Setting an Agenda to Tackle Environmental Issues with Data and Collaboration

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ABSTRACT

The environmental crisis and more recently climate emergency have driven news media outlets to create editorial brands that specifically cover these topics. To make itself heard in a market for environmental news that is increasingly dominated by global media outlets, La Nación (Argentina) has leveraged its reporting on the topic by developing a novel editorial brand focused on environmental data journalism: “Proyecto Naturaleza.” Through the lens of data journalism and collaborative journalism, this article relies on methods such as participant observation and in-depth interviews to understand the practices, norms, and routines adopted by La Nación to produce data journalism focused on environmental topics. The results indicate three specific pillars for such journalism: climate change, biodiversity, and audience participation. The team sets an agenda based on these topics in light of annual events or large celebrations, resulting in a calendar of proposed activities (the production of data stories or crowdsourcing actions). The data team holds meetings with different individuals and organizations from different sectors to identify distinct perspectives on environmental issues to discuss undertakings and collaborate as needed with these actors. La Nación also emphasizes involving audiences on a deeper level, transforming their traditional role as passive recipient into active participant.

KEYWORDS

Data journalism; environmental journalism; collaborative journalism; La Nación; Argentina; Latin America

Introduction

The climate emergency has driven news media outlets to create editorial brands specifically for environmental reporting. In 2019, for instance, The Economist dedicated an entire issue to the subject. In 2021, The Financial Times announced the creation of Climate Capital, a new online hub dedicated to covering climate change news in response to growing demand from its audience (Granger 2021). Many similar efforts to cover environmental concerns occurred in elite American and European newsrooms, including at the BBC, Bloomberg, The Guardian, and The Independent (Lefebvre 2020; Kunova 2020).

To make itself heard in a market for environmental news driven by Western publishers, La Nación (Argentina) leveraged its reporting on the topic by developing a novel editorial brand, “Proyecto Naturaleza” (also known as LN Naturaleza). Designed as a cross-section
editorial brand under the umbrella of the data team, LN Naturaleza aims to cover global environmental concerns such as biodiversity, climate change, and global warming. The data team at La Nación, popularly known as LN Data, was founded in 2011. It has broad experience producing data stories, making it “a powerhouse of Latin American data journalism” (Mazotte 2017). The data team is considered an example of success for always seeking new ways to bring different forms of production and novel formats to the audience (such as open data, civic journalism, and automated journalism), regardless of the level of data literacy across the region (Palomo, Teruel, and Blanco-Castilla 2019).

LN Data is further known for its ability to involve the public in its investigations (Palomo, Teruel, and Blanco-Castilla 2019). For the production of several impactful data stories, the data unit relied on the public to check, for example, 40,000 intercepted audio recordings related to the investigation of a 1994 terrorist attack led by federal prosecutor Alberto Nisman, who was found dead in his home in 2015, four days after denouncing high-ranking politicians for covering up possible leads in the case. This crowdsourcing effort helped strengthen transparency and the collaborative spirit of the team (Mazotte 2017). Consequently, the work of LN Data earned international recognition as the team won a series of major awards (Palomo, Teruel, and Blanco-Castilla 2019).

Through an optimal combination of environmental and data journalism, La Nación sheds light on potential pathways for theme-based data journalism. Using the case of LN Naturaleza, this study clarifies how data journalism can be used as a tool to strengthen environmental journalism—reporting that is not yet widespread across the news industry. As noted by Appelgren and Jönsson (2021), the emergence of environmental reporting in data journalism suggests new ways to tackle topics that have long been forgotten by the media or only recently gained prominence on the media agenda (Kovarik 2020).

Through the lens of data and collaborative journalism, this article relies on multiple methods (participant observation and in-depth interviews) to understand the practices, norms, and routines adopted by La Nación to produce environmental data journalism. Although this study takes a practical approach to analyze this phenomenon, it contributes to scholarly literature by providing a rigorous analysis and characterization of practices and norms in the development of data stories. It also offers insights for the discussion of theme-data journalism.

**Theoretical Grounding**

**Interplay Between Different Media Outlets Spurs Environmental Reporting**

After decades of low priority on the media agenda, environmental journalism has only recently begun to occupy a prominent place in the news coverage (Mercado 2012). The bleak prognosis broadly conceived by the urgency of climate change has seen journalistic coverage of environmental and climate issues expand across media organizations. Following The Economist’s cover, which used stripes on its cover to represent the increase in the average global temperature every year since the mid-nineteenth century (The Economist 2019), news outlets around the world have begun to proactively create teams or news beats dedicated to covering climate and environmental issues, finding ways to produce visually appealing that could impact audiences (Lefebvre 2020; Kunova 2020).
Following the original studies into agenda-setting (McCombs and Shaw 1972), successive researchers investigated how media organizations are also influenced by their peers (Golan 2006). This is described as intermedia agenda-setting, and scholars are concerned with measuring the extent to which news content transfers between various media (Harder et al. 2017). These intermedia agenda-setting effects are often shaped by agenda setters who belong to a group of elite news organizations, which includes The New York Times, The Washington Post, and the BBC, as these organizations influence the salience of issues on the agendas of other news media institutions (Mathes and Pfetsch 1991). These endeavors in environmental reporting could be seen as mainly influenced by elite media such as the BBC, Bloomberg, The Guardian, The Independent, and The Financial Times—all of which are located in Western countries (Lefebvre 2020; Kunova 2020; Granger 2021). They could also be seen as an instrument used to uphold the news norms within the journalistic community (Nygaard 2020).

Perceived to be a Western phenomenon, environmental journalism was often considered a preoccupation exclusive to wealthy countries as the Global South was “too poor to be green” (Kovarik 2020). But the existence of environmental issues is permanent in any society, even in countries that seem to take a lower priority in the public debate (Guha and Martínez-Alier 1997). This leads to the following research question:

**RQ1**: How was La Nación influenced by other news outlets to create a cross-section editorial brand to produce environmental data journalism? How is the composition of the team that produces environmental data journalism?

A closer look at the literature on environmental issues in Argentina reveals that these concerns have always been part of the news agenda (Mercado 2012; Kovarik 2020). Environmental coverage permeated across editorial boundaries between politics, business, technology, and culture. In a study, Mercado (2012) found that environmental concerns stories were prominently reported in the international section of major legacy news outlets in Argentina, Clarín and La Nación. She also found that media coverage reflected attention cycles. In general, environmental topics are reported when they coincide with special dates, conferences, or summits (such as the Fifteenth Conference of the Parties to the United Nations Convention on Climate Change, known as COP15 or the Copenhagen Summit) (Mercado 2012). Apart from these events, however, environmental reporting is more challenging for journalists to handle as “this issue breaches some of journalism’s established foci and demarcations” (Bødker and Neverla 2012, 152). As soon as the events concluded, newspapers reduced their coverage.

Other important actors involved in environmental reporting are non-governmental organizations (NGOs) and think tanks that operate in a supposedly nonpartisan way (Krøvel 2012). However, environmentalists are also seen as “agents of Western influence,” reporting to foreign governments about issues in the Global South while trying to interfere in national matters. Krøvel (2012) stresses that the NGOs with influence in Norwegian media are “not those focusing on supposedly media-friendly activism” (272). Environmental journalists are thus judged by their role in advocating for nature and science rather than in producing “objective” journalism (Tuchman 1972). This generated much criticism after the unbalanced reporting failed to stimulate a response to environmental and climate emergencies as expected, leading news organizations to separate objectivity from advocacy (Moser and Dilling 2007). The dichotomy
between “balanced” versus “advocacy” journalism has been part of the debate about environmental journalism within the media ecosystem.

In order to capture an audience, information needs to be produced and disseminated fast enough to engage the public and stimulate its “response to affect the issue at stake” (Krøvel 2012, 260). But environmental journalism is closely related to scientific communication, which can reduce both the interest and understanding of the public (Howarth 2012; Wormer 2018). To encourage public engagement and mobilization for the climate and nature, scholars identified the need for new journalistic formats (Hackett and Gunster 2017). Data journalism emerged as an important effort to convert academic knowledge into news products that may be easier to comprehend and more appealing to audiences; the practice also brought the “objectivity” of numbers to the translation of scientific knowledge (Bødker and Neverla 2012). This gives rise to a second research question:

**RQ2:** Which actors involved in environmental reporting have contributed to the creation of new journalistic approaches using data?

*Environmental Data Journalism: From One Niche to Another*

Data journalism appeared in an era characterized by innovation in the news media industry (Stalph 2020). The advent of novel technologies and the datafication of society provided the impetus for the use of data in news reporting. For obvious reasons, data has always been part of the news reporting process. Since the mid-1990s, mainstream newspapers have used computer-assisted reporting (CAR) to aid in the news-gathering process (Anderson 2018). Over the last decade, the practice has matured and become more integrated with the routines and norms of the news industry (Borges-Rey 2016).

Previous studies emphasize how data journalism “renewed the promise of objectivity” (Parasie 2015, 365), which means “minimal personalisation” (Tandoc and Oh 2017, 1008) and the “exclusion of opinions of journalists” or the use of news sources (Tong and Zuo 2021, 4). Because it relies on statistical analyses and visual representations, data journalism is perceived as more accurate and less biased than traditional forms of reporting. In effect, it moves from “he-said/she-said reporting” (Tong and Zuo 2021, 4) to letting the data speak (Boyles and Meyer 2016). In data journalism, practitioners can find the principles of journalism together with the precision of data science.

In Latin America, data journalism tends to report on local issues (e.g., inadequate infrastructure, corruption, and populism). Thus, compelling narratives about the “local community, grassroots and guerrilla journalism” have been used to produce data stories (Borges-Rey 2019, 277). For example, Colombian news outlet *Rutas del Conflicto* reports the stories of people who have suffered from the nearly fifty years of conflict in the country (Borges-Rey 2019). *InfoAmazonia*, a data-driven platform that combines local reporting and environmental journalism, similarly reports on environmental damage, endangered species, and human-made disasters in the Amazon region (Salovaara 2016). Alternative media outlets located in Brazilian *favelas* bring data to promote activism and fight for the rights of this population (de-Lima-Santos and Mesquita 2021a). Thus, this objectivity is not compatible with a Latin American context (Hanitzsch et al. 2019).

Scholars also claim that the so-called promise of objectivity in data is not valid. First, objective facts are a Western ideal with origins in the search for rationality and truth
born in the Enlightenment period (Anderson 2018). The Anglo-Saxon world, in particular, has been demarcated by a news practice based on objective facts—more so than other Western nations (Hanitzsch et al. 2019). In other parts of the world, journalists reject objectivity and embrace subjectivity in their news stories. For example, Arab journalism is considered emotive in nature (Bebawi 2019). In Latin America, journalists are aligned with fact-based truth-telling and traditional norms of independence (Harlow and Salaverría 2016).

Second, there is a relationship between objectivity and passion. Journalists tend to think that objectivity means “an emotionless practice adopted by cold, logical people, people somehow capable of eliminating excess feeling from their professional lives in pursuit of the truth” (Anderson 2018, 4). But by thinking like that, the journalist makes an emotional consignment. The process of data collection, processing, and analysis is subject to the choices made by practitioners. Inevitably, at some stage, some imbalance of choice-making will happen (Tong and Zuo 2021).

Third, the practice of data journalism involves interactions with a whole set of actors responsible for producing data and making it available to the public. Data journalists face the daunting task of checking and verifying databases for imbalanced data or mistakes. These practitioners confront uncertainties about data collection methods that can influence the results of their analyses (Tong and Zuo 2021). Last, unequal access to open data and freedom of information legislation challenges journalists in their attempts to obtain sufficient data, causing them to rely on third-party information collected by civil society organizations, NGOs, or research initiatives (Jamil 2019).

Despite these allegations of subjectivity, legacy and non-legacy media outlets around the world are increasingly interested in data journalism (Ausserhofer et al. 2020). Born as “fluid and mutable” (Hermida and Young 2019, 45), the very nature of data journalism has enabled it to evolve from niche and innovation spheres “to that of delivery” (Bradshaw 2021, 393)—that is, to producing data stories every day.

As technology evolves, there is growing use of sensors and satellites to provide recurring services for safeguarding and protecting the environment. These produce different kinds of information, such as basic data, indicators, and metadata. For example, satellite imagery and aerial photographs are major data sources for illegal deforestation and bushfires. Likewise, sensors are useful for measuring levels of emissions, pollution, and global warming (Szeliski 2011). Our environment is full of data waiting to be captured and used. Hence, environmental data journalism has found its way onto the agenda of data storytelling.

Data journalism serves as a bridge between scientific and journalistic standards (Wormer 2018). It transforms sophisticated information into more appealing content that, in many cases, uses visualization techniques. But despite the potential held by data stories for the coverage of environmental topics, Appelgren and Jönsson (2021) found that environmental reporting was not a priority for the two Swedish data desks they investigated. For the authors, the practice has the power to put “forward cultural values that could work to promote pro-environmental attitudes, beliefs and behaviors” (Appelgren and Jönsson 2021, 14) by educating and engaging audiences with interactive products (Appelgren 2017). Therefore, environmental data journalism needs to be more than climate change reporting (Appelgren and Jönsson 2021). It should be seen as advocacy and educational journalism, neither of which is expected to “pay equal attention to
both sides of arguments” (Tong and Zuo 2021, 3) as this would present an inaccurate reality and loss of meaning. To enrich data stories, practitioners should include more than just data and interviews from scientists. It should also engage the public in a form of crowdsourcing (Porter 2020). This study thus aims to answer the following research question:

**RQ3:** Which organizational structures and production processes for environmental data journalism exist in *La Nación*?

*La Nación: A Data Journalism Powerhouse that Relies on Collaboration to Break Down Walls*

Born as print media in 1870, *La Nación* today has a strong online presence through lana-cion.com.ar. It also acts as a studio for the TV channel LN+. In the Argentinian media system, the predominance of a commercial model based on private ownership is complemented by unwritten pacts of mutual convenience (Mastrini 2011). Initially, the newspaper served to sustain the political power of Bartolomé Miter, the former president of Argentina and founder of the organization (Mercado 2012).

Argentina has a high literacy rate in regional terms, which enabled the early development of the press (Mastrini 2011). Together with Clarín, *La Nación* became the leading national daily newspaper in the country. Historically, the two news organizations were the agenda-setters and disruptors of innovation in Argentina’s mediascape. For example, *La Nación* was the first newspaper to launch a digital version at a national level in 1995. Following its creation in 2011, LN Data helped the news team refine the work and improve overall skills. The data unit assumed a vanguard position within the data journalism industry for the region, investing in new forms and techniques to deliver data-driven news articles to audiences (Palomo, Teruel, and Blanco-Castilla 2019).

In terms of news media, past studies have shown that there are different methods, levels, and degrees of audience participation and engagement (Egan Sjölander and Jönsson 2012). For instance, nonprofessional involvement in the provision of information is part of the grassroots culture in Latin America. Other projects in the region rely on audience participation to correct or expand information, such as “Cuentas Juradas” (“Sworn Statements”) from the Peruvian news outlet Ojo Público (Palomo, Teruel, and Blanco-Castilla 2019).

In Argentina, *La Nación*’s data team (LN Data) became an example of how to engage citizens in data reporting. In 2014, the team promoted the first civic marathon to verify 4,800 public documents. Similarly, the “Telegrams” and “Sworn Statements” projects relied on collective intelligence to boost team productivity. This new form of public engagement resulted in several awards for data stories from LN Data. From 2013 to 2018, *La Nación* earned six data journalism awards from the Global Editors Network in addition to international recognition, such as the ONA’s Online Journalism Award and the Malofiej International Infographics Award. Thus, crowdsourcing is part of an honorable tradition for LN Data. (Palomo, Teruel, and Blanco-Castilla 2019; de-Lima-Santos and Mesquita 2021b).

Collaboration is not restricted to audience participation in journalism. The process of investigative reporting was disrupted by technological developments as relates to computing power, which gave practitioners a mechanism for processing large amounts of data in support of new forms of digital investigative journalism (Felle 2016). Recent
cross-border investigations have been a driving force in the reconstruction of collaborative forms of working in the news ecosystem (Stonbely 2017). Collaboration in the workplace can yield innovative approaches to overcoming a lack of infrastructure, knowledge, and staff (de-Lima-Santos and Mesquita 2021c; Heft and Baack 2021).

This was the case for the Panama and Paradise Papers investigations led by the International Consortium of Investigative Journalists (ICIJ). The independent, US-based international network demonstrated the value of cooperation in news media to the world, shifting the image of the journalist from lone wolf to collaborative community (Heft 2019). Collaboration means journalists move away “from an ‘old model’ of a highly competitive single newsroom environment” (Carson and Farhall 2018, 1901) toward a new model composed of networks of journalists or organizations (Konow-Lund 2019).

In fact, collaborative journalism takes various forms that differ from one another according to levels of organization and control. The division of labor in these networks usually occurs in line with background, which could range from the technical skills of the journalist to different national contexts (Lück and Schultz 2019). Much transnational cooperation, like the sort backed by the ICIJ, offered a solution by building a network of professionals trained by a particular institution that could also provide infrastructure for these professionals. These features allow such alliances to perform their existing functions better in distinct locations and conditions, despite differing levels of expertise and access to resources. Heft, Alfter, and Pfetsch (2019) characterize this type of collaboration, in which an organization is responsible for managing partnerships between media outlets as well as the data used in the investigation, as a high degree of organization. A medium degree of organization occurs when collaboration exists for a short period, perhaps organized by a media outlet for a particular project or investigation. A low degree of organization occurs when cooperation happens sporadically, such as across a network of journalists who work on and off. The authors also outlined the degree of collaboration among journalists within the network as low, medium, and high, depending on the tasks and exchanges between these professionals (Heft, Alfter, and Pfetsch 2019).

These relationships set new standards for collaborative data journalism. Since the Panama Papers, news organizations have started to adopt all levels of cooperation in their newsrooms. One example in Latin America is the Lava Jato (Car Wash), which brought together more than 20 Latin American journalists from 15 countries to expose high-level corruption in Latin America (Lagunes and Svejnar 2020; de-Lima-Santos and Mesquita 2021b). As a “hacker culture” emerged in news organizations alongside the popularization of data journalism, the data journalism community became known for its collaborative nature (Lewis and Usher 2013). This nature is essential to filling gaps in the existing knowledge of data practitioners as well as to circumventing limitations posed by a lack of resources and staff shortages across the Latin American news industry (Cueva Chacón and Saldaña 2021). To conclude, this study poses the following question:

RQ4: How does cooperation work as a mode of production for La Nación?

Methodology

Global climate change is perceived as a “super-wicked problem”. This means it is dispersed across both borders and generations; it must be addressed to improve
management of the impacts of severe weather on the future. Climate change is just one of the interconnected issues of environmental concern, such as biodiversity loss, deforestation, water pollution, and the protection of nature can also stem from systemic failure (Levin et al. 2009). Data journalism has become an important tool for raising awareness of the need to increase the attention paid to all of these matters (Appelgren and Jönsson 2021). Bringing the two concepts together through environmental data journalism, practitioners connect the principles of journalism with the precision of data science to engage audiences in an environmental agenda. Although scholars have conducted many studies of data journalism, the field of environmental data journalism is still underexplored.

To illuminate this uncharted area, I examined *La Nación*, a pioneering Latin American news media organization in data journalism and now in the field of environmental data journalism. Although scholars have conducted many studies of data journalism, the field of environmental data journalism is still underexplored. Exploration will bring nuances to knowledge of the practice, such as the involvement of specific actors or different forms of public engagement.

This study employs a multi-method design that relies on a two-step analysis of qualitative data. First, data was collected from newsroom observation. This involved three months of fieldwork during the first quarter of 2020, before the pandemic hit, when the author went to *La Nación*’s newsroom, in Buenos Aires, Argentina. The researcher worked closely with the data team during normal working hours at the newsroom (eight hours per day on average), even having lunch with the staff. Participant observation was chosen as a method of data collection because it creates “a single, unified and complete description of the world” (Longino 1999, 339 as cited in Charles 2021). Through direct participation, the researcher elicits a single experience by seeing through the eyes of key actors involved in news generation. This allowed the author to not only identify news norms and routines adopted by the data desk, but also understand the team vision of the data and collaboration needed to support environmental reporting. The author further observed editorial agenda meetings and team meetings throughout the period to understand the rules or processes behind their production of data storytelling (Bryman 2012).

Second, observation data was triangulated with secondary data gathered through in-depth interviews. This has allowed the author to go beyond individual limitations to create new knowledge and generate reliable insights into the phenomenon under investigation (Becker and Geer 1957; Bryman 2012). Interviews were conducted during the three-month observation period and, in general, each lasted 65 min. Twelve people were interviewed in total, as shown in Table 1. Interview topics emerged from observation, such as the idea or process for environmental data journalism in the newsroom, the interviewee’s responsibilities and activities, and the importance of data and collaboration in the work routine. The author exclusively used Spanish throughout the period of study, as this is the official language of the newsroom.

Overall, this work can be described as hybrid ethnography as it combines participant observation with in-depth interviews (Usher 2016). As previous studies have relied on these methods to describe the distinct norms and routines adopted by news organizations, they have become influential in the field (Palomo, Teruel, and Blanco-Castilla 2019; Usher 2016).
To analyze the data, the ethnographic narrative is recorded and constructed by the researcher following the three-stage process proposed by Emerson, Fretz, and Shaw (2011). The first stage involves a close, systematic examination of observations and records of fieldnotes. The second stage involves a qualitative analytical coding of the notes in two phases: open and focused. Open coding occurs when the ethnographer reads fieldnotes line-by-line to identify emerging themes and concepts. For focused coding, notes are subject to a fine-grained analysis involving a reduced set of topics and categories based on the themes identified in the previous phase. Topics that emerged during this phase of analysis included the evolution of the team, structures and production processes, public engagement, and collaboration. In the third stage, the findings are described as narrative “tales” (Richardson 1990) that unite the themes through a series of steps that “move progressively toward creating a thematic narrative that is fieldnote-centered” (Emerson, Fretz, and Shaw 2011, 202). Thus, this study relies on the ethnographic narrative to reflect the research questions proposed using the interviews as ancillary data (Emerson, Fretz, and Shaw 2011). These steps were enough to obtain sufficient information to respond to the research questions proposed by this study.

Findings

The LN Data Metamorphosis: The Emergence of Environmental Reporting in Data Journalism

Longstanding teams inevitably experience periods of instability brought on by changing circumstances. This was no different for LN Data, which faced ups and downs in terms of staffing. During the observation period, the multidisciplinary team was comprised of ten full-time employees dedicated to data reporting. Each team member possessed knowledge and expertise relevant to the production of data stories (de-Lima-Santos, Schapals, and Bruns 2021). In addition to technologists, journalists, a lawyer, and a librarian, there were also two interns from the master’s program promoted by La Nación at Torcuato Di Tella University. Of these practitioners, three-fourths were female. This was an interesting finding as the data journalism industry is assumed to be “white and male” due to a “toxic culture that has long marginalized women” (Usher 2019). In part, this can be attributed to the fact that leadership is under the duty of women who have exerted significant influence in the newsroom to include more female practitioners (I1, I2).
The idea of developing LN Naturaleza emerged from the cooperative project Covering Climate Now (CoveringClimateNow.org). Instituted in April 2019 by the Columbia Journalism Review and The Nation, Covering Climate Now aimed to strengthen the media’s agenda on the climate crisis (Hertsgaard 2019). This was initiated after the UN Intergovernmental Panel on Climate Change (IPCC) issued a report on the achievability and implications of limiting global warming to well below two (preferably 1.5) degrees Celsius compared to pre-industrial levels (Masson-Delmotte et al. 2018). La Nación was “first organized in Argentina to become part of the project” (I1), which aimed to “[produce] data journalism for change” (I1). Guided by the project aims and global elite news media outlets covering environmental reporting (Harder et al. 2017), the team decided to take the idea to the CEO and the editor-in-chief, who saw a potential for the project. In September 2019, LN Naturaleza was officially launched as a cross-sector brand. This means there is no team dedicated to producing stories for the brand. Likewise, it is not a new beat. Rather, LN Naturaleza fell under the umbrella of the data team producing content in association with other editorial sections. In general, the news articles are rarely published by LN Data itself. Some members of the team have been dedicated to learning more about environmental topics (I1, I3).

Structures and Production Processes

According to I2, the idea was to “dream big, but start small” with the project as there were no experts in environmental journalism on the team. For this reason, I1 and I4 spent some days dedicated to learning more about the IPCC and the UN Sustainable Development Goals (SDG). As this was a theme-data journalism project, there was much experimentation to test and find new formats that would allow for the use of data in environmental stories. In line with findings from Palomo et al. (2019), this is part of the LN Data culture wherein the team sees itself as “a startup inside the newsrooms” (I1). LN Naturaleza itself is a “new venture inside the newsroom” (I3). According to I1, the idea is that the team learns while developing a new product.

The natural environment offers up an immense quantity of data for capture and use. The team relies on data from different sources, such as open data, NGOs, and academic investigations, to report environmental concerns. Their focus falls especially on Argentina and Latin America but it also includes major events that draw global attention, such as climate activist Greta Thunberg’s speech at the 2019 United Nations Climate Change Conference (COP25).

International events and celebration days inspired the team to set an agenda that could drive its production throughout the year. The idea was to spur action for the environment by the public and the government (I1, I2). On that basis, the team identified three specific pillars of action as the agenda-setters for La Nación’s data stories: climate change, biodiversity, and participation. Each data journalist was responsible for a specific pillar during a specific time or project. The three pillars were then divided by months, as shown in Figure 1. World Water Day (held annually on March 22 since 1993), for example, celebrates water and raises awareness about global water shortages. LN Data thus aimed to produce content related to water in the context of climate change during the month of March. Another example is National Tree Day, which is celebrated in
Argentina on August 29. During this month, the team planned to produce news products on the topic from the perspective of biodiversity.

The last pillar of participation includes the audience in the generation of content, such as for the 6D movement held during the 2019 COP25 on December 6 in Madrid, Spain. On this day, LN Data joined forces with the La Nación Foundation (a branch of La Nación newspaper dedicated to civic engagement) and other NGOs to promote action for the environment using social media channels. On Instagram, the team produced a series of stories showing La Nación employees and their families planting 150 trees in the city of Buenos Aires to represent the age of the paper. NGO representatives also explained the benefits of planting trees, such as the reduction in windchill factor caused by a tree compared to air conditioning or how much a tree is capable of reducing atmospheric contamination.

This agenda “is not fixed, and it was adjusted to special events or breaking news” (I5) such as the Australian bushfires. During the massive forest fire that occurred in January 2020 in Australia, the staff dedicated time to producing stories about the impact of the fires and how it represents a serious threat to fauna (mostly endangered species) using data from international agencies. As previous studies note (Krøvel 2012), there is an activist strain in environmental journalism; data sustains the evidence and brings more trustworthiness to news reporting (Tong and Zuo 2021).

![Figure 1. Agenda for “Proyecto Naturaleza”](image-url)
Calling for Engagement and Active Participation

The experience of the 6D movement is only one example of how important it is for LN Data to engage citizens in the conversation about environmentalism. To engage active audience participation, these professionals aim to transform “hard information” (I1) and “democratize the data access” (I6) into a product or action that can be “digested by the public” (I6) from accessible sources, such as social media platforms. The team sees these efforts as part of building a better future for the community and country.

To accomplish this, LN Data relies on online and offline settings for enabling participation. In the online environment, the team resorts to social media to spread the word about environmental crises. This means data stories can be produced for other platforms and in other formats, moving away from the traditional archetypal data journalism (Stalph 2020). The face filter function embedded in Instagram stories, for instance, carries immense potential for reaching a wider range of audiences. Today, it is one of the most popular augmented reality (AR) applications. The team created a face filter called “SOS Planeta” (SOS Planet), which included different statements to support the climate change mitigation efforts during 6D (such as “neither one degree above nor one species less,” and “there is no planet B”). In the same vein, LN Naturaleza produced Instagram stories explaining events or commemorative dates and providing quizzes for the public to take. Wallpapers with the “Proyecto Naturaleza” logo were also made available to the audience. Short videos were also published on TikTok to explain environmental topics and news, such as deforestation or the recent bushfires in Argentina. On Facebook, the team created “a group to boost the discussion on the biodiversity crisis and find stories that could inspire them” (I2).

Digital technology was thus used to unlock the potential for new levels of interaction. The team goal was to gain a reach and capacity sufficient to be meaningful to citizens of all interests and levels of education. Practitioners told stories that framed the narrative of life, combining cognitive, emotional, and behavioral features to enhance public engagement (Sanseverino and de-Lima-Santos 2021). Efforts to engage audiences with data stories on social media platforms are in line with prior studies on this aspect of the La Nación culture (Palomo et al. 2019; Carpes and Sanseverino 2021). However, interactive choices in design and presentation can also be associated with negative effects such as perceptions of a “controlling, non-transparent or intrusive” effort to engage the public (Appelgren 2017, 308).

Offline, LN Data traditionally promotes events that disseminate a culture of open data and transparency. These include events such as Women in Data Science, organized in association with the University of Buenos Aires (UBA), and DataFest. LN Data team organized the latter to be held in April at installations at the Buenos Aires Institute of Technology (ITBA). Due to restrictions imposed by the Covid-19 pandemic, DataFest was postponed to August and later canceled. The event would focus on the planet, bringing together specialists from different areas related to data science and the environment to discuss environmental concerns. Such events are perceived as a tool for “learning and establishing networks” (I1) to provide data and sources for the news reports. LN Data recognizes the importance of the public as a source of knowledge building. Overall, these findings align with those of older studies showing that the data journalism
community tends to consider collaboration as a learning opportunity (de-Lima-Santos and Mesquita 2021c; Lewis and Usher 2013).

All Help is Appreciated: Internal and External Collaboration

For I13, data journalism is “not expensive as people think, as we use tools that are already applied in the commercial sector like Tableau, for instance.” Such business thinking reveals the strategic approach to data journalism in the organization, which allows for a naturally close relationship with other areas and makes collaboration unavoidable (Cornia et al. 2020). LN Data thus understands collaboration as “a people- and purpose-driven process” (I2). In other words, it is a way of learning that is connected to the society we live in—a process of mutual cooperation to collect skills and evidentiary knowledge for its projects. Collaboration on an internal level is vital for “Proyecto Naturaleza,” which publishes in association with other news desks. Visualization is the responsibility of another team, the Infographic desk. After compiling, cleaning, and analyzing data, LN Data has meetings with different Infographic team members to decide which visuals should be used (e.g., interactive graphics on Tableau or static images). Depending on the tools required, other actors may be involved.

Contrary to the findings of a study by Stalph (2020), which looked at three early adopters of the practice of data journalism (The Guardian, Spiegel Online, and Neue Zürcher Zeitung), I found no element of subordination between the infographics and data journalism teams. Relationships across teams are good, despite their location on different floors. Members from both teams generally have lunch together, which helps develop strong interpersonal ties. Still, the Infographics team serves the organization’s entire operation. This creates a pipeline system that operates at maximum capacity and limits the team’s ability to produce visuals. Reliance on third-party tools such as Tableau could be indicative of insufficient staffing for the production of in-house solutions, echoing previous findings in the literature (de-Lima-Santos, Schapals, and Bruns 2021).

In terms of collaboration with other desks, it is a process that, according to I3, I4 and I5, demands time. Some journalists have worked with LN Data on several projects and know what they do, while others do not know what the team does yet. For “Proyecto Naturaleza,” the “data team has to pitch other desks with ideas” (I4, I5, and I6). Occasionally, journalists come up with an idea and check whether it is possible to find environmental data about it. For the February publication of news reports on clean and renewable energy, for instance, the team contacted journalists at the Economy desk to check interest in cooperation on the project. One journalist who liked the idea helped the team locate relevant sources and data useful for reporting on renewable energy in Argentina. This cooperation led to inviting some sources to come to the newsrooms and spend half a day discussing the energy production situation and government investments in renewable energy. The discussions were called “A Data Day for Energy” (I2), an initiative to gain knowledge on the topic and establish ties with sources. In line with findings from Stalph (2020), collaborative data stories do not always result in conventional data journalism, which relies more on “he-said/she-said reporting” (Tong and Zuo 2021, 4).

At an external level, LN Naturaleza collaboration takes many forms. Due to its long-standing prestige “acquired through awards and recognition” (I2), LN data does not merely represent “an investment to build more loyal relationships with the audience”
It also represents a golden standard that is recognized internationally (Palomo, Teruel, and Blanco-Castilla 2019).

Essentially, the team brings potential partners together in meetings to learn more about their business and possibilities for bargaining agreements. The collaborations tend to happen sporadically and usually around a particular project or news product, which Heft, Alfter, and Pfetsch (2019) would define as a medium degree of organization. For example, the partnership with a startup dedicated to analyzing satellite imagery to detect objects was a one-time project that produced an investigation into the development of solar farms in Argentina. The organizations signed a Memorandum of Understanding (MOU) stating that the collaboration did not involve any financial resources and the end goal was to report about renewable energy in Argentina (with a news story as the final product). Similarly, there were other meetings about specific topics to establish future partnerships, such as with a company responsible for certifying B Corporations in Argentina. The development of cooperative projects shows a certain level of experience and business acumen.

During the three-month period of observation, an intern from Northwestern University in the United States worked with the team. According to I2, this is a common practice; typically once a year, the team receives one student from Northwestern or another university interested in working with the team. Such alliances are fundamental to overcoming a lack of resources or topical knowledge (Heft, Alfter, and Pfetsch 2019). These characteristics could also be associated with prior experiences in collaborative journalistic projects.

The team has built a network of allies in other countries that can support each other and engage in developing transnational collaborative projects (Heft 2019), such as the ICJ’s investigations and Lava Jato. Two team members (I8 and I10) worked together on some ICJ investigations. I3 is the La Nación focal point person for collaborative regional projects such as Red PALTA, “a cross-border and investigative collaboration aiming to monitor the uses of public money, to identify patterns of bad practices in governments and also uses technology to reveal cases of national and international corruption” (de-Lima-Santos and Mesquita 2021b).

Other investigations involved legacy news organizations that belong to GDA (Grupo de Diarios América), a consortium of 11 major newspapers in Latin America, and the Open Contracting Partnership, which involves other data-driven news organizations in the region. Overall, these findings are in line with those reported in the literature describing the importance of collaboration in journalism to remedy resource limitations, develop in-house innovation, and acquire knowledge (Heft, Alfter, and Pfetsch 2019; Ponchek 2016). In these alliances, LN Data found a form of exchange that catered to its needs. Cooperation work as a mode of production is thus not restricted to environmental data journalism projects. Rather, it is an intrinsic characteristic of the data unit.

However, collaboration brings some concerns. La Nación is attentive to avoiding association with companies engaged in “greenwashing” (I1), which is the “promise [of] more environmental benefit than they deliver” (Dahl 2010, 247). By publishing methodology and data for all stories on La Nación’s website, the team ensures that their environmental data journalism follows the routines adopted by data journalism in the West (Lewis and Usher 2013). Here, the goal is to bring more “objectivity, transparency, and
trustworthiness to environmental reporting” (I5) as data and technology are manmade products subject to bias and error (Tong and Zuo 2021).

**Discussion and Conclusion**

This ethnographic study shows that *La Nación* has a well-developed structure for producing data journalism. This long-term strategy allows it to experiment with new formats and themes, such as with the environmental data journalism initiative LN Naturaleza. This shows the potential of theme-data journalism to expand opportunities for data storytelling in newsrooms.

Our interviewees revealed how Western news outlets influenced and inspired *La Nación* to create a cross-sectional editorial brand for the production of environmental data journalism (RQ1). During the collaborative project Covering Climate Now, LN Data saw an opportunity to deploy an editorial brand that relies on data to produce new journalistic formats. Although the data team did not change its composition to include LN Naturaleza, some members are specializing to target the various topics concerning environmental concerns. The team accepts a responsibility to bring content in more engaging and didactic ways, helping the public to understand ways to tackle climate issues and ecological concerns as well as the seriousness of the problem. These formats encourage public engagement and mobilization around concerns for the climate and nature.

*La Nación* does not enjoy the same resources, capabilities, and means that its Western counterparts have (despite being a legacy news outlet with a large market share in the country) (RQ2). Previous studies have emphasized how crowdsourcing skills have helped *La Nación* strengthen its reporting (Palomo, Teruel, and Blanco-Castilla 2019). The team also developed a mindset of transparency and collaboration that helped it to become a powerhouse in Latin American data journalism (Mazotte 2017). On a daily basis, the data stories are rarely published by the data team itself. LN Data works with internal teams that include journalists from other desks. This is an important endeavor as working with other practitioners brings different perspectives to a story that requires a multi-layered explanation. Furthermore, it helps to make the reports richer in terms of data and analysis.

LN Data further emphasizes audience involvement on a deeper level, changing their traditional role as passive recipient of the news into active participants. For example, the team promoted a day for planting and used social media platforms to invite the public to action. Such efforts could potentially increase the public profile of their agenda, pushing governments and decision-makers to act on environmental concerns. This highlights the importance of the data team’s cooperative efforts and processes (de-Lima-Santos and Mesquita 2021c).

In addition, LN Data brings a new approach to environmental reporting (RQ3). The team put forward an agenda that aimed to spur an environmental movement in Argentina based on three specific pillars of action: climate change, biodiversity, and participation. LN Data proposed the production of data stories and crowdsourcing actions on these axes in correspondence with annual events, whether large global celebrations (such as Earth and Ocean days) or local celebrations (such as National Water Day). Through these mechanisms, LN Data put forward an ambitious, lengthy, and substantial resolution for engaging the public in this conversation. This means the team does not
produce only traditional archetypal data journalism; data stories can be produced on other platforms and in other formats (Stalp 2020). At the same time, data journalism is thus seen as a tool to bring more transparency and trustworthiness to environmental topics. This is important as the level of trust in the news has declined in recent years, requiring new approaches to regain public trust (Fisher et al. 2021).

Environmental journalism is closely related to scientific communication, which particular actors are likely to have. Attention, effort, and advanced knowledge are often required to understand this communication and transform it into digestible content formatted for the public. External collaboration is essential to this process as, without it, environmental reporting could hinder the ability of the public to assess the content (Appelgren and Jönsson 2021; Wormer 2018). At the internal level, engagement with other actors in the newsroom helps to spread the word about the work of the team (RQ4).

For its environmental data journalism project, LN Data also mobilized external individuals and organizations around the three pillars of action. Meetings help the team gain knowledge and involve other actors in its actions, reaching a wider audience. These include NGOs, social media influencers, governmental entities, and scholars, all of which fall directly in line with previous findings (Krøvel 2012). By organizing these meetings with different individuals and organizations, LN Data further aims to identify distinct perspectives or values in terms of environmental issues. These meetings are useful for discussing various possible undertakings and proposing collaboration to further improve news production.

Environmental data journalism provides an opportunity to engage with the broader audience of La Nación or reach new ones. The “fluid and mutable” (Hermida and Young 2019, 45) nature of data journalism is reflected in the adaptability and business mindset of the team when working with other actors inside and outside the news industry. This feature played a central role in the rhetoric and observations of interviewees. For the team, collaboration is seen as a normative discourse based on the combination of established editorial norms with values that emerged from the data journalism scene (Lewis and Usher 2013). This is how cooperation works as a mode of production for La Nación.

Limitations of this study include the possibility that audiences do not perceive environmental data journalism as engaging content. Audiences could also intuit their reaction to the message, leading to the so-called “boomerang effect” (Mann and Hill 1984). This occurs when, in an attempt to persuade the public to take a certain position, the public adopts the opposite position. Future studies should investigate how audiences understand and see environmental data journalism.

Additionally, participant observation is prone to bias and confusion. Such study does not regularly demonstrate causality as it does not carry the advantage of randomization, which allocates risk factors for some outcome of interest to chance. Still, a lengthy period of observation like this one increases the likelihood of observing casualties. Future studies could also fruitfully explore the potential effects of objectivity within the viewpoint of the practitioner and how they can be distinguished from general data journalism.

LN Naturaleza is a unique and innovative project for environmental reporting that uses data as a new way to tackle climate issues and ecological concerns. This undertaking demands cooperation between media outlets, governments, and the public. Overall, La Nación’s approach to environmental data journalism can be characterized by three key
features: the proposal of an agenda of topics, collaboration with internal and external stakeholders, and audience participation. This study takes a practical approach to show how La Nación’s practices and norms contribute to improve the journalism field. With these findings, this study thus adds to a growing corpus of research on collaborative and data journalism as well as provides several implications and opportunities for practitioners, indicating potential pathways toward theme-data journalism, particularly environmental data journalism.

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References

Anderson, C. W. 2018. Apostles of Certainty: Data Journalism and the Politics of Doubt. New York: Oxford University Press.

Appelgren, Ester. 2017. “An Illusion of Interactivity.” Journalism Practice 12 (3): 308–325. https://doi.org/10.1080/17512786.2017.1299032.

Appelgren, Ester, and Anna Maria Jönsson. 2021. “Engaging Citizens for Climate Change—Challenges for Journalism.” Digital Journalism 9 (6): 755–772. https://doi.org/10.1080/21670811.2020.1827965.

Ausserhofer, Julian, Robert Gutounig, Michael Oppermann, Sarah Matiasek, and Eva Goldgruber. 2020. “The datafication of data journalism scholarship: Focal points, methods, and research propositions for the investigation of data-intensive newswork.” Journalism 21 (7): 950–973. https://doi.org/10.1177/1464884917700667.

Bebawi, Saba. 2019. “Data Journalism and Investigative Reporting in the Arab World: From Emotive to Evidence-Based Journalism.” In Data Journalism in the Global South, 1st ed., edited by Bruce Mutsvairo, Saba Bebawi, and Eddy Borges-Rey, 193–204. Cham: Palgrave Macmillan.

Becker, Howard S, and Blanche Geer. 1957. “Field Methods and Techniques Participant Observation and Interviewing: A Comparison.” Human Organization 16 (3): 28–32. https://doi.org/10.17730/humo.16.3.k687822132323013.

Bedker, Henrik, and Irene Neverla. 2012. “Introduction: Environmental Journalism.” Journalism Studies 13 (2): 152–156. https://doi.org/10.1080/1461670X.2011.646394.
Borges-Rey, Eddy. 2016. “Unravelling Data Journalism: A study of data journalism practice in British newsrooms.” Journal of Journalism Practice 10 (7): 833–843. https://doi.org/10.1080/17512786.2016.1159921.

Borges-Rey, Eddy. 2019. “Data Journalism in Latin America: Community, Development and Contestation.” In Data Journalism in the Global South 1st ed., edited by Bruce Mutsvairo, Saba Bebawi, and Eddy Borges-Rey, 257–283. Cham: Palgrave Macmillan.

Boyles, Jan Lauren, and Eric Meyer. 2016. “Letting the Data Speak: Role perceptions of data journalists in fostering democratic conversation.” Digital Journalism 4 (7): 944–954. https://doi.org/10.1080/21670811.2016.1166063.

Bradshaw, Paul. 2021. “Data Journalism With Impact.” In The Data Journalism Handbook: Towards A Critical Data Practice. 2nd, edited by Liliana Bounegru and Jonathan Gray, 388–396. Amsterdam: Amsterdam University Press.

Bryman, Alan. 2012. Social Research Methods. 4th ed. New York: Oxford University Press.

Carpes, Giulia, and Gabriela Gruszynski Sanseverino. 2021. “News Consumption Through Social Media and Messaging Applications.” In Journalism, Data and Technology in Latin America. 1st, edited by Ramón Salaverría and Mathias-Felipe de-Lima-Santos, 195–228. Cham: Palgrave Macmillan.

Carson, Andrea, and Kate Farhall. 2018. “Understanding Collaborative Investigative Journalism in a ‘Post-Truth’ Age.” Journalism Studies 19 (13): 1899–1911. https://doi.org/10.1080/1461670X.2018.1494515.

Charles, Mathew. 2021. “Understanding Trauma for Reconciliation and Peace-building Journalism in Colombia.” Journalism Practice 15 (2): 259–270. https://doi.org/10.1080/17512786.2020.1713857.

Cornia, Alessio, Annika Sehl, and Rasmus Kleis Nielsen. 2020. “We No Longer Live in a Time of Separation: A Comparative Analysis of How Editorial and Commercial Integration Became a Norm.” Journalism 21 (2): 172–190. https://doi.org/10.1177/1464884918779919.

Cueva Chacón, Lourdes M., and Magdalena Saldaña. 2021. “Stronger and Safer Together: Motivations for and Challenges of (Trans)National Collaboration in Investigative Reporting in Latin America.” Digital Journalism 9 (2): 196–214. https://doi.org/10.1080/21670811.2020.1775103.

Dahl, Richard. 2010. “Green Washing.” Environmental Health Perspectives 118 (6). https://doi.org/10.1289/ehp.118-a246.

de-Lima-Santos, Mathias-Felipe, and Lucia Mesquita. 2021a. “Data Journalism in Favela: Made by, for, and About Forgotten and Marginalized Communities.” Journal of Journalism Practice, 1–19. https://doi.org/10.1080/17512786.2021.1922301.

de-Lima-Santos, Mathias-Felipe, and Lucia Mesquita. 2021b. “The Strategic Value of Data Journalism.” In Journalism, Data and Technology in Latin America, 1st ed., edited by Ramón Salaverría and Mathias-Felipe De-Lima-Santos, 97–136. Cham: Palgrave Macmillan.

de-Lima-Santos, Mathias-Felipe, and Lucia Mesquita. 2021c. “Data Journalism Beyond Technological Determinism.” Journalism Studies 22 (11): 1416–1435. https://doi.org/10.1080/1461670X.2021.1944279.

de-Lima-Santos, Mathias Felipe, Aljosha Karim Schapals, and Axel Bruns. 2021. “Out-of-the-Box Versus in-House Tools: How Are They Affecting Data Journalism in Australia?” Media International Australia 181 (1): 152–166. https://doi.org/10.1117/1329878X20961569.

The Economist. 2019. “A Warming World - The Climate Issue.” The Economist. September 19, 2019. https://www.economist.com/leaders/2019/09/19/the-climate-issue.

Egan Sjölander, Annika, and Anna-Maria Jönsson. 2012. “Contested Ethanol Dreams - Public Participation in Environmental News.” In Citizen Voices: Performing Public Participation in Science and Environment Communication, 1st ed., edited by Louise Philips, Anabela Carvalho, Julie Doyle, and C., 47–72. Bristol and Chicago: Intellect Ltd.

Emerson, Robert M., Rachel I. Fretz, and Linda L. Shaw. 2011. Writing Ethnographic Fieldnotes. 2nd ed. Chicago and London: The University of Chicago Press.

Felle, Tom. 2016. “Digital Watchdogs? Data Reporting and the News Media’s Traditional ‘Fourth Estate’ Function.” Journalism: Theory, Practice & Criticism 17 (1): 85–96.
Fisher, Caroline, Terry Flew, Sora Park, Jee Young Lee, and Uwe Dulleck. 2021. “Improving Trust in News: Audience Solutions.” *Journalism Practice* 15 (10): 1497–1515. https://doi.org/10.1080/17512786.2020.1787859.

Golan, Guy. 2006. “Inter-Media Agenda Setting and Global News Coverage: Assessing the Influence of the New York Times on Three Network Television Evening News Programs.” *Journalism Studies* 7 (2): 323–333. https://doi.org/10.1080/14616700500533643.

Granger, Jacob. 2021. “Financial Times Launches a New Hub for Climate News Because Its Audience Asked for It.” Journalism.Co.Uk. February 2, 2021. https://www.journalism.co.uk/news/financial-times-launches-climate-capital-section-to-double-down-on-user-needs/s2/a792627/.

Guha, Ramachandra, and Joan Martinez Alier. 1997. *Varieties of Environmentalism: Essays North and South*. 1st. London: Routledge.

Hackett, Robert A., and Shane Gunster. 2017. “Journalism, Climate Communication and Media Alternatives.” In *Carbon Capitalism and Communication*. 1st, edited by Benedetta Brevini and Graham Murdock173–186. Cham: Palgrave Macmillan.

Hanitzsch, T., L. Ahva, M. O. Alonso, J. Arroyave, L. Hermans, J. F. Hovden, S. Hughes, et al. 2019. “Journalistic Culture in a Global Context.” In *Worlds of Journalism*, edited by Thomas Hanitzsch, Jyotika Ramaprasad, Folker Hanusch, and Arnold S de Beer, 23–46. New York: Columbia University Press.

Harder, Raymond A, Julie Sevenans, and Peter Van Aelst. 2017. “Intermedia Agenda Setting in the Social Media Age: How Traditional Players Dominate the News Agenda in Election Times.” *The International Journal of Press/Politics* 22 (3): 275–293. https://doi.org/10.1177/1940161217704969.

Harlow, Summer, and Ramón Salaverria. 2016. "Regenerating Journalism: Exploring the “alternative-ness” and “digital-ness” of online-native media in Latin America ." *Digital Journalism* 4 (8): 1001–1019. https://doi.org/10.1080/21670811.2015.1135752.

Heft, Annett. 2019. “The Panama Papers Investigation and the Scope and Boundaries of Its Networked Publics: Cross-Border Journalistic Collaboration Driving Transnationally Networked Public Spheres.” *Journal of Applied Journalism & Media Studies* 8 (2): 191–209. https://doi.org/10.1386/ajms.8.2.191_1.

Heft, Annett, Brigitte Alfter, and Barbara Pfetsch. 2019. “Transnational Journalism Networks as Drivers of Europeanisation.” *Journalism* 20 (9): 1183–1202. https://doi.org/10.1177/1464884917707675.

Hertsgaard, Mark. 2019. “Covering Climate Now Signs on over 170 News Outlets.” Columbia Journalism Review. 2019. https://www.cjr.org/covering_climate_now/covering-climate-now-170-outlets.php.

Howarth, Anita. 2012. “Participatory Politics, Environmental Journalism and Newspaper Campaigns.” *Journalism Studies* 13 (2): 210–225. https://doi.org/10.1080/1461670X.2011.646398.

Jamil, Sadia. 2019. “Increasing Accountability Using Data Journalism: Challenges for the Pakistani Journalists.” *Journalism Practice* 15 (1): 1–22.

Kono-Lund, Maria. 2019. “Negotiating Roles and Routines in Collaborative Investigative Journalism.” *Media and Communication* 7 (4): 103–111. https://doi.org/10.17645/mac.v7i4.2401.

Kovarik, Bill. 2020. “The Rise of Environmental Journalism in Asia, Africa, and Latin America.” In *Routledge Handbook of Environmental Journalism, 1st ed.*, edited by David B. Sachsman, and JoAnn Myer Valenti, 52–69. London: Routledge. doi:10.4324/9781351068406-5.

Krøvel, Roy. 2012. “Setting the Agenda on Environmental News in Norway: NGOs and Newspapers.” *Journalism Studies* 13 (2): 259–276. https://doi.org/10.1080/1461670X.2011.646402.

Kunova, Marcela. 2020. “Bloomberg Media Invests in Climate Reporting, Launches New Brand.” Journalism.Co.Uk. 2020. https://www.journalism.co.uk/news/bloomberg-media-heavily-invests-in-climate-reporting-launches-new-brand/s2/a750852/.

Lagunes, Paul, and Jan Svejnar. 2020. *Corruption and the Lava Jato Scandal in Latin America*. 1st ed. London: Routledge.
Lefebvre, Ben. 2020. “How Bloomberg Would Tackle Climate Change.” POLITICO. 2020. https://www.politico.com/news/2019/12/13/how-bloomberg-would-tackle-climate-change-084498.

Levin, K., B. Cashore, Steven Bernstein, and G. Auld. 2009. “Playing It Forward: Path Dependency, Progressive Incrementalism, and the ‘Super Wicked’ Problem of Global Climate Change.” IOP Conference Series: Earth and Environmental Science 6 (50). https://doi.org/10.1088/1755-1307/6/0/502002.

Lewis, Seth C., and Nikki Usher. 2013. “Open Source and Journalism: Toward New Frameworks for Imagining News Innovation.” Media, Culture and Society 35 (5): 602–618.

Longino, Helen E. 1999. “Feminist Epistemology.” In The Blackwell Guide to Epistemology, edited by John Greco and Ernest Sosa, 325–353. Oxford, UK: Blackwell Publishing.

Lück, Julia, and Tanjev Schultz. 2019. “Investigative Data Journalism in a Globalized World.” Journalism Research 2 (2): 93–114. https://doi.org/10.1177/2569-152X-22019-9858-en.

Mazzoni-Delmonte, Valérie, Panmao Zhai, Hans-Otto Pörtner, Debra Roberts, Jim Skea, Priyadarshi R Shukla, Anna Pirani, W. Moufouma-Okia, C. Péan, and R. Pidcock. 2018. “Global Warming of 1.5°C.” An IPCC Special Report on the Impacts of Global Warming Of 1.5°C. https://www.ipcc.ch.

McCombs, Maxwell, and Donald L. Shaw. 1972. “The Agenda-Setting Function of Mass Media.” Public Opinion Quarterly 36 (2): 176–187. https://doi.org/10.1086/267990.

Moscado, María Teresa. 2012. “Media Representations of Climate Change in the Argentinean Press.” Journalism Studies 13 (2): 193–209. https://doi.org/10.1080/1461670X.2011.646397.

Moser, Susanne C., and Lisa Dilling. 2007. “Toward the Social Tipping Point: Creating a Climate for Change.” In Creating a Climate for Change, 1st ed., edited by Susanne C. Moser, and Lisa Dilling, 491–516. Cambridge: Cambridge University Press.

Nygård, Silje. 2020. “Boundary Work: Intermedia Agenda-Setting Between Right-Wing Alternative Media and Professional Journalism.” Journalism Studies 21 (6): 766–782. https://doi.org/10.1080/1461670X.2020.1722731.

Palomo, Bella, Laura Teruel, and Elena Blanco-Castilla. 2019. “Data Journalism Projects Based on User-Generated Content. How La Nacion Data Transforms Active Audience Into Staff.” Digital Journalism 7 (9): 1–19. https://doi.org/10.1080/21670811.2019.1626257.

Parasie, Sylvain. 2015. “Data-Driven Revelation? Epistemological Tensions in Investigative Journalism in the Age of ‘Big Data’.” Digital Journalism 3 (3): 364–380. https://doi.org/10.1080/21670811.2014.976408.

Ponchek, Talya. 2016. “To Collaborate or Not to Collaborate? A Study of the Value of Innovation from a Sectoral Perspective.” Journal of the Knowledge Economy 7 (1): 43–79. https://doi.org/10.1007/s13132-015-0290-3.

Porter, Caroline. 2020. Adapting to a Changing Climate: How Collaboration Addresses Unique Challenges in Climate-Change and Environmental Report. Montclair: Center for Cooperative Media | Montclair State University.

Richardson, L. 1990. Writing Strategies: Reaching Diverse Audiences. A Sage University Paper. London: SAGE Publications.

Salovaara, Inka. 2016. “Participatory Maps: Digital Cartographies and the New Ecology of Journalism.” Digital Journalism 4 (7): 827–837. https://doi.org/10.1080/21670811.2016.1173519.

Sanseverino, Gabriela Gruszynski, and Mathias-Felipe de-Lima-Santos. 2021. “Experimenting with User Generated Content in Journalistic Practices: Adopting a User-Centric Storytelling Approach During the COVID-19 Pandemic Coverage in Latin America.” Brazilian Journalism Research 17 (2): 244–279. https://doi.org/10.25200/BJR.v17n2.2021.1369.
Stalph, Florian. 2020. “Evolving Data Teams: Tensions Between Organisational Structure and Professional Subculture.” *Big Data & Society* 7 (1): 1–13. https://doi.org/10.1177/2053951720919964.

Stonbely, Sarah. 2017. *Comparing Models of Collaborative Journalism*. Montclair: Center for Cooperative Media | Montclair State University.

Szeliski, Richard. 2011. *Computer Vision: Algorithms and Applications*. 1st ed. London: Springer.

Tandoc, Edson C., and Soo Kwang Oh. 2017. “Small Departures, Big Continuities?: Norms, Values, and Routines in The Guardian’s Big Data Journalism.” *Journalism Studies* 18 (8): 997–1015. https://doi.org/10.1080/1461670X.2015.1104260.

Tong, Jingrong, and Landong Zuo. 2021. “The Inapplicability of Objectivity: Understanding the Work of Data Journalism.” *Journalism Practice* 15 (2): 153–169. https://doi.org/10.1080/17512786.2019.1698974.

Tuchman, Gaye. 1972. “Objectivity as Strategic Ritual: An Examination of Newsmen’s Notions of Objectivity.” *American Journal of Sociology* 77 (4): 660–679. https://doi.org/10.1086/225193.

Usher, Nikki. 2016. *Interactive Journalism: Hackers, Data, and Code*. Urbana, IL: University of Illinois Press.

Usher, Nikki. 2019. “Women and Technology in the Newsroom.” In *Journalism, Gender and Power*, 1st ed., edited by Cynthia Carter, Linda Steiner, and Stuart Allan, 18–32. London: Routledge.

Wormer, Holger. 2018. “Mind the Statistics Gap: Science Journalism as a Bridge Between Data and Journalism.” In *News, Numbers and Public Opinion in a Data-Driven World, 1st ed.*, edited by An Nguyen, 226–241. London: Bloomsbury.