expertise. I think that in science journalism — perhaps using a small quiz — could quickly determine the knowledge and interest levels of readers, allowing articles to be tailored accordingly." Furthermore, "I can also imagine that AI could assist with writing, generating headlines, or searching for subject-specific images — tailored more precisely to the needs or preferences of the audience. It could provide creative input and faster suggestions, enabling more efficient and informed work while fostering better and quicker results" (J12). Other tasks mentioned for distribution included creating subtitles, SEO optimization, and personalized advertising.

4.3 ▪ *Tasks no AI should do*

What tasks, according to the interviewed journalists, should AI and genAI not take on in science journalism in the future? For most, the answer was clearly related to the selection and production of news: "The selection of topics, evaluation, opinion, all of that must be done by humans. The crucial thing is that there's human control involved. It's also about accountability. Who is to blame if AI makes a mistake?" (J6). Or: "Absolutely not when it comes to writing own text. In the end, it still has to be manually reviewed by yourself" (J1). Many of the science journalists interviewed said they would never allow genAI to produce and publish its own content unsupervised, nor to manage the entire news production process. They did not trust AI and genAI for opinionated pieces, controversial topics, or to accurately convey traditional news factors such as reach, relevance, proximity, or emotions. In the end, human oversight, quality control, and verification are necessary. J2 stated:

> "I have doubts that AI can truly grasp human emotions, fears, and needs — or respond adequately to them through its outputs. Especially in science coverage, where results often require careful interpretation, it's essential to convey a sense of everyday relevance and answer the question: What does this mean for people now? This is something I believe AI struggles to achieve effectively."

In addition, J12 said: "No comments, no opinions, no stances. Anything that ultimately requires human experience and judgment should remain the domain of people. It should be clear that AI, in this regard, shouldn't have its own stance or opinion." And this was supported by J16:

> "I firmly believe that quality journalism is something that should be done by humans, as they do it better. Critically assessing issues, selecting topics, approaching them creatively, and thinking through and analyzing problems — these are tasks that humans can still do better. [...] When it comes to actually creating content, I find that problematic, not least because I want to keep my job!"

Several science journalists mentioned that AI and genAI cannot perform creative or humorous work and, therefore, could never replace them. J4 emphasized:

> "The automatic generation of articles, as we see in stock market reporting, weather reporting, or sports reporting, is something I find acceptable. It works there because the datasets are extremely structured and straightforward, essentially just status updates. However, in nearly all other areas of journalism that involve politics or interpretation, I would categorically rule it out."

Journalists working in radio, such as J7, added:

> "In radio, there's research showing that many listeners develop a kind of parasocial relationship with the radio host, even though it's not a direct exchange. I wouldn't want an automated news broadcaster [...]. Maybe it's because I perceive audio and audiovisual media as more personal or direct."

Two interviewees also mentioned that the technologies should not be used in the hiring process for new journalists. J25: "Basically, anything that involves a leadership role is something AI cannot or should not take over. This includes areas outside of journalism, like personnel decisions, for instance. I think it would be better if such tasks were handled with minimal reliance on AI."

In total, although there is a temptation to increase the use of AI and genAI — "It's really a sweet poison" (J4) — there are several tasks that the science journalists interviewed could not imagine AI and genAI taking over. J30: "But maybe a year from now, we'll be sitting together, and AI will be able to do that — who knows."

5 ▪ Discussion

The present study highlights the complex interplay between AI, genAI, and science journalism, focusing on perceptions of potential future influences. Overall, the majority of journalists interviewed expressed a desire for applied AI to solve specific problems related to the production and distribution of news [see also Rejeb et al., 2024; Henke, 2024, for similar findings among university office representatives]. They preferred AI that already exists or is developed for routine tasks [see also Deuze & Beckett, 2022]. Although this reflects the assumption that AI and genAI are tools to assist rather than replace humans [e.g., Diakopoulos, 2019; Moran & Shaikh, 2022], some interviewees still voiced concerns, particularly regarding potential job loss.

The journalists interviewed anticipated that AI's influence on science journalism would increase, making workflows more efficient [see also Beckett, 2019], while also presenting challenges such as job security, loss of creativity, biases, and maintaining journalistic standards in the face of increasing AI integration. Both positive and negative assessments were mentioned. While some tasks may be automated, the interviewees emphasized the importance of human oversight, creativity, and quality control. What they sought was assistance, help, and an easier work life — preferably with AI and genAI that could be personalized to their own needs. To link to the title of this study, science journalists could become "unicorns" (J28) in a way that they work in-depth on issues rather than merely churning out articles on the latest study results. This could mean that science journalists may need to expand their skill sets to remain relevant, both journalistically and technologically, by diving deeper into individual issues and knowing when to use AI or genAI for speeding up tasks.

In contrast, their main fear was content being selected and produced without human oversight; they were less concerned about AI's role in distributing news to audiences. While

Broussard et al. [2019] suggest that not all, especially smaller, media companies need to use AI, the interviewees in this study [in line with, e.g., Beckett, 2019] felt that the future of journalism would inevitably involve AI and genAI. In this context, it was stressed that science journalism must remain flexible and adapt to new circumstances.

What does this mean for the future of science journalism? As emphasized, even for journalism in general, researchers see AI as a savior or a threat to the profession, with most seeing both benefits and risks [e.g., Deuze & Beckett, 2022; Hansen et al., 2017; Moran & Shaikh, 2022; Soto-Sanfiel et al., 2022]; these mixed evaluations may be even more pronounced in science journalism [e.g., Dunwoody, 2019; Guenther, 2019]. Research has often stressed AI's potential to support science journalism [e.g., Vadapalli et al., 2018], making reporting more diverse [e.g., Maiden et al., 2023], and allowing more time for in-depth stories if routine tasks are automated [e.g., Tatalovic, 2018; see also Dunwoody, 2021]. In these regards, the results mirror those found in other beats, such as sports and finance reporting [e.g., Kunert, 2020; Thurman et al., 2017]. However, some of the interviewed journalists believe their beat is fundamentally different from others regarding the future impact of AI and genAI. High degrees of automation were deemed inappropriate for science journalism due to the need for interpretation. Whether this holds true, especially for short, bulletin-like formats, remains to be seen.

Nonetheless, human oversight is essential, as genAI does not always present accurate information [e.g., Bulian et al., 2023]. The interviewed science journalists echoed this argument, repeatedly stressing that AI and genAI are unlikely to take over their core tasks and that they see themselves as adaptable. While genAI may eventually be able to produce short or breaking news, none of the interviewees expected it to fully replace human journalists (though job loss was still a concern). This could mean that the topics science journalists focus on may shift. For some, an era of AI and genAI in journalism could lead to a resurgence of high-quality, human-made science journalism, or it could bring science and journalism closer together. Most science journalists interviewed saw major developments in the production and distribution of news (with human oversight) but not in the selection, which they considered a core journalistic task.

While this study does not definitively answer whether AI and genAI will exacerbate or alleviate the crisis in science journalism, it may be reassuring that most journalists interviewed do not feel significantly threatened. They recognize that (science) journalism is moving toward greater integration with AI and genAI. The findings of this study support initial insights from Dijkstra et al. [2024], suggesting that science journalists will likely continue — or begin — using AI and genAI. In line with theoretical assumptions [e.g., Adam, 2011; Beckert & Suckert, 2021; Selin, 2008], journalists can shape future pathways through their behavior. "AI technologies will not save journalism or kill it off" [Beckett, 2019, p. 90]. From an audience perspective, some may also favor a combination of genAI and human input in journalism [e.g., for China: Sun et al., 2024] but research in this area is only starting. As highlighted, some audience members may not even make a difference between AI- and human-written articles [e.g., Lermann Henestrosa et al., 2023].

While the present study offers valuable insights, its limitations must be acknowledged. This is a qualitative study conducted in Germany. Although we attempted to include a variety of leading media organizations, we only covered a small sample. Furthermore, there could be a self-selection bias, in that only science journalists with strong opinions about using AI and

genAI in science journalism responded to our interview requests. Furthermore, it must be kept in mind that science journalists may have positive perceptions regarding AI because their beat is — comparatively — still less affected by technological developments. Lastly, the analysis itself is based on qualitative content analysis, which inherently includes interpretive elements. However, we believe that those directly affected are best equipped to discuss the future implications of AI and genAI integration into science journalism, and their voices should be heard.

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