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“The truth is not in the middle”: Journalistic norms of climate change bloggers

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1. Introduction

According to the Intergovernmental Panel on Climate Change (IPCC), “Limiting global warming to 1.5 °C would require rapid, far-reaching and unprecedented changes in all aspects of society” (IPCC, 2018). Indeed, the scientific consensus about anthropogenic climate change has become stronger over the last decades. Most studies find at least a 97% consensus amongst scientists (Anderegg et al., 2010; Cook et al., 2013). Yet, in some Western nations scepticism about the reality and severity of climate change is common (Whitmarsh and Capstick, 2018). For example, the United States (US) is fiercely politically polarized around climate change, with on one side those identifying the negative consequences of industrial capitalism and on the other side those defending the economic system from such changes (McCright and Dunlap, 2011). One possible explanation for this discrepancy between scientific consensus and divided public opinion is how media have presented climate change over the years.

Over the past decade, various studies have shown how professional journalistic norms shaped biased climate change coverage in traditional media outlets in the US (Boykoff and Boykoff, 2004, 2007). Most research focused, however, on traditional media outlets, while the media landscape is changing dramatically with the growth of new internet-based media formats (Painter et al., 2018; Schäfer, 2012). Technically, everyone with internet access and freedom of speech can publish content without being restricted to professional journalistic norms. Indeed, content about climate change is now produced by a greater variety of people in terms of education, motivation, and ideology (Moser, 2016). The climate change blogosphere is a prime example of transformed

journalism.

Climate change blogs started popping up in the mid-90s, but the blogosphere truly came alive in 2009, when the ‘climategate’ controversy unfolded over hacked emails of the University of East Anglia Climatic Research Unit. The climate discussion became heated when climate sceptics seized the opportunity to present the leaked emails as evidence that data was manipulated and climate change a hoax, while climate scientists argued that private conversation was taken out of context (Bowe et al., 2014). During this episode, many sceptics worldwide positioned their blog as the representative sceptical voice in climate policy (Edwards et al., 2011). Scientists who accept the mainstream scientific position actively blogged to correct misinformation and address the allegations made by sceptics. The years after climategate, the discussion over climate change continued. “Climate sceptics” and “climate activists” both created divergent discursive realities in their blog posts (van Eck and Feindt, 2017). Persistent polarization over climate change is manifest in the climate change blogosphere.

Climate change blogs are well known in the international climate science community. The bloggers directly and indirectly influence public discourse and political decision-making. It is difficult to quantify the impact, but the influence of blogs should not be underestimated. Popular climate change blogs can have over 700,000 visitors a month and while this is less than some traditional media outlets, their readership is highly engaged and also consists of professional journalists and political elites that feed on bloggers work as source of information (Farrell and Drezner, 2007; Lewandowsky et al., 2013). Especially climate sceptics have been credited as using blogs to their advantage (Nerlich, 2010; Pearce, 2010). In the US, they triggered several

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congressional investigations and uncovered a plagiarism case (Lewandowsky et al., 2013). The sceptical blog *Watts Up With That* won The Bloggies Award for best science blog in 2011 (The Weblog Awards, 2011). However, not only sceptical blogs are appraised. The mainstream science blog *RealClimate* was on the list of *Scientific American's* Science & Technology Web Awards in 2005 (Scientific American, 2005). *Nature* dedicated an editorial to the blog (Butler, 2004) and recognized *RealClimate* as the third most popular science blog (Butler, 2006).

The influential climate change blogosphere only spurred scientists' interest over the last years. Analyses often focus on bloggers' risk perceptions about anthropogenic climate change (climate sceptical vs. mainstream) or frames and discourses (e.g. scientific or political) (Elgesem et al., 2015; Harvey et al., 2018; Sharman, 2014; van Eck and Feindt, 2017). Earlier research scrutinizing journalistic norms revealed impediments in climate science communication via traditional media (Boykoff and Boykoff, 2007). While certain journalistic norms are firmly entrenched in traditional reporting, virtually no researchers have investigated norms in the climate change blogosphere. The current research aims to investigate impediments in climate science communication via the blogosphere, by identifying the journalistic norms that profoundly shape the selection and composition of blog content. Such research is crucial, because it not only provides insight into whether traditional journalistic norms are also honoured online or whether they are up for re-articulation (Dahlgren, 2016; Vos and Finneman, 2017), it also gives an understanding of what rules and guidelines inform the selection and composition of polarized climate change blogs. Hence, this research aims to answer the question: "What journalistic norms do climate change bloggers support?"

2. Theoretical framework

2.1. Climate blogs

The blogosphere is constantly changing and as a result a clear and consistent definition of blogs in public discourse and scientific literature is missing (Garden, 2013; Perlmutter, 2008). New forms of blogging have emerged, such as microblogging and live blogging (Kirilenko and Stepchenkova, 2014; Thorsen, 2013). This research focusses on traditional blogging, but even characterizing traditional blogs is a challenge.

Distinguishing blogs from online professional journalism by simply verifying whether the term 'blog' is applied is not sufficient, as the word has become so popular that everyone is using the word alternately (Perlmutter, 2008). Blogs can be defined based on the technical features or on social and communicative features (Garden, 2013). Definitions based on technical features focus for example on whether the website uses blog software such as *WordPress*, hyperlinks, enables comments, and views blog posts in reverse chronological sequence (Fischer, 2018; Garden, 2013; Lowrey, 2006; Matheson, 2004). However, these definitions are flawed, since traditional journalism websites can also enable these technical features, for example some online newspapers hyperlink while diary blogs do not (Garden, 2013; Herring, 2009; Lowrey, 2006). When blogs are defined on the basis of social and communicative functions, bloggers' opinionated tone or personal agenda are often highlighted as typical features (Fischer, 2018; Lowrey, 2006).

This research proposes a loose definition that recognizes the complexity of characterizing blogs and combines the technical features with the social and communicative functions. We define climate change blogs as websites that primarily and frequently produce content about climate change with dated entries in a reverse chronological order and possibly a comment section. Climate change bloggers are defined as people who regularly edit or write blog posts on climate change blogs. Many characterisation frames are being used in scientific literature to define the opposing opinions in the climate debate (Howarth and Sharman, 2015). In this research, climate sceptical bloggers are defined as the bloggers who are either doubtful about the existence, causes, or

consequences of climate change (Rahmstorf, 2003) and climate mainstream bloggers are defined as the bloggers who endorse the scientific consensus on anthropogenic climate change (ACC). By applying either the term 'climate deniers', 'sceptics' or 'contrarians', there is a risk that it oversimplifies and increases polarization within the climate debate. Nevertheless, we chose the term 'sceptic' for the sake of the argument, but with the critical note that scepticism forms an integral part of the scientific method and that the phrase is therefore misapplied in the context of this research (O'Neill and Boykoff, 2010).

2.2. Journalistic norms

By the late 19th and early 20th century, journalists came to a general agreement about what constituted news judgment and newsworthiness (Lazer et al., 2018; Vos and Finneman, 2017). Journalistic norms are underlying rules or guidelines for making rapid and consistent news content decisions (Bennett, 1996). However, not only journalistic norms influence the selection and composition of news, and in this case blogs. Media content is influenced by several factors at the micro, meso, and macro level, i.e. "individual-level professionals and their routines, the organizations that house them, the institutions into which they cohere, and the social systems within which they operate and help maintain" (Reese and Shoemaker, 2016, p.390). Nonetheless, journalistic norms provide an explanation for patterns across reporting, as particular journalistic norms are followed by most journalists, which leads to standardization in news content (Bennett, 1996).

Boykoff is the researcher who primarily should be credited for his work on how traditional journalistic norms shaped biased climate change coverage (Boykoff and Boykoff, 2004; Boykoff, 2007a,b; Boykoff and Mansfield, 2008). Boykoff and Boykoff (2007) discuss how traditional journalists' adherence to the norms 'personalization', 'novelty', and 'dramatization', 'authority-order', and 'balance' led to coverage about dueling climate scientists and considerable scientific uncertainty during the end of the 1990s and early 2000s in the US.

Journalistic norms shape the selection and composition of content. The 'personalization' norm refers to journalists' focus on stories that emphasize the human-interest aspect of individuals' trials and tribulations in favor of structural or institutional analyses. The 'dramatization' norm favors controversy and an immediate sense of excitement over continuity in society and past or future conflicts. The 'novelty' norm clarifies journalists' focus on news that is fresh, original, and new in favor of repetition and long-term analyses. If journalists follow the 'authority-order' norm, they consult authority figures who reassure order. But when authorities are in disagreement the 'balance' norm prevails, when journalists pay roughly equal attention to both sides.

More recent research shows that traditional journalists have radically redefined the component of balanced climate change reporting (Hiles and Hinnant, 2014). Coverage in the US, United Kingdom, Germany, Switzerland, and India has shifted towards interpretative journalism, in which journalists actively contextualize and evaluate climate sceptic voices in line with the mainstream scientific perspective (Boykoff, 2007; Brüggemann and Engesser, 2017, 2014). In this research, we dub this type of reporting as the 'contextualization' norm. Thus, the literature focusing on traditional climate change reporting puts forward the following norms: personalization, dramatization, novelty, authority-order, balance, and contextualization.

However, these journalistic norms are identified for professional journalists working for print media and television, while increasingly more content is produced by others. Professional journalists claim their authority by emphasizing the collective character of the professional journalistic enterprise and their support for journalistic norms (Örnebring, 2013). Indeed, external control over bloggers usually comes from a loose, fluidly structured collective that seem not bound to a particular set of normative priorities (Singer, 2007). Nonetheless, bloggers who view their work as a form of journalism tend to have journalistic motivations and support professional journalistic norms

(Gil de Zúñiga et al., 2011).

Then the question is what journalistic norms shape bloggers' news selection and composition of content. Singer (2007) explains that truth and transparency are two central normative aspects to journalists' and bloggers' ethical codes, although they define and express it differently. Most journalistic conceptualizations of truth are based on enlightenment philosophers' definition of truth: "what is verifiable, replicable and universal" (Patterson et al., 2018, p.25). However, this conceptualization is challenged by postmodern notions, which bloggers are committed to (Singer, 2007). They rather perceive truth as the result of discourse that is collectively created instead of a prerequisite (Singer, 2005). Bloggers highly value transparency, as a pathway to achieve truth (Singer, 2007). Bloggers can be transparent in their blog posts if they explain the blog's mission, reference sources, publicly correct mistakes, disclose conflicts of interests, and note the use of potentially biased sources (Blood, 2002; CyberJournalist.net, 2013). It remains unclear, though, whether climate change bloggers also support the norms truth and transparency.

This research aims to identify whether and how climate change bloggers support the journalistic norms of personalization, dramatization, novelty, authority-order, balance, contextualization, truth, transparency, and possibly other norms that are not put forward in scientific literature yet. Table 1 provides an overview of the journalistic norms identified in scientific literature with a complementing definition that we use as starting point for the analysis.

3. Methodology

Climate change bloggers' journalistic norms were identified on the basis of semi-structured interviews. While interviews are subject to obtaining socially desirable responses that may differ from actual behaviour of the interviewees, they do identify the bloggers' arguments and rationalizations for selecting and composing climate change blog posts. The research followed a grounded theory approach with the journalistic norms of the theoretical framework (see Table 1) as synthesizing concepts.

3.1. Sample

A group of 47 interviewees was selected using purposive and snowball sampling. Bloggers from company- and NGO blogs were excluded. Climate change blogs and bloggers were identified via Google, blog rolls, and recommendations of other interviewees. They were all approached via email or, in case no email address was provided on the blog, a comment was posted to get in touch via email. In total, 31 climate change bloggers responded to the email invitation of whom 27 accepted the request to be interviewed and actually participated (see overview in the Appendix).

The aim was to create a sample that was diverse (taken into account the inclusion/exclusion criteria), in order to capture the great variety of climate change bloggers that the internet knows. The final sample of interviewees consisted of bloggers that edit or write blog posts for

varying types of climate change blogs, including blogs in which science, politics, personal experiences, and other issues are subject of discussion. The authors categorize the bloggers as follows: six climate sceptical bloggers and 21 climate mainstream bloggers. They were from different countries, namely The Netherlands (6), US (5), UK (5), Australia (2), France (2), Canada (1), India (1), Ireland (1), Italy (1), Norway (1), Poland (1) and Sweden (1). It was attempted to include climate change bloggers from other continents, but this proved to be a challenge as no climate change blogs that met the definition were identified in these continents (i.e. Africa, South-America).

3.2. Data collection

Except of one interview that was conducted via telephone, all interviews were conducted by the first author via Skype or Google Hangouts, which are online conversation tools. It was expected that bloggers are used to operating from their computers and therefore felt safe to express their thoughts and feelings by doing the interview via these tools (Janghorban et al., 2014). The conversations were video and/or audio recorded with the permission of the interviewees. All of the interviews were conducted between the 21st of September and 7th of November 2018. On average, the interviews lasted 61 min, ranging from 34 to 130 min. The interviews were semi-structured, which allowed the interviewer and interviewee to deviate from the topic list and explore issues they felt were important in a conversational manner (Longhurst, 2009). First the bloggers were asked to introduce themselves and their blog, followed by questions about their training, expertise, blogging style, and role in society. Subsequently, bloggers were interviewed about their journalistic norms. Probing questions were related to criteria for news selection, shaping of content, and climate change reporting challenges. After that, other norms that the bloggers did not formulate by themselves were discussed as well. These norms included the eight journalistic norms that were identified in the literature (see Table 1) with complementing follow-up questions.

3.3. Data analysis

All of the interviews via the online conversation tools were transcribed and coded in ATLAS.ti (version 7.5.18). The interview via telephone was not transcribed as the audio was inaudible, hence, notes that were made directly after the interview were coded instead. Separate codes were deductively created for the eight norms that were identified in the literature (see Table 1). In addition, new codes were created for norms that were inductively identified during the coding process. After coding, all the text of individual codes was analysed to identify how many interviewees provide support for specific statements (Longhurst, 2009).

The interviewees were offered the opportunity to validate the statements that are used in this article, to ensure that the interviewer interpreted the results correctly. Besides a few interviewees who slightly changed wording without changing the quote's intended meaning, only one interviewee made an addition to the quote to

Table 1
Overview of journalistic norms identified in scientific literature.

Journalistic norms	Definition
Personalization	Coverage should emphasize the human-interest aspect of individuals trials and tribulations
Dramatization	Coverage should focus on controversy and give an immediate sense of excitement
Novelty	Coverage should be fresh, original, and new
Authority-Order	Coverage should focus on authority figures who reassure order
Balance	Coverage should provide roughly equal attention to both sides of the story
Contextualization	Coverage should contextualize and evaluate climate sceptic voices in line with the mainstream scientific perspective
Truth	Coverage should be the result of discourse that is collectively created
Transparency	Coverage should explain the blogger's mission, reference sources, publicly correct mistakes, disclose conflicts of interest, and note the use of potentially biased sources

Table 2
Clarification of labels.

Label	Amount of interviewees
All	27 interviewees
Most	20–26 interviewees
Some	6–19 interviewees
A few	1–5 interviewees
None	0 interviewees

provide more context and one interviewee expressed the wish to remain anonymous.

4. Results

Some interviewees explain that they are not consciously supporting particular journalistic norms when they select and compose content. Blogging is a pragmatic endeavour. Nonetheless, the interviews helped them to reflect on their practices and explicate their own set of journalistic norms. Adam Corner who writes blog posts for *The Guardian* & *NewScientist* comments: “You don't realize that lots of norms are there, you just follow them. But I think there are some clear patterns that I've been applying through the different blogs that I've written.” The interviewees discuss that their journalistic norms are determined by their journalistic training, scientific norms, personal norms of being a decent human being, or legislation.

The journalistic norms that are identified in the literature (see Table 1) are first presented, followed by the journalistic norms clarity and decency that were inductively identified. Table 2 clarifies the labels that we use to indicate how many interviewees provide support for respective statements.

4.1. Personalization

Some interviewees support the traditional interpretation of personalization by linking the science to readers' personal lives, in order to reduce the psychological distance. Ranjan Panda of the blog *climatecrusaders* comments: “I always try to focus on how climate change is impacting the majority of people, the poor, and the marginalized”. Interestingly, the interviewees also give other meanings to the personalization norm, by sharing stories about themselves and writing about what personally interests them.

Half of the interviewees tries to personalize their blog posts by sharing stories about themselves, in order to bring the human aspect into the story. Hans Labohm, author and editor of the blog *Climategate.nl*, comments: “I have recently urged several authors to tell a personal story, so that it is not only about science, problems and issues. They can write about what they have experienced and how it affects their personal lives and how they have become climate sceptics.” A few interviewees share in their blog posts personal stories about the challenges of living a sustainable life. Jelmer Mommers of *The Correspondent* explains: “The debate should not be too technocratic. People need to be able to relate to the challenges that come with living a sustainable life. It is human to experience challenges and we should be able to discuss this.” A few interviewees discuss how they want to popularize science by showing the human being behind the research. However, the other half of the interviewees are not sharing personal stories, as they mostly focus on the science. Nonetheless, a few interviewees express the wish that they could write more personally.

Another interpretation of the personalization norm relates to the selection of content. Some interviewees write about what personally interests them. A few interviewees argue that it is their intuition that is decisive in what they write about. Arnaud Delebarre of *Le blog de Arnaud Delebarre* discusses: “It's intuition. At one moment, I'm thinking about a blog post for quite some time and at the end, I'm preparing one day a post on another subject. So, it's completely unpredictable.” The

interviewees explain that the selection process about what to write is pragmatic. Their mood and time available are highly influential factors in this process.

4.2. Dramatization

Most interviewees discuss how they try to capture the audience's attention by supporting the dramatization norm. They try to give the audience an immediate sense of excitement, for example by having a great headline. Similar to the traditional understanding of the norm, some interviewees look for conflict to excite the audience, but they also use other strategies. That is they use humour or thrilling messages to engage the audience or try to take them on an adventure.

Some interviewees look for conflict, for example in science. Judith Curry comments: “I'm not interested in stuff we already know. It's really the knowledge frontier or places where people disagree.” Adam Corner explains: “I think the conflict that I bring in is a classic norm. It's like contrasting two things. I am often being critical of something that's happened or upcoming.” A few interviewees argue that they are not looking for the conflict, but that they try to be sharp. Ken Rice of the blog *...and Then There's Physics* explains: “I think I now know how to write posts that can provoke a reaction and get lots of comments and views. In particular, if you highlight a disagreement with some other people. However, I don't think this is all that constructive, so have mostly tried to avoid it.” However, a few interviewees mention they prefer to create dialogue rather than debate.

Next to that, a few interviewees try to use humour to engage the audience. They feel that humour entertains the audience and makes the blog posts less boring to read, and simultaneously, less boring to write. Peter Sinclair says: “Occasionally, I hear messages from people like, ‘Boy, thank you. That really made me laugh.’ Or, ‘This was an illuminating thread. Thank you.’ I'm constantly gratified when I see that, especially after a series of particularly snarky or tough posts.” Another interviewee who wishes to remain anonymous discusses: “The most fun blog posts are the ones in which a humorous approach is used to criticize someone.”

A few interviewees send out thrilling messages. Geoff Beacon of the *Brussels Blog* says: “My approach is ... I'm afraid to say it, ‘Look, you stupid bastards, what you're doing! Look at this stuff happening! What are you gonna do about it?!’ I know that's not necessarily very effective, but I'm just hoping a few people will notice.” However, a few interviewees also strongly oppose fear-inducing messages. One interviewee who wishes to remain anonymous comments: “I am outrageous, emotional, when I notice that children are frightened about the future.”

A few interviewees try to take the audience on an adventure in their writing. Willis Eschenbach who regularly writes for *Watts Up With That* says: “In my scientific writing, I like to bring people along on a scientific trip of adventure. To give them some inkling of the joy of voyage of scientific discovery. Going where scientists haven't gone.” Likewise, Jakub Malecki who is a glaciologist and runs the blog *Glacjoblogia* reports about his adventures at the glaciers: “I go to these glaciers year-by-year and take photographs of them in intervals from exactly the same spot to show people how they are changing over time. That helps to show people we are losing the ice and this is bad.”

4.3. Novelty

Most interviewees support novelty as a norm, but interpret it differently. They support the traditional understanding of novelty, in which coverage is fresh, original, and new, or they support coverage that is up-to-the-minute. Nonetheless, there is also critique that focuses on the traditional interpretation.

Half of the interviewees discuss how every blog posts needs to contain new information. Johan Lorck of the blog *global-climat* comments: “I noticed that when you write something new, something which you don't expect is often what people are most interested in.” A few

interviewees use a new angle or frame to make it novel. Rasmus Benestad of the blog *RealClimate* discusses: “You could tell a story about an old item. It could also be about something that happened a long time ago, being revisited ... or in light of new knowledge. But to repeat things that everybody says, I find that really boring”. Some interviewees aim to link the science to news and current affairs. John Gibbons of the blog *ThinkOrSwim.ie* explains: “You take your opportunity, and you have to, to use the window of extreme weather to explain why climate change is such a risk.”

A few interviewees are also critical of providing content that focuses on incidents and instead favour coverage with long-term analyses. Jelmer Mommers argues: “If there’s an extreme hurricane, then someone asks whether that is related to the warming. I believe that what I do is actually fundamentally different. The starting point is one of concern and a journalistic curiosity about how climate change is developing and our response to it.” Michael Tobis of *Planet 3.0* even argues that explanations of how climate change works need to be repeated over and over, until people understand it. Gavin Schmidt of the blog *RealClimate* comments: “Most of the coverage of new articles is the background of the story; not the actual discovery. The actual discovery is often not actually that much of a discovery. It totally fits in with everything else. I guess this is where it’s different from journalism. We’re not looking for the front page.” The suggestions of these interviewees that reporting should focus on long-term analyses and repeat messages might provide a basis for new norms.

A few interviewees discuss how blogging provides them with the opportunity or demands them to be up-to-the-minute. Willis Eschenbach explains: “If I see something that’s an issue today out there in the climate world and I want to research and do an article for a science journal, it won’t appear for six months if I’m lucky. But I can respond to it in three days on Watts Up With That while it’s still bubbling.” Gavin Schmidt adds: “At the beginning, we tried to be up to the minute. Something would happen and we had to be the first feed, and then people would say, ‘Oh! What did *RealClimate* say about this?’ And so, there was a pressure to be very reactive, in particular when there was this big thing called climategate.”

4.4. Authority-order

The interviewees regard ‘authority’ and ‘order’ as two different concepts, since they do not agree that authorities necessarily should reassure order. They perceive ‘authority’ as a norm in which coverage should focus on authorities and ‘order’ as a norm in which coverage should reassure social order in favour of social chaos.

All of the interviewees give authority to particular scientists and scientific institutions and a few to particular media organizations and civil society organizations that are in line with their ideas about ACC. However, which scientists and scientific institutions are regarded as authoritative differs per interviewee. All of the interviewees, who accept the mainstream scientific perspective of climate change, generally regard the IPCC and similar scientific institutions as authorities in the field. Jelmer Mommers explains: “At a certain point, you know which scientists work for institutions that are not paid by the fossil fuel industry. On the basis of these criteria, you decide whether you find a source reliable. But, the reputation of certain institutions also plays a role.” A few interviewees explain that they focus on authorities that urge people to act upon climate change. John Gibbons discusses: “What I’m looking for is a science report that’s saying ‘We need to act.’” Climate sceptical bloggers discuss that they primarily regard scientists and their institutions as authorities, if they conduct in their opinion solid research. Some interviewees regard themselves as authorities. Michael Tobis responds to the question whether he would use NGOs or politicians as sources the following: “My ideal is that they would use me as a source, not the other way around.”

The bloggers are divided about whether the norm ‘order’ is a good norm to support. The climate sceptical bloggers are against apocalyptic

framing, because they believe bloggers should not cause social chaos as ACC is not supported by science. Other bloggers agree that apocalyptic framing should not be used, but for another opposite reason. Peter Sinclair of the blog *Climate Denial Crock of the Week* explains: “When people tell me that the world is going to end, that we’re going to see near term human extinction, I tell them, ‘We’re not getting off that easy.’ We, and our children, are going to be here, and we are going to have to deal with and solve the problems we have created. To the extent that we do not, there will be suffering.”

Whereas a few interviewees refrain from hope or threat messaging and argue they prefer to stick to the science, a few others argue that they stick to the science, but that the scientific facts are threatening in itself. John Gibbons discusses: “I don’t have a reputation for being a person who fills people with hope. I see my job as being a guy who speaks the truth. It’s not a very popular thing to do.” Since, some bloggers find the truth fear-inducing and learned from social science research that this type of messaging is ineffective, they try to provide hope in their writing. Jakub Malecki says: “When I’m writing about the impact of climate warming on glaciers, I’m not really trying to convince them this is our fault. I don’t want to make them feel guilty.”

Some scientist bloggers struggle with whether it is their responsibility to warn people for the dangers of ACC. Ken Rice explains: “If you try to be optimistic and hopeful, will people look back and say that you didn’t speak out enough? On the other hand, if you’re too apocalyptic and alarmist and highlight how bad things could be and things aren’t that bad, people look back and say, ‘Ah, yes, you exaggerated everything and everything’s fine.’ So I think there’s a really difficult balance to how this is approached.” Others believe that it is actually traditional journalists’ responsibility, who have failed in their opinion in taking on this job. Michael Tobis discusses: “‘The scientists are too negative, the scientists are too positive.’ First of all, it’s not our job to do the communication. You left this in our lap because you guys didn’t do it. So don’t give us a hard time. We’re expected to somehow solve all these other problems in our spare time. That’s crazy.” Jelmer Mommers shares this critique: “Many science journalists are very careful to be put in a camp. The worst thing you can say to a science journalist is that you are an alarmist, let alone that you would warn for something because you are worried about something. That is actually not done. I think that is part of the problem, so I do it differently.”

4.5. Balance

None of the interviewees supports the norm of balance. Most interviewees are critical of the fact that traditional journalists are trying to provide a balanced overview of opinions, with the result that facts are distorted. Peter Sinclair says: “If one side of the issue is that the sky is blue and the other side of the issue is the sky is purple with pink polka dots, that those are not two sides that deserve equal weight.” Some interviewees argue that traditional journalists’ adherence to this norm has given an unreasonably large stage to sceptics. Most interviewees agree that they do not want to make the same mistakes as traditional journalists and therefore do not support the norm of balance. Gavin Schmidt comments: “There’s no balance between sense and nonsense. The balance between right and wrong is not somewhere in the middle.”

4.6. Contextualization

Some interviewees blog to explain the science of climate change and provide background. They want to ensure that the public debate about climate change is based on scientific facts. Some interviewees follow the contextualization norm, as they actively try to contextualize and evaluate climate sceptical voices in line with the mainstream climate scientific perspective. They explain that they are often frustrated how climate science is presented in the media and by some scientists. Hence, they want to address misinformation about ACC in their blog posts. Bart Verheggen of the blogs *Klimaatverandering* & *My view on climate change*

comments: “Rebutting sceptical stories functions as a rearguard fight for recycling stories. We have to write rebuts for the umpteenth time. Those sceptics are truly the biggest recyclers in the world, as they keep recycling these old myths.”

Not surprisingly, climate sceptical bloggers support another interpretation of the contextualization norm. They actively try to contextualize and evaluate mainstream voices in line with science that is sceptical of ACC.

However, some interviewees do not follow the contextualization norm. They argue that they do not want to pay too much attention to climate sceptical voices, as they could spend their time more efficiently. Over the years, they have lost willpower to continuously address misinformation. David Thorpe of the blog *The Low Carbon Kid* explains: “I really prefer to ignore them because it is a waste of energy. We know we are right, we know climate change is happening. These people are trying to leach away our energy. And I think if we give them the oxygen and publicity it just reinforces them.”

4.7. Truth

All of the interviewees agree that being truthful is an important journalistic norm, but what truth effectively means and how it is attained differs per interviewee. Most interviewees allude to the enlightenment philosophers’ definition of truth, in which objectivity is considered to be attainable. The interviewees are well aware that there is a lot of misinformation about climate change out there, which makes it difficult for audiences to assess what objective information is. Hence, most interviewees believe that objectivity only is not enough, one also needs to be transparent and honest. All in all, most interviewees define truth as: “what is objective, transparent, and honest”, which is a multidimensional concept that is elaborated on in the following sub-sections.

4.7.1. Objectivity

Some interviewees support the norm objectivity, which means that coverage should be scientifically measurable. David Thorpe argues: “One can be very passionate about something and be completely wrong. One has to have some objective measure.” Some interviewees explain that before they publish a blog post they do careful research and let their peers review it. A few interviewees argue that traditional journalists do not properly fact-check information. Miriam O’Brien of the blog *HotWhopper* argues: “I think we hold ourselves to a higher standard than journalism in the sense of trying to present the truth and the facts.”

Some other interviewees believe they are objective and subjective simultaneously, by arguing that their ideas about ACC are supported by science, but their opinion about how to address ACC is subjective. A few interviewees also explain that the selection of content is subjective. Mike Shanahan of the blog *UNDER THE BANYAN* explains: “I’m objective with respect to the veracity of what I’m saying and I know that I’m biased in the topics I choose to write about. What interests me determines what I write about, so there’s already a natural bias.”

A few interviewees do not support objectivity as a norm, because they believe that this norm is unattainable. Jelmer Mommers argues: “Objectivity is a way of dampening the real meaning of what we are talking about. It is a way of avoiding that you want to say ‘hello, may I have your attention. Something very bad is happening’. We should actually do that, because it is very bad.”

4.7.2. Transparency

All of the interviewees agree that transparency is important. There are different ways how they aim to achieve transparency, by explaining their mission, using their own name, disclosing conflicts of interest, publicly correcting mistakes, referencing sources, noting the use of potentially biased sources, and making their data available.

Most interviewees are transparent about their mission on the blog. They have an ‘About’ page on which they explain why they blog. Gavin

Schmidt says: “Everything is viewed through my subjective lens. I’m certainly not pretending to be a view from nowhere. We make no pretence that we’re not advocating for something.” Only Miriam O’Brien blogs under a pseudonym: “At the time I started blogging, I didn’t want the focus to be on me. Also, I was still working and I didn’t want my clients to be tarred with, ‘Oh, Miriam, she’s that crazy blogger lady’.” A few interviewees are critical of the fact that bloggers can use pseudonyms, because it does not create trust and the person cannot be held accountable. However, a few interviewees also understand why bloggers would use pseudonyms, especially female bloggers, as comments can be quite rude and sexist.

Most interviewees are transparent about any potential conflicts of interest, although, half of the interviewees have never experienced a conflict of interest and argue that they feel free to write about anything. John Gibbons says: “I’ve always felt it’s been a kind of a safe place that I can go to in order to write. No, I wouldn’t have said that I’ve felt a need to censor something on that, unless it was a legal problem with it.” Some interviewees have experienced conflicts of interest, but they dealt with it differently. They reported it on their blog, withdrew from the other activity, felt restricted to write about the issue, or did nothing. Some interviewees refer to the fact that they are also transparent about whether they are receiving funding or not.

Most interviewees aim to be transparent in how they deal with mistakes in their writing. They correct it in the text and highlight it or write a rectification in the comment section. A few interviewees comment that it is alright to make mistakes, but that it is important that you own up to your mistakes. Willis Eschenbach argues: “One of the reasons that I’m widely followed and widely believed is that when I’m wrong, I stand up and announce it. I say, ‘You were 100% right’. I don’t say, ‘I guess I must have been a little off the path’. In part, it’s because I have a somewhat different opinion about the value of being shown to be wrong. I find it very valuable. Most people find it demeaning or insulting.” Some interviewees discuss their cautiousness in making errors, because of the responses. Rasmus Benestad comments: “I’m very aware that whenever I write a thing, before I press the publish button, I’m a bit afraid because I know I’m taking a big chance. There’s a big height to fall down, because we have made a brand name and there’s a very high set of expectations about what we write. If I make a silly mistake, I will hear it.”

Everyone aims to be transparent about their sources, by referencing and hyperlinking their blog posts. Some interviewees only make use of scientific sources and do not use potentially biased sources. In contrast, Judith Curry argues: “I don’t care whether somebody’s biased or not. It’s really about their argument. That’s why this whole funding thing is a little bit of a red herring.”

A few interviewees discuss that it is very important that the method and data should be available. Climate sceptical blogger Paul Driessen, who describes himself as an energy analyst, argues: “You can’t have a debate and prove or disprove anything if one side is successful in hiding its data, its computer algorithms, its computer codes for climate models, its general methodologies – and then refuses to actually discuss or debate the climate science, or its claim that renewable energy truly is renewable, earth-friendly or sustainable. This is a big part of the battle, as well. I get into a lot of that in my articles. I try to challenge the other side to step forward and actually have an honest debate.”

4.7.3. Honesty

Some interviewees articulate that honesty is an important journalistic norm and see it as their responsibility to provide the public with honest information. They perceive honesty as the intention to tell the truth and not to deceive. Adam Corner argues: “You should never write anything that is misleading, or disingenuous, or that hides or obscures evidence or information that you’re aware of.” John Gibbons adds: “I think there’s a chronic shortage of honest reporting on climate change in Ireland and elsewhere. I’m trying to fill a gap. I’m trying to make sure that if people are interested in unvarnished information and opinion,

then I can provide that.”

Michael Tobis describes that the journalistic norm dramatization and honesty can be conflicting. He believes that being honest about climate change is to many not entertaining. Hence, for him the honesty norm is superior to the dramatization norm: “I used to think that I could be entertaining and honest at the same time, but I realize that I cannot be entertaining to most people out there. I want to be honest, that’s my goal.”

4.8. Clarity

Writing clearly may seem obvious and natural for traditional journalists, but writing in an understandable manner is not necessarily straightforward for the interviewees. Climate science is perceived as quite complex, as one generally needs academic reasoning capacity to understand the science. This complexity makes it challenging to translate the science in such a way that it is understandable for the reader. Hence, the interviewees articulate that clarity is another important norm. The interviewees discuss different strategies to achieve clarity, ranging from the writing style to the design of the blog post.

Some interviewees mention how they try to adapt their writing to the knowledge level of the audience. A few discuss how blog posts need to be self-contained, which means that they cannot assume any prior knowledge of the readers. Some explain that they try to avoid using jargon and technical terms, although a few also admit that they find this a challenge. Half of the interviewees mention that they do not want the blog post to be lengthy, instead it needs to be specific and concise. However, a few others argue that lengthy blog posts are not a problem. John Gibbons comments: “The beauty of the blog is that there’s no particular content limit. I guess it’s a type of long-form journalism, and people seem to be perfectly happy to stay with you for a long article.” A few discuss that they pay careful attention to the structure of the blog post, for example by making short paragraphs and sentences. Adam Corner explains: “I try and keep it quite energetic; quite bouncy, so that it feels like you’re moving along.” Next to that, a few interviewees mention that their writing ideally needs to provide a summary, charts, and diagrams.

4.9. Decency

Half of the interviewees articulate that decency is an important norm, as they also expect that from their readers in the comment sections. They explain decency in terms of having respect for others. Some interviewees describe that they do not enjoy some of the discussions they have on the blog. The discussions can be very hostile and personal. Willis Eschenbach explains: “You have to have some basic norms about decency. For me it boils down to a simple rule which is attack the ideas and not the person. That’s in part because I’ve been attacked so bitterly for being a generalist, for not having a scientific education.” Other interviewees confirm they also follow Eschenbach’s rule that they don’t want to personally insult. A few interviewees describe how they are trying to avoid discussions with climate sceptics or trolls for these reasons.

5. Discussion

While scientists have reached consensus about the fact that humans cause climate change, public opinion is still divided (Whitmarsh and Capstick, 2018). The transformation of the media landscape has created an opportunity for many to speak their minds about climate change. The climate change blogosphere presented itself as a venue where a variety of people advocate their cause (Elgesem et al., 2015; van Eck and Feindt, 2017). In our research, climate change bloggers were provided with the opportunity to reflect on what journalistic norms inform the selection and composition of their blog posts. The results of 27 interviews with climate change bloggers identified the journalistic norms

that these bloggers support, complementing earlier research on how journalistic norms shape traditional climate change coverage (Boykoff and Boykoff, 2007) and linking them to broader developments in the media landscape (Moser, 2016).

First, the analysis showed that the journalistic norms of traditional journalists identified by Boykoff and Boykoff (2007) are not identical to the journalistic norms of climate change bloggers. The norms personalization, dramatization, and novelty are supported by some interviewees, but not by everyone. Some interviewees are critical of the traditional interpretation of the norms dramatization and novelty, because these type of norms have misrepresented climate change and failed to provide a comprehensive story in terms of providing context. The interviewees redefine the norms personalization, dramatization, and novelty, by providing multiple interpretations. Besides the traditional understanding of personalization, climate change bloggers also understand this norm as rules to share stories about themselves and write about what personally interest them. The interviewees also interpret dramatization as a way to use humour or thrilling messages or try to take the audience on an adventure, next to the traditional focus on conflict. The interviewees also perceive novel reporting as coverage that is up-to-the-minute, besides fresh, original, and new content. Another important finding is that climate change bloggers do not perceive authority-order as one norm, but rather as two different ones. Many climate change bloggers regard themselves as the authority and are divided about the idea whether social order should be reassured in their writing. None of the climate change bloggers supports the balance norm. These findings suggest that the norms of Boykoff and Boykoff (2007) are up for re-articulation with respect to the climate change blogosphere (Vos and Finneman, 2017).

Second, bloggers who accept the mainstream scientific perspective on climate change actively contextualize and evaluate climate sceptic voices in line with their perspective. Although, it needs to be noted that some interviewees do not want to pay attention to climate sceptic voices anymore. Climate sceptic bloggers interpret the contextualization norm differently. They contextualize and evaluate mainstream voices in line with science that supports their perspective. These findings complement more recent research focusing on traditional media that shows that balanced coverage shifted towards interpretative journalism (Boykoff, 2007; Brüggemann and Engesser, 2017, 2014). One can speculate about whether traditional journalists followed bloggers’ example.

Third, truth is a salient journalistic norm to all climate change bloggers. They redefine truth as a multi-dimensional concept, consisting of objectivity, transparency, and honesty. This finding confirms earlier research that put forward the idea that these individual concepts are closely related to, or part of, the norm truth (Deaver, 1990; Hafez, 2002; Singer, 2007), but is novel in combining the different concepts. Objectivity means for the interviewees coverage should be scientifically measurable. Transparency is interpreted as explaining their mission, using their own name, disclosing conflicts of interest, publicly correcting mistakes, referencing sources, noting the use of potentially biased sources, and making their data available. Lastly, the interviewees define honesty as the intention to tell the truth and not to deceive. This redefinition of truth borrows and combines elements of enlightenment philosophers’ definition of truth and postmodern notions (Patterson et al., 2018; Singer, 2005). In comparison, traditional journalists also redefine objectivity by shifting their view on balance, but most journalists are not comfortable revealing their personal opinions (Hiles and Hinnant, 2014).

Additionally, the current study puts forward clarity and decency as new journalistic norms. Importantly, both norms should be understood in the context of climate change reporting, as generally the science is perceived as complex to communicate and the online debate as hostile. Bloggers aim to be clear in their writing, which reflects a sensitivity to effective science communication (Moser and Dilling, 2011). The decency norm relates to what Collins and Nerlich (2015) define as

Table 3
Overview of journalistic norms identified in the current research.

Journalistic norms	Definition
Personalization	- Coverage should emphasize the human-interest aspect of individuals trials and tribulations - Coverage should focus on stories about bloggers themselves - Coverage should be selected on the basis of bloggers' personal interests
Dramatization	Coverage should give an immediate sense of excitement, by using humour or thrilling messages, trying to take the audience on an adventure, or looking for disagreements, conflicts or controversy
Novelty	- Coverage should be fresh, original, and new - Coverage should be up-to-the-minute
Authority	Coverage should focus on authorities
Order	Coverage should reassure social order
Contextualization	- Coverage should contextualize and evaluate climate sceptic voices in line with the mainstream scientific perspective - Coverage should contextualize and evaluate mainstream voices in line with science that is sceptical of ACC
Truth	Coverage should be objective, transparent, and honest: -Coverage should be scientifically measurable -Coverage should explain the mission, not be pseudonymous, disclose conflicts of interest, publicly correct mistakes, reference sources, note the use of potentially biased sources, and make the used data available -Coverage should not deceive
Clarity	Coverage should be understandable for the reader
Decency	Coverage should be respectful to others

'civility' in their analysis of user comment threads about climate change. A question for future research would be what norms bloggers have when they moderate their blog's comment sections.

Interestingly, overall the climate sceptical and mainstream climate change bloggers support the same journalistic norms. However, climate sceptical bloggers operationalize certain norms in a different way, as their truth about climate change is different from bloggers who accept the mainstream scientific perspective. These bloggers perceive other persons and institutions as authorities, argue social order should be reassured because climate change is not dangerous, and provide context to mainstream arguments instead of sceptical arguments. These findings confirm earlier research that the climate change blogosphere is polarized on the micro-level of discursive constructions (van Eck and Feindt, 2017).

Overall, the findings confirm earlier research that focusses on journalistic practices in the blogosphere and challenges the framework of traditional journalistic norms of journalists. Our research shows that as users now also have the opportunity to communicate about climate change, coverage is transforming and simultaneously the journalistic norms that shape this coverage. Table 3 provides an overview of the journalistic norms of bloggers that are identified in this research with complementing definitions.

Finally, the research identified climate change bloggers' norms by conducting interviews, which is subject to social desirability and memory biases. In other words, the present research does not shed light if and how norms translate into blog content. Hence, a critical future research direction would be what journalistic norms can be identified in climate change blog posts on the basis of a content analysis. The researchers make no claim that these results are generalizable to all climate change bloggers, partly because it is difficult to theoretically define who are part of this community. However, a wide range of climate change bloggers was interviewed, which allowed the researchers to identify patterns in their answering. The sample was international but the analysis was not cross-culturally focussed, which could be problematic since the bloggers operate in countries with different media systems. Having said that, such cross-cultural effects would likely have surfaced in the analysis. Moreover, exchanges between climate change bloggers rather happen on the level of one's scientific position than across countries (Elgesem et al., 2015), which is interesting given that all bloggers aim to be truthful in their writing. Future research could therefore focus on climate change bloggers' scientific norms. Lastly, another interesting future research direction is investigating other factors at the micro, meso, and macro level that influence how climate change blog posts are shaped, in comparison to traditional journalistic output (Reese and Shoemaker, 2016).

6. Conclusion

The current research supplemented earlier research on the climate change blogosphere:

- For the first time, research focused on whether journalistic norms also shape climate change coverage in blogs. Also for the first time, interviews were conducted with climate change bloggers. On the basis of 27 interviews, we can conclude that climate change bloggers also support particular journalistic norms.
- The results showed that climate change bloggers support the following journalistic norms: personalization, dramatization, novelty, authority, order, contextualization, truth, clarity, and decency. The interviewees give new meanings to the different norms in comparison to traditional understandings. Hence, the current study challenges traditional models of journalistic norms that shape climate change coverage and confirm and elaborate theories focusing on journalistic norms of bloggers in general.
- The researchers found that there are no differences in journalistic norms across the divide between climate sceptics and the climate mainstream, except of the fact that they operationalize some norms differently.

The current research contributed to the scientific literature about traditional journalistic norms, broader developments in the media landscape, and climate change communications. The theoretical framework that combined elements of traditional journalism with blogging enabled the researchers to deductively identify journalistic norms of climate change bloggers. The inductive coding process of the semi-structured interviews also provided room to identify new journalistic norms specific to the online debates about climate change. The research is important for our understanding of how climate change is presented in blogs.

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Supplementary materials

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Appendix

Name blogger	Name blog
1. Sture Astrom*	Klimatsans
2. Ugo Bardi**	Cassandra's Legacy
3. Geoff Beacon**	Brussels blog
4. Krispijn Beek**	Krispy's blog & Sargasso
5. Rasmus Benestad**	RealClimate
6. Adam Corner**	The Guardian & NewScientist
7. Judith Curry*	Climate Etc.
8. Arnaud Delebarre**	Le blog de Arnaud Delebarre
9. Paul Driessen*	Various blogs
10. Willis Eschenbach*	Watts Up With That
11. John Gibbons**	ThinkOrSwim.ie
12. Hans Labohm*	Climategate.nl
13. Johan Lorck**	global-climat
14. Paul Luttkhuis**	Klimaat of the Dutch newspaper NRC
15. Jakub Malecki**	Glacjoblogia
16. Jelmer Mommers**	Klimaat & Energie of The Correspondent
17. Miriam O'Brien**	HotWhopper
18. Ranjan Panda**	climatecrusaders
19. John Pratt**	JPRATT27
20. Ken Rice**	... and Then There's Physics
21. Gavin Schmidt**	RealClimate http://www.realclimate.org/
22. Mike Shanahan**	UNDER THE BANYAN
23. Peter Sinclair**	Climate Denial Crock of the Week
24. David Thorpe**	The Low Carbon Kid
25. Michael Tobis**	Planet 3.0
26. Bart Verheggen**	Klimaatverandering & My view on climate change
27. Theo Wolters*	Climategate.nl

* = Climate sceptical blogger.

** = Climate mainstream blogger.

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