Article

Negotiating interpretive power: Interpretive practices in journalist-scientist interactions

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Abstract

This study critically examines the notion of interpretation and interpretive practices within journalist-scientist interactions in the news production process. The linguistic ethnographic work in this paper offers rare insights into an intense and lengthy collaboration between a newspaper, university, and government agency as they set up a citizen science project on air quality in Belgium. Our analysis focuses on how journalists and scientists interpret scientific results and how they actively reflect on that interpretation. Beeman and Peterson's (2001) notion of interpretive practice is adopted as an analytical framework and operationalized by looking into how routine procedures, cultural categories, and social positions from the fields of journalism and science are adapted, negotiated or reflected on in the dataset. The findings show that the scientists go beyond providing data and expertise and are heavily engaged in the interpretive work within the news production process. The close-knit interaction between the scientists and journalists brings about a struggle over whose interpretation should be a part of the final news product and limits the interpretive power of the journalist.

Keywords

science, ethnography, interpretive journalism, citizen science, collaboration, science journalism, journalism, science communication, linguistic ethnography, journalist-scientist interaction

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Introduction

During one of the many meetings behind the scenes of a citizen science project on air quality, journalists, scientists, and a range of other newspaper, university and government staff are discussing how to make their collaboration work. At a certain point, a news marketer addresses a crucial issue: "Where does the analysis stop and where does the interpretation begin, that is the greatest concern right?". In her intervention, the marketer makes the distinction between a scientific analysis and a journalistic interpretation and touches on a number of vital questions in the study of journalist-scientist interactions: what interpretation means, whose interpretation can be found in the news, and what that implies for the way science is covered in the news (Armon, 2016; Brüggemann and Engesser, 2017). This paper critically examines the notion of interpretation and interpretive practices within journalist-scientist interactions in the news production process. Although there has been ample research into science news (Schäfer, 2012, 2017), and the relationship between journalists and scientists (Albæk, 2011; Peters, 2013), few studies have looked into actual journalist-scientist interactions in the news production process (Briggs and Hallin, 2016). News writing transforms discourse in various forms (e.g., interview notes or press releases) and from various sources (e.g., individual scientists or university press offices) "into a single narrative, framed as an authoritative account of a news event" (Van Hout and Jacobs, 2008: 67). Since a lot of traces of the journalist-source interactions in this process are missing in the final news product, this paper takes on a production-oriented perspective to get a comprehensive analysis of how these interactions shape the news (Peterson, 2001; NewsTalk & Text Research Group, 2011).

This paper investigates a Belgian citizen science project on air quality that was set up by a newspaper, university and government agency. Several journalists and scientists worked together closely over a year to organise this project and publish the results in the newspaper. I approach this case from a linguistic ethnographic perspective and focus on three meetings between the scientists and journalists in which they, respectively, present preliminary scientific results and drafts of newspaper items to each other. In these meetings, I look at how the journalists and scientists interpret scientific results, and how they actively reflect on that interpretation. With the goal of unravelling interpretation as it is occurring in action, I adopt and explore Beeman and Peterson's (2001) notion of interpretive practice as an analytical framework and look at how the actors in the dataset adapt, negotiate or reflect on routine procedures, cultural categories and social positions from the fields of journalism and science. Beeman and Peterson claim that journalists are "socially charged with responsibilities for interpretation" (2001: 159) as journalists have a mandate to interpret events within their social context and present those interpretations in news stories. In this paper, I will show that the same could be said of the scientists in this citizen science project as they interpret their scientific results and present those interpretations to the journalists.

In the following sections, I will first discuss existing literature on journalist-scientist interactions in relation to the so-called interpretive turn in journalism. Next, an outline of the ethnographic setting and dataset is given. I go on to explore and operationalize the notion of interpretive practice as an analytical framework, followed by the findings.

Finally, in the discussion and conclusion, I will argue that on op top of actively co-constructing the news story with the journalists, the scientists attempt to create more space for their own interpretation within the news production process and in doing so limit the interpretive power of the journalist.

Journalist-scientist interactions and the interpretive turn

Studies have shown a dramatic rise in scientific news in Western media since the 1980s (Albæk et al., 2003; Bauer, 2012). This rise goes hand in hand with science journalism spilling over from the science sections to general reporting on social and political life (Wormer, 2008). Because of this, scientific experts feature increasingly as commentators on societal and political events, rather than on their own scientific work (Albæk et al., 2003). The prominent role of science and scientific experts in contemporary news media is often explained by changing media structures that allow scientists and scientific institutions to be visible on multiple media platforms, and efforts of scientific institutions to communicate with news media (Brossard, 2013; Entradas et al., 2020). Albæk (2011) connects it with the interpretive turn, which relates to journalists increasingly embedding facts within journalistic explanations, evaluations or opinions and in doing so take on a more independent approach to reporting and feature a more prominent journalistic voice in the news product (Salgado and Strömbäck, 2012). Albæk suggests that interpretive journalism leads to a greater need for scientists in the news in two ways. First, interpretive journalism often involves journalists framing news stories before contacting scientists. In these cases, scientists are needed as neutral sources to legitimize the journalist's interpretation. Second, interpretive journalism requires journalists to go beyond reporting facts and provide a broader societal context and speculation on potential outcomes. In order to provide this context, journalists call upon scientists to act as "sparring partners" who can provide the necessary expertise and background information (Albæk, 2011: 339).

The interpretive turn is often connected to the emergence of a range of alternative journalistic styles that are juxtaposed to descriptive, objective, and fact-focused reporting (Peeters and Maeseele, 2023). While it may be feasible to differentiate between these two categories of journalistic styles at the "story-level of analysis" (Salgado and Strömbäck, 2012: 154; Soontjens, 2019), one should keep in mind that journalistic styles are grounded in journalistic routines, practices, and values that tend to be more intricate and heterogeneous (Broersma, 2010; Harbers, 2016; Peeters and Maeseele, 2023). Albæk's study (2011) illustrates this complexity: because interpretive journalism is journalist-driven, journalists reach out to scientific experts more to either confirm or co-construct an interpretation. If we consider the news production process to be "a process of entextualization involving multiple actors who struggle over authority, ownership and control", it seems important that we do not take this power dynamic in the journalist-scientist interactions for granted (Van Hout and Jacobs, 2008: 60). Where journalist-source interactions tend to be fleeting in the fast-paced news industry (Tuchman, 1973), the data in this paper provides long stretches of interaction time that allow us to focus on the power dynamic between journalists and scientists as they negotiate how to interpret scientific results and present that interpretation in the news.

Ethnographic setting and dataset

This paper is part of a larger ethnographic study on a collaboration between a newspaper, university, and a government agency in Flanders, Belgium (for more on this study, see Verkest, 2021; Verkest and Jacobs, 2021). These three partners worked together closely in 2018 to set up a citizen science project in which a large number of participants measured NO_2. The results of the project were published in a special weekend edition of the newspaper two weeks before the municipal elections. Because NO_2 is a traffic related pollutant and thus important for policies on urban design and mobility, the results of the project were part of almost every political debate in the run up to the elections.

Over the course of seven months, I conducted fieldwork in which I acted as a participant-as-observer (Gold, 1958) in various meetings and in the newsroom. Although our analysis is informed by the full data-set (see Table 1 for an overview),[1] I will focus on three meetings in this paper.

These meetings were selected for two reasons. First, they were the only meetings in which employees from all participating organisations were present. The second reason is that next to practical conversations (e.g., when to send out newsletters to participants), they contained substantive discussions on the scientific results and how those results should be presented in the news. In these meetings, scientists would present some of the preliminary results and conclusions. Closer to the publication of the results, storylines and angles for news items about the results were discussed and the journalists and other newsroom staff presented drafts of how the results would be visualized. These meetings proved to be sites of negotiation and reflection concerning the way the scientific results are interpreted and how that interpretation should be presented in the newspaper, which makes them highly suitable for our research question.

Table 1. Dataset.

Dataset acquired during fieldwork		
Fieldwork	Method	Data
7 meetings	Participant-observation	Fieldnotes, audio recordings and transcripts
7 interviews conducted by journalists	Participant-observation	Fieldnotes, audio recordings and transcripts
5 days in the newsroom	Participant-observation	Fieldnotes, audio recordings and transcripts
12 interviews with key players of the project	Semi-structured interviews about the collaboration and project	Audio recordings and transcripts
23 internal documents	Documents received from participants or during meetings	Slides, briefings, emails, campaign copywriting documents
204 news items published by newspaper	News items related to /about the project	News articles (on- and offline), videos and podcasts

In order to fully understand the upcoming analysis, I will provide some clarifications concerning a number of key players in the meetings. See Table 2 for a clear overview of the participants of each meeting.

- Uni-scientist-1 is the lead scientist on this project and hosted the meetings together with his colleagues. The meetings took place in university classrooms. This spatial element will prove to be important in the upcoming analysis.
- Journalist-1 initiated the citizen science project because – so she mentions in an interview - she "kept bumping into the observation that we just don't know how the air quality is". She referred to herself as a "project journalist", because she was able to write longer stories or series of stories for the weekend edition of the newspaper.
- The independent research organisation is specialised in computer models related to (amongst others) air. Although this organisation was not a main partner, they were present in most meetings and appeared crucial in the analysis of the data.

Table 2. Participants per meeting.

	Partner meeting 1	Partner meeting 2	Partner meeting 3
Length	2 h 33 m	3 h 8 m	2 h 38 m
University	Uni-scientist-1 Uni-scientist-3 Uni-PR Uni-SciComm	Uni-scientist-1 Uni-scientist-2 Uni-scientist-3 Uni-scientist-4 Uni-PR Uni-SciComm	Uni-scientist-1 Uni-scientist-3 Uni-scientist-4 Uni-PR Uni-SciComm
Newspaper	Journalist-1 News-marketer-2 News-project-1	Journalist-1 Journalist-2 News-marketer-1 News-marketer-3	Journalist-1 Journalist-2 News-graphic-1
Government agency	Gov-staff-1 Gov-scientist-1 Gov-PR	Gov-staff-1 Gov-scientist-1 Gov-PR Gov-SciComm	Gov-scientist-1 Gov-PR (online)
Indepedent research organisation	Indep-scientist-1 Indep-scientist-2 Indep-scientist-3 Indep-PR	Indep-scientist-1 Indep-scientist-4 (online) Indep-scientist-5 Indep-PR	Indep-scientist-1 (online) Indep-scientist-3 (online)

Analytical framework and methodology

Beeman and Peterson (2001) developed the concept of interpretive practice as a way to analyse interpretation in everyday interactions. They describe interpretation as the way in which "people make sense out of situations in ways that make sense to others" (2001: 159). This notion of interpretation is grounded in the human nature to internalize "other's viewpoints into one's own sense of self in the twin process of interaction and interpretation" (Zienkowski, 2017: 4). The other could be a conversation partner in a face-to-face interaction, but equally so a broader community of newspaper readers. In order to uncover these processes of interpretation within the context of the news production process, this paper takes on a linguistic ethnographic approach. For this, I draw on a long history of newsroom ethnographies, and media linguistics exploring how situated language use in the newsroom and beyond shapes the news product (Burger, 2018; Cottle, 2007; Cotter, 2010; NewsTalk & Text Research Group, 2011). This allows us to extract interpretive processes from the messy reality of everyday social interaction and embed them within a broader social, cultural, economic, and political context (Beeman and Peterson, 2001).

With that same goal in mind, I adopt Bourdieu's field theory. This is particularly important in the context of the collaboration investigated in this paper, as it positions the scientists and journalists in relation to each other and to their respective fields (Bourdieu, 2005). Taking a linguistic ethnographic perspective and engaging with the data through a field theory lens thus allows us to investigate "the small stuff of everyday interaction" and connect it to how that is "coloured, patterned and regimented by the 'big' stuff of culture, social structure and history" (Blommaert, 2015: 93).

In order to study interpretation in vivo, Beeman & Peterson look at interpretation as practice. They define interpretive practice as instances of interpretation in which "routine procedures, cultural categories, and social positions come together" that often occur within interconnected and overlapping fields (Beeman and Peterson, 2001: 159). I set out to investigate to what extent the three concepts and how they are adapted, negotiated or reflected on in the dataset prove useful in operationalizing the interpretive practices of the journalists and scientists in their interaction. For the purpose of this analysis, I have constructed these three concepts as follows:

- **Routine procedures** are related to individual and organizational routines consisting of behavioural patterns or organizational rules (Becker, 2008). Think of short deadlines for journalists or presenting at conferences for scientists.
- **Cultural categories** are inspired by the work of McCracken (1986) on cultural meaning. According to McCracken, cultural categories are the invisible scaffolding used to segment our world into comprehensible parts. Members of a culture are continually (re)constructing this scaffolding in interaction. They are guided in this segmentation by so called cultural principles. To apply this to our dataset: the cultural principle of 'falsifiability' could be what allows somebody to assign something to the cultural category of 'science', while the cultural principle of 'editorial freedom' could be what makes somebody view something as 'journalism'.

- **Social positions** are understood within the context of Bourdieu's field theory as the position that social agents can take with respect to the field they are in and/or other fields (Bourdieu, 2005). Bourdieu's concept of habitus uncovers how the historical and social environments in which the agents in the field are formed and how the position of the agents in the field are embodied in everyday actions, perceptions and behaviours (Benson and Neveu, 2005). Applied to this dataset, social positions cover both instances in which they become apparent (e.g., a journalist interviews a scientist) and instances in which the agents address their own or the other's position (e.g., "as a scientist/journalist, I…").

The dataset was first inductively coded by searching for prominent themes and patterns in the data. In a subsequent phase, the data were coded according to the three concepts as operationalized above. Finally, the two sets of codes were aggregated to locate new or confirm previously found themes and patterns in the data and accomplish a rigorous analysis (Fereday and Muir-Cochrane, 2006). All coding was done using NVivo.

In the following section, I show how the concepts of routine procedures, cultural categories, and social positions are adapted, negotiated or reflected on within the collaboration. Although the findings are neatly structured according to these three concepts, it will become clear that they overlap and set each other in motion throughout the data.

The extracts used in this paper were chosen as "apt illustrations" of patterns found in the data (Gluckman, 1961: 7). They are translated from Dutch. The transcription glossary can be found in the appendix. The data have been anonymized upon request of the actors in the citizen science project.

Findings

Routine procedures

The scientists and journalists bring their own routine procedures to the table. Some of these routine procedures become apparent as scientists mold their scientific results into a suitable format for the journalists in the room. This was especially visible in a presentation given by one of the university scientists about preliminary results. During the first part of the presentation, the scientist explained the analysis and accuracy of the results. He clarified key concepts in the methodology and analysis at a slow pace, and frequently interrupted his presentation with comprehension checks towards the audience. In the second part, he presented the results of the project and takes on a different style:

Extract (1)

1 Uni-scientist-1	for the for the um (.) the second lowest value ((…)) we find (0.4) here on the
2	military domain and (.) the happy owner of the second lowest value is Naya
3	from
4 Collective	hehehe
5 Uni-scientist-1	and the lowest value in Flanders we find in Remersdaal in Voeren (0.3)

(continued)

(continued)

6	°° that's 10.3°° (1.7) and (.) I = I'll ask you if that (.) should be *luchtkwaliteit* or
7	*qualité d'air* that you should say there ((…)) hehe
8 Collective	hehe
9. Uni-scientist-1	but so there THE MOST the most eastern (.) um::: measuring point in (.) in
10	Flanders is also the lowest point so (3.3) THE HIGHEST VALUE is also in
11	Limburg (3) ((…)) and um = we see there (.) in an oasis of green we see two
12	dark points on the (.) that's a um two-lane way where we have a a
13	crossroads (.) and um the combination of busy traffic with stop and go at the
14	traffic lights makes
15 Collective	((gasping))
16	Uni-scientist-1 that we have two (0.4) um = values there that are higher

By starting with the second to lowest value (line 1) and then continuing to the lowest (lines 5–8) and highest values (lines 10–16), Uni-scientist-1 attempts to create suspense. The fact that the highest amount of NO_2 was found in Limburg, known for its heathlands and forests, was a surprising scientific result. He emphasises that surprise in lines 10 and 11 by adding long pauses and raising his voice. The surprise is further highlighted by contrasting the "the dark points" with the "oasis of green" (lines 11 and 12). The surprise appears to be confirmed by the audience's reactions (line 15). Earlier he had added humorous 'headline-esque' catchphrases by connecting the results to current events: in line 2 he mentions that the "happy owner" of the second lowest point "is Naya", the first wolf to be spotted in Flanders in decades. Similarly, in lines 6 and 7 he links the results to linguistic tensions in Belgium by jokingly asking if the journalists will use the Dutch or French word for air quality when referring to a bilingual area.

One could say that the presentation styles used by Uni-scientist-1 match the content: a technical explanation of how an analysis is conducted is perhaps served best with an educational style, while results can be popularized more easily. One could also argue that by presenting the scientific results in a ranking of lowest to highest polluted areas, Uni-scientist-1 adapts his style to a format that is very suitable for news coverage. In doing so, he exhibits a metapragmatic awareness of forms of speech socially recognized as indexical of the journalistic field (Agha, 2007; Verschueren, 2000). Metapragmatic awareness relates to language about language and is used by speakers with varying levels of consciousness (Verschueren, 2000). Having a certain amount of metapragmatic awareness allows speakers to strategize on the wording of their messages and anticipate the consequences of their discourse in a certain context (Caffi, 2016). The way Uni-scientist-1 switches his presentation style to incorporate headline-esque catchphrases, humour, and suspense when talking about the results indicates that he recognizes 'the language of journalism' and aligns himself with the journalists in the room (Agha, 2007; Blommaert, 2015).

Not every scientist displays an equal amount of metapragmatic awareness, however. This was made clear when the newspaper staff first presented drafts of how the results would be visualized in the newspaper. This presentation resulted in a discussion, written down in the field notes as "the asterisk argument". During the second half of what had

already been a long and rowdy meeting, the marketer and graphic designer of the newspaper handed round printed newspaper sheets containing the results, visualised in maps of cities or regions. At this point, one of the scientists brought up a longstanding issue: most scientists found the headline "how healthy is the air in Flanders?" to overgeneralise the actual scope of the research project, which was about NO_2 and not air quality as a whole. Extract (2) shows a sliver of that lengthy discussion:

Extract (2)

1 Gov-staff-1	the information is far apart so ((…)) how should you interpret that as an
2	outsider (.)I'm just looking at it with as (0.3) someone who doesn't know
3	uh::: what NO_2 is wh = who doesn't how how health = uh::: is estimated and
4	then I have to find it somewhere at the bottom ((…))
5 Gov-scientist-1	ok either way (.) an asterisk (0.3) it triggers peoples' curiosity it's like (.) how
6	healthy(.) asterisk (0.4) guaranteed people will read that
7 Uni-scientist-1	yes ok (0.6) an asterisk (.) >can we add an asterisk< ((points to journalists))
8	(1.7) and then the asterisk refers to
9 Collective	((no more turn-taking, rowdy discussions))
10 Journalist-1	but no hm an asterisk in a headline I can't help it but that's:::
11 Journalist-2	but asterisks don't work in headlines ((…)) that will be very childish and that's unprofessional come on ((…))
12 Gov-scientist-1	no matter how hard you clarify your headline
13 Gov-PR-1	yes
14 Gov-scientist-1	is wrong
15 Gov-PR-1	it's misleading ((…))
16 Uni-PR-1	the headline is something teasing right I think right ((…)) it should uh::: attract
17	attention right cause (0.3) if every wrong headline needs to be removed from
18	the newspaper then there wouldn't be any more headlines
19 Gov-scientist-1	we are scientists here right I mean

In the draft, the overgeneralization in the headline was nuanced by a clarification in a box at the bottom of the page. As one of the government staff members points out, however, an unknowing reader might not see this box (lines 1–4). In an attempt to address the issue constructively, Gov-scientist-1 suggests to add an asterisk to the headline. Footnotes and asterisks are a common technique to add nuance to scientific papers, but are highly unusual in a printed newspaper. Perhaps a bit taken aback by the hands-on approach of the others, the newspaper staff remains fairly quiet during these discussions. When Uni-scientist-1 takes on the voice of an auctioneer, however, and tries to 'sell' the asterisk to the journalists (line 7), they speak up and veto the idea (line 10-11). This eventually leads Gov-scientist-1 and Gov-PR-1 to turn their backs on the headline entirely, stating that no clarification can correct a misleading headline (lines 12–15). Finally, the university PR officer – who remained quiet in most of the meetings –steps in and explains the nature of headlines to the scientists (lines 16–18).

Although scientists are sometimes offered the chance to review news items, this is often seen as a favour granted by the journalists and revisions made by scientific experts

can be seen as a sign of struggle for power over the final news product (Jaspers, 2014). Keeping this in mind, we should be aware of the uniqueness of the situation in which scientists not only get to revise the text of a news article but also the layout and graphics. The unique situation in extract (2) shows how routine procedures of the different actors collide. This collision not only makes them explicit, but shows how certain interpretations and their representation in the newspaper (are these results about air quality or about a traffic related pollutant) are rooted in routine procedures. Typical for discussions about routine procedures is that they are almost always intertwined with or end up in discussions about cultural categories and social positions. In extract (2), for example, we see Gov-scientist-1 going from thinking about a possible headline (lines 5–6) to reverting back to his role as a scientist by literally reminding the PR officer that "we are scientists here" (line 19). In this sense, talk about routine procedures can be seen as the tip of the iceberg with more profound arguments about social positions and cultural categories underneath. In what follows, we will see how these two concepts continuously emerge from talk about routine procedures.

Cultural categories

Throughout the meetings, it is clear that both the scientists and journalists are aware of certain cultural categories that are important in the other's field. Concepts such as objectivity, authority, bias, citizen science and academic or editorial freedom pop up during conversations about possible news stories but equally so in conversations about software or other practicalities. Extract **(3)** shows a part of a discussion about which news items would be behind the newspaper paywall. What started out as a rather technical conversation about buttons and links – to be situated at the level of routine procedures - ended up in a discussion about some of the foundations of journalism:

Extract (3)

1 Gov-staff-2	I am trying to gain clarity on what kind what kind of information we should
2	expect there right
3 Uni-scientist-1	there is there is the ((newspaper)) file
4 Gov-staff-2	yes
5 Uni-scientist-1	and in fact there the newsroom of ((newspaper) has editorial independence
6	(0.9) but because this is about a file in which our scientific results are
7	presented the: the scientific results of ((the project)) it makes sense that we
8	um (0.7) that there is feedback on that = and that we w = we offer them well
9	that we discuss that already ((…)) and that we make the: main lines of the
10	the: core messages clear (.) right (0.8) um so that tha:t (1.9) that that is a
11	and um a a two-way process: in the sense o = that we can give feedback on
12	that and (.) that we (.) which with respect you also have editorial
13	independence of course

(continued)

(continued)

14 Journalist-2	mm
15 Uni-scientist-1	so we have to [really figure out]
16 Journalist-2	[that's it]
17 Uni-scientist-1	what what
18 Journalist-2	there is always (.) the journalist here is holding >whether that's me or
19	someone else< the pen you know of course we won't write things that have
20	not been sen = you know about which you say that can't be

When Gof-staff-2 wonders about the "kind of information" he should expect behind the paywall (lines 1–2), Uni-scientist-1 constructs a new method of working within the collaboration, incorporating a key journalistic cultural category: editorial independence (lines 5–13). Although he starts off by stressing editorial independence, an immediate "but" and "our scientific results" (note the possessive pronoun) mark the boundaries of that independence (line 6). He goes on to stress that there should be feedback and that "we", the scientists, "make the main lines of the core messages clear" (lines 8–10). Journalist-2 steps into the conversation, marking her own boundaries by emphasizing that "the journalist is holding the pen", but at the same time leaning in to the proposed MO by stating that they "won't write things" that have not been approved (lines 18–20).

Extract **(3)** shows Uni-scientist-1 and Journalist-2 constructing a new way to interact, setting up new boundaries and negotiating cultural categories and social positions. By doing this, they establish limits for who has the authority to interpret scientific findings and select the main takeaways that will end up in the news.

The way Uni-scientist-1 lays out new ground rules for working together also illustrates exactly how much this collaboration deviates from what he considers to be normal journalist-scientist interaction. This 'abnormality' was mentioned explicitly on a number of occasions. This was the case in one of the meetings in which preliminary results were presented and several scientists raised questions about the analyses, dataset and terminology presented by their peers. Behaviour that would be routine procedure at any scientific presentation was now palpably uncomfortable as every time a question was raised, one of the other scientists or government staff members claimed this should be discussed amongst the scientists separately. Towards the end of that meeting, Gov-staff-1 raised the issue:

Extract (4)

1 Gov-staff-1	in the logical order it is that eh (.) first let the scientists work (.) to see (.)
2	what are the most important conclusions now ((…)) and then it is the
3	next = uh step is then to how (0.4) do you make the ((translation/transfer)) to
4	a broader public but that also is I think something that scientists should
5	guard along with if that is formulated correctly ((…))
6 News-marketer-1	where does the analysis stop and where does the interpretation begin that is
7	the greatest concern right or that's what I'm assuming
8 Gov-scientist-1	some things are are pretty: (0.8) ri-you cannot interpret wrong but (0.9)

(continued)

(continued)

9	other things ((…)) yes as a scientist you look at it differently (.) and and (0.8)
10	you take a lot more into account and it is important that you give that (0.2)
11	scientific framework instead of giving the results just (.) bone-dry because
12	then it will go wrong actually uh (3.9) but well I think that we should indeed
13	look at it on Tuesday (0.2) what's what is there and what are the interesting
14	things (1.8) how (.) much those speak for themselves actually
15 Journalist-2	yes
16 Uni-scientist-1	after Tuesday: (.) I would like to have a sort of blueprint of (0.7) of w=what
17	the message is

The actors in extract **(4)** reflect on the notion of interpretation. They make distinctions between interpreting, translating and analysing. In the "logical order" of Gov-staff-1, there appears to be no mention of interpretation at all. Scientists "work" and "make conclusions" and journalists translate/transfer[2] (lines 1–4). The logical order relates to a notion of "the pure scientist" as someone who doesn't interpret findings, but discovers particular facts (Funtowicz and Ravetz, 1993) and of the journalist as a "conduit" who simply explains or translates scientific information (Fahy and Nisbet, 2011).

In her response, News-marketer-1 attempts to summarize the issue and in doing so distinguishes analysis (by scientists) from interpretation (by journalists) (lines 6–7). The "main concern", she concludes, is that it is unclear where the boundaries between that scientific analysis and journalistic interpretation lie. Gov-scientist-1 further differentiates that scientific analysis (lines 9–11): "as a scientist you look at [things] differently", "take more into account", and add a "scientific framework".

Gov-staff-1 and Gov-scientist-1 are actively setting up boundaries between science and journalism. In their "logical order", the scientists do not interpret, but discover facts, draw conclusions, and put the results in a scientific framework. Whether journalists translate or interpret, their work appears as a threat to those conclusions as their "formulation" needs to be "guarded" by the scientists (lines 4-5) and leaving the analysis of the "bone-dry results" up to the journalists will go wrong (lines 11–12). Gov-scientist-1 goes on to enforce the proposed linearity by effectively displacing the "analysis" of the results to a Tuesday meeting, attended by scientists only (lines 12–13). Interestingly, this is where the meaning of the scientific "analysis" changes into seeing "what the interesting things [are]" (line 14) and laying out a blueprint of the message (lines 16–17).

Extracts **(3)** and **(4)** show the scientists negotiating cultural categories and marking boundaries. In doing so, they create more space for their own interpretive practices: editorial independence is limited by the ownership of scientific results and a linear "logical order" is suggested in which scientists analyse first and journalists translate or interpret later. This linear order is constructed as though the scientists are not doing any interpretive work, but discover undebatable facts. One could, however, argue that analysing and contextualizing NO_2-data within Flemish urban design is a form of interpretation (Funtowicz and Ravetz, 1993). Equally so, finding "what the interesting things [are]" or making blueprints of the message **(4)** could be considered interpretive work.

In the final part of the findings, we look at how this boundary work affects the social positions of the journalists and scientists in the collaboration.

Social positions

It is perhaps a bit surprising that in a collaborative citizen science project, some of the scientists and government staff cling so adamantly to a linear relationship with the journalists. One might suspect that an intense and long collaboration would blur boundaries rather than cement them. And indeed, the fieldwork data tell us that the way some of the scientists or government staff members made strong claims to "let the scientists work first" might have been – at least in part - performative. A number of scientists did meet up with the journalist separately to discuss preliminary results and possible interpretations and thus broke this proposed linearity. Some of these separate meetings were much closer to a regular interview format and allowed the journalist to ask critical questions and lead the conversation. This way she was able to fulfil her role as journalist a lot more than in the partner meetings, which could be considered more of a home game for the scientists. Not only is giving a presentation in a classroom a routine procedure for a lot of scientists, the whole interaction starts from their prepared presentations. In this sense, the set-up of these presentations almost gets an air of very informal press conferences in which the scientists have the opportunity to present carefully crafted messages tailored to the journalists **(1)**. Looking at the data from this perspective, the linear relationship proposed in extract **(4)** cannot only be linked to certain norms within the field of science, but also to the practical setting in which these meetings took place.

As their collaboration forces the journalists and scientists to mark boundaries and negotiate ways to interact, some confusion arises about their social positions: are they still in a journalist-source relationship when they are in such an intense partnership? This confusion unfolded during a discussion about where to publish the results. The scientists wanted to put some "basic results" on the project website, controlled by the university science communicators. The journalists and newspaper marketing staff opposed this heavily, as this would entail that the information published on their news website would also be available elsewhere. It's at this point that one of the university scientists seems to forget that he is not only a partner in the collaboration, but also a source for the news items:

Extract (5)

1	Uni-scientist-2	do you as (1.2) as jour (.) I can im- (.) well (0.8) I really get the = uh dilemma
2		but (.) isn't it interesting for you as as uh journalists to be able to refer to an
3		(1.2) to an authoritative source?
4	News-marketer-1	we do that anyway
5	Journalist-2	that's what we're doing anyway right [this whole time]
6	Uni-scientist-2	[in this ca-right yes] I know that you do

(continued)

(continued)

7	that anyway but now: (1.0) you know if that information is only on your own
8	website (0.2) then you continuously have to refer: you know because there
9	won't be a report or anything yet um
10	News-marketer-1 we-the research has always been announced a = as being from three partners

Instead of publishing the results in a peer-reviewed journal first, they are immediately published in the newspaper. In extract **(5)**, Uni-scientist-2 suggests that this non-linear publication process is not interesting for the journalists as they will not have an "authoritative source" to refer to (lines 1–3). The comment left the newspaper staff briefly baffled, as they have been referring to authoritative sources (the scientists) "this whole time" (line 5).

Extract **(5)** pinpoints the double roles that the journalists and scientists are taking in this collaboration: on the one hand they are close collaborators (line 11). On the other hand, they are also journalists and sources. Even though the journalist-source relationship is not always clear in the meetings, it is enacted in the newspaper items about the results. The journalist-source relationship is a deep-seated concept within the professional norms of journalism (Berkowitz, 2008; Broersma et al., 2013; Fisher, 2018). It aligns with numerous routine procedures (such as fact checking or attribution) and cultural categories (such as independence or authority). The social positions of the journalist and their sources are dynamic and constantly negotiated in interaction (Broersma et al., 2013). Throughout the meetings, we see the power dynamic shift: although the journalists are somewhat excluded from the interpretation of the scientific results and outline of the core messages **(3 and 4)**, they are "holding the pen" **(3)**. And although the journalists don't seem to have a desire to write anything the scientists disagree with **(3)**, they do have the final say. Having no authoritative source to refer to **(5)** also means that the scientists and government staff have no way of showing where the journalistic account deviated from their own interpretations. Or, as one government staff member put it later on, to show "what the data were, how they were interpreted scientifically and how ((the newspaper)) turned this into a story". In this sense, this desired transparency concerning the different interpretive practices of the journalists and scientists can also be considered a way to regain control of the final news product.

Discussion and conclusion

The goal of this paper was to critically examine the notion of interpretation in journalist-scientist interactions, and investigate the power dynamic between journalists and scientists as they settle on how to interpret scientific results and present that interpretation in the news. A close-knit collaboration between a newspaper, university, and government agency was investigated using Beeman and Peterson's analytical framework of interpretive practice.

Our close scrutiny of situated language use has demonstrated how the three central concepts of routine procedures, cultural categories, and social positions have proven

useful in operationalizing the interpretive practices of the journalists and scientists in their interaction. In particular, our analysis of extracts **(1)** and **(2)** has shown how key interpretive language choices, like choosing a headline or ranking scientific results, are rooted in the routine procedures of both the journalists and scientists. In this collaboration, the actors not only had to familiarize themselves with routine procedures from the other fields but also adapt some of their own in order to have a smooth collaboration. As the actors adapt these routine procedures, they also conducted complex language work in negotiating and reflecting on cultural categories (extract **(3)**) and social positions (extract **(5)**) within the fields of science and journalism. Our discursive analysis of these reflections revealed the complexity of interpretive practices as journalists and scientists do not simply bring their own routine procedures, cultural categories and social positions to the table, but also come with perceptions of the other's interpretive practice and of what 'normal' interaction between the two fields should look like.

Similar to Albæk's (2011) findings discussed at the start of this paper, we see the journalists and scientists stepping out of their trusted journalist-source roles, and becoming sparring partners in a shared interpretive space. The extracts show the scientists going beyond providing data and expertise and actively co-construct news articles about the results with the journalists. As the scientists and journalists engage in interpretive sparring matches, they also struggle to define the interpretive process itself. This is most explicit in the "logical order" laid out by one of the government staff members in extract **(4)**, in which scientists do not interpret but draw conclusions and journalists translate or interpret those conclusions. By dubbing the scientific analyses and conclusions as non-interpretive, the government staff member sets forward the idea of the neutral scientist describing facts that are transferred to news media. One could argue, however, that just like the journalists, the scientists are engaged in interpretive work. Analysing and contextualizing NO_2-data within Flemish urban design and making "blueprints" of the message is a way of interpreting the scientific results. The scientists in this collaboration could be considered to be "socially charged with responsibilities for interpretation" along with the journalists (Beeman and Peterson, 2001: 159). Even more, by effectively excluding the journalists from that interpretive work, the scientists create more space for their own interpretation within the news production process. It is exactly here that we see how the power dynamic in the journalist-scientist interaction is challenged by the collaboration. Although the main journalist initiated the project to uncover the extent of NO_2-pollution in Belgium, the complexity of this issue requires her to interact or collaborate closely with scientists who are specialized in those fields. This close-knit interaction, however, also brings about a struggle over whose interpretation should be part of the final news product and limits the interpretative power of the journalist.

Collaboration, participation and engagement with different stakeholders are becoming fundamental parts of newsrooms, universities and other societal institutions (Bherer et al., 2016; Declercq et al., 2021). Although this ethos of collaboration and participation is often welcomed as a way to increase inclusivity and break down certain hierarchies, it also puts pressures on the existing practices of and relationships between stakeholders (MacGilchrist et al., 2021). The linguistic ethnographic work in this paper offers rare insights into an intense and lengthy collaboration between journalists and scientists. This

collaboration demonstrates that even when the news production process appears journalist-driven and journalists have the final say in how news items are constructed, the power dynamic between the journalists and scientists is in continuous flux throughout the process. This paper shows scientists who get an unusual amount of control in the news production process but, who, nonetheless, seem threatened by the journalists' interpretive power and attempt to increase their own. Considering the growing presence of scientists and of a great diversity of other expert voices in news media (Albæk et al., 2003; Leidecker-Sandmann et al., 2021), it appears critical that future journalistic scholarly work moves out of the newsroom and into a diverse range of scientific institutions to investigate the way their language use and interpretive practices shape news media.

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Notes

1. Different parts of the dataset have previously been analysed in various ways. for example the interviews and documents have been subjected to qualitative content analyses and thematic analyses, while the news item corpus has been studied using multimodal discourse analysis.
2. The original word in Dutch is "doorvertaling". This is a gerund coming from the verb "doorvertalen", which translates literally to "translate through" and entails both the act of translation and transfer. It implies a translation that is not multilingual, but contextual (as in this case, from a scientific context to a media context).

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Appendix

Table 3. Transcription glossary.

[And]	Overlapping utterances
=	Latching between utterances
(0.0)	Timed pause (in tenth of seconds)
(.)	A pause shorter than one tenth of a second
:	Elongation
-	Abrupt stop
Underlined	Emphasis
CAPITAL	Loud/forte speech
°°	Soft/piano speech
hh	Exhalations
he or ha	Laugh particle
wo(hh)rd	Laughter within a word
.hhh	Inhalations
>word<	Faster/allegro talk
<word>	Slower/lento talk
$word$	Smile voice
((Notes))	Analyst notes
((..))	Omission in order to safeguard anonymity of informants
((Journalist))	The names of the informants or organizations were replaced with generic terms in order to safeguard anonymity