44. The Datafication of Journalism: Strategies for Data-Driven Storytelling and Industry–Academy Collaboration

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Abstract

How are journalism and academia responding to the datafication of their professions, and how can they collaborate more effectively on data-driven work?

Keywords: journalism, academia, collaboration, datafication, data work, researcher–journalist collaborations

We live in a world driven and informed by data. Data increasingly influences how policy and political decisions are made (Höchtel et al., 2016; Kreiss, 2016), informs the design and functionality of the cities we live in (Glaeser et al., 2018), as well as shapes the types of news, products and information that we have access to—and consume—in the digital age (Diakopoulos, 2019; Lewis, 2017; Lewis & Westlund, 2015; Thurman et al., 2019; Usher, 2016; Zamith, 2018). The full power and potential of data, for good or ill, is only just beginning to be realized (Couldry & Mejias, 2019; O’Neil, 2016; Schroeder, 2018).

Governments, universities and news media have long made use of data and statistics to find patterns and explain the world. But with the growth in digital devices and the massive trace data they produce—about our clicks, likes, shares, locations, contacts and more—the sheer volume of data generated, as well as the increase in computing power to harness and analyze such data at scale, is staggering. Making sense of all that data, in many cases, is arguably the biggest challenge, and is deeply fraught with ethical determinations along the way (Crawford et al., 2014). It is a riddle that

policy makers, businesses, researchers, activists, journalists and others are contending with—and one that will not be so easily resolved by “big-data solutions” or, in vogue today, the glittering promise of artificial intelligence (Broussard, 2018; Broussard et al., 2019).

In this chapter, building on our respective observations of practice (Radcliffe) and research (Lewis) regarding data and journalism, we outline how the worlds of journalism and academia are responding to the datafication of their professions as well as the broader datafication of public life. Ultimately, our aim is to offer recommendations for how these two fields, which historically have shared a rather uneasy relationship (Carlson & Lewis, 2019; Reese, 1999), might more productively work together on data-centric challenges.

The poet John Donne wrote that “no man is an island.” In a data-driven world, no profession should be either.

Journalism and Data-Driven Storytelling: Five Strategic Considerations

The use of data to tell stories, and make sense of the world around us, is not wholly new.¹

In Victorian England, physician John Snow produced a map that plotted cholera cases in central London. It enabled him to identify a pump on Broad Street as the cause of a particularly fatal, and geographically focused, outbreak of the disease in 1855 (see Figures 44.1 and 44.2). Snow’s influential analysis does not look too dissimilar from disease maps produced with modern tools of data analysis and visualization.

In another example, Florence Nightingale’s visualizations “of the causes of mortality in the army in the East” (“Worth a Thousand Words,” 2013) helped to demonstrate the role that sanitation (or lack thereof) played in causing the death of British soldiers fighting in the Crimean War (see Figure 44.3). Her designs still feel remarkably contemporary.

Alongside these efforts, around the same time, Horace Greeley’s work for *The New York Tribune* in the mid-19th century exposed how a number of elected officials (including a young Abraham Lincoln) were claiming expenses greater than they were eligible for (Klein, 2015). Although the world has moved on (Greeley’s work focused on distances typically travelled by horseback), this type of important investigative work continues to be a journalistic staple (Larcinese & Sircar, 2017; see also Barrett, 2009; “A

1 See Anderson’s chapter in this book for a look at different genealogies of data journalism.

Figure 44.1. Map of London produced by physician John Snow, plotting cholera cases in central London in 1855. Source: British Library, <https://www.bl.uk/collection-items/john-snows-map-showing-the-spread-of-cholera-in-soho-london-1855>.

Chronology of the Senate Expenses Scandal,” 2016; “Expenses Scandal an Embarrassing Start,” 2017; “MPs’ Expenses: Full List,” 2009; “Q&A: MP Expenses,” 2009; Rayner, 2009; “Senate Expenses Scandal,” n.d.).

These historic examples, coupled with more contemporary case studies (such as those identified by the annual Data Journalism Awards), can act as powerful sources of inspiration for journalists.² They demonstrate how data-driven approaches may be used to hold authority to account (ICIJ, n.d.), highlight important social injustices (Lowenstein, 2015), as well as visualize and showcase the extraordinary (“2016 Year in Review,” 2016).

While data has long been a part of journalism, as reflected in the emergence of “computer-assisted reporting” during the late 20th century, recent

2 <https://www.datajournalismawards.org/>. See also Loosen’s discussion of the awards in her chapter in this book.

Figure 44.2. Text of an 1855 newspaper story documenting cholera cases in central London. Source: British Library. <https://www.bl.uk/learning/images/makeanimpact/publichealth/large12734.html>

Figure 44.3. "Diagram of the causes of mortality in the army in the East," by Florence Nightingale. Source: Wikimedia. <https://upload.wikimedia.org/wikipedia/commons/1/17/Nightingale-mortality.jpg>

developments in the availability and accessibility of data-driven techniques have amplified opportunities for distinctly data-driven journalism (for a history, see Anderson, 2018; for an overview of data journalism, see Gray et al., 2012). It is against this backdrop that news organizations around the world—particularly the best-resourced ones, but increasingly smaller newsrooms as well—are using data to inform their journalistic work, both in telling stories with data (Hermida & Young, 2019) as well as in using data (in the form of digital audience metrics) to influence story selection as well as to measure and improve the impact of their work (Zamith, 2018).

Here are five key messages for newsrooms and journalists looking to do more with data:

Data alone does not tell stories. We still need journalists. For all of the data we have access to, we still need journalists to make sense of it, by providing context and interrogating the data in the same way as any other source.

As Steve Johnson (2013) of Montclair State University has noted: “Readers don’t care about the raw data. They want the story within the data.” Commenting on data about lower Manhattan provided by an early open-data portal, EveryBlock, he observed:

There were reports on what graffiti the city said it had erased each month, by neighborhoods. But what was missing was context, and photos. If I’m a reporter doing a story on graffiti, I want to show before and after photos, AND, more importantly, I want to know whether the city is successfully fighting the graffiti artists, i.e., who is winning. The raw data didn’t provide that. (Johnson, 2013)

More recent “data dumps” such as the Paradise Papers and Panama Papers also emphasize this point. In this instance, sources had to be cross-referenced and contextualized—a time-consuming process that took many journalists months to do. However, without this interrogation of the sources by journalists (as opposed to concerned citizens), the full impact of the data could not be realized. These principles are as applicable at the local level as they are in stories of national and international import (Radcliffe, 2013).

Data, in itself, is seldom the story. It needs to be unpacked and its implications explained, if the full meaning behind it is to be understood.

You don’t have to go it alone. Collaboration is often key. Collaboration has been a watchword of the networked age, and a key element in the ongoing blending of journalism and technology sensibilities—including the integration of “hacks” (journalists) and “hackers” (coders) (Lewis & Usher, 2014, 2016) as well as the broader interplay of news organizations and their

communities around shared concerns. The essence of such “networked journalism” (Beckett, 2010; Van der Haak et al., 2012) or “relational journalism” (Boczkowski & Lewis, 2018; Lewis, 2019) is the underlying belief that more might be accomplished through cooperative activity.

This approach is applicable to many beats and stories, including those involving large volumes of data. As *The Guardian* showed in their 2009 analysis of British MPs’ expenses, concerned citizens and members of the public can work in tandem with journalists to analyze data sets and provide tips (“MPs’ Expenses: *The Guardian*,” 2009; Rogers, 2009a, 2009b). More recently, research by Stanford’s James T. Hamilton (2016) and others (Sambrook, 2018) has identified the importance of collaboration—both across organizations and in the deployment of different disciplines—for many newsrooms, when it comes to producing high-quality, high-impact investigative journalism.

The amount of data that many new organizations are contending with, coupled with ongoing challenging economic circumstances, means that partnerships, the use of specialists, volunteers and wide-ranging skill sets, are often a necessity for many newsrooms. And, a collaborative approach is increasingly essential from both a financial and journalistic standpoint.

How you present your data matters. Journalists have access to a wide range of tools, techniques and platforms through which to present data and tell stories accordingly.³ As a result, it is important to determine which tools are most appropriate for the story you are trying to tell.

Data visualizations, graphs, infographics, charts, tables and interactives—all can help to convey and drive home a story. But which one (or ones) you use can make all the difference.⁴

As our colleague Nicole Dahmen has noted, one way to do this is through data visualization. “Visuals catch audience attention . . . [and] . . . are processed 60 times faster than text” (as cited in Frank et al., 2015). When used well, they can help to bring a story alive in a manner that text alone cannot.

The Washington Post’s online feature “The Depth of the Problem,” which shows how deep in the ocean the black box from the missing Malaysia Airlines flight 370 could be, is a good example of this (“The Depth of the Problem,” n.d.; see Figure 26.5). The reader scrolls down the page to 1,250 feet, the height of the Empire State Building; past 2,600 feet, the depth of giant squids; and below 12,500 feet, where the *Titanic* sits; to 15,000 feet, where the black box was believed to be.

3 https://www.journalisttoolbox.org/2018/03/11/online_journalism/

4 See <https://www.import.io/post/8-fantastic-examples-of-data-journalism/> for eight stories which use different techniques and consider swapping them.

“You’re not just reading how deep that plane is,” Dahmen has said. “You can see and engage and really experience and understand how deep they suspect that plane to be.”

Determining your approach may be influenced by both the story you want to tell and the data literacy and preferences of your audience. Either way, your data-driven stories should be well designed so that audiences do not struggle to understand what is being shown or how to interact with the data (Radcliffe, 2017b, 2017c).

Place your work in a wider context. Alongside these considerations, journalists working with data also need to be cognizant of wider developments, in terms of the consumption of content and attitudes towards journalism.

Think mobile: In 2012, the Pew Research Center found that over half of those who owned a smartphone or a tablet accessed news content on those devices (Mitchell et al., 2012; “News Consumption on Digital Devices,” 2017); just four years later, more than seven in ten Americans (72%) reported getting news via mobile (Mitchell et al., 2016). As mobile news consumption continues to grow, so too it is imperative that news organizations provide a positive mobile experience for all of their content, including data-rich material.

Make it personal: In an era of personalization and algorithmically generated media experiences, this can include creating opportunities for audiences to interrogate data and understand what it means for them. *ProPublica*’s Dollars for Docs investigation (Tigas et al., 2019), which enables patients to see the payments made by pharmaceutical and medical device companies to their doctors, is one example of this technique in action.

Protecting your sources: Journalists need to know how to protect data as well as how to analyze it. Protecting yourself, and your sources, may well require a new approach—including new skill sets—to handling sensitive data and whistleblowers (Keeble-Gagnere, 2015). Encryption coupled with anonymity (as witnessed in the Panama Papers) is one way to do this.

Harnessing new technologies: Blockchain is just one tool that may protect and support data and investigative work (IJNET, 2016). As Walid Al-Saqaf of Södertörn University (Sweden) (as cited in Bouchart, 2018) has explained: “Blockchain preserves data permanently and prevents any manipulation or fraud. That means that if governmental data is there it can’t be removed or changed once it is published.” Machine learning is another technology already being used in this space, and one which will only grow (Bradshaw, 2017).

Rebuilding public trust: With trust in journalism at near-record lows, it is incumbent on all journalists to work towards remedying this (Knight Foundation, 2018; Nicolau & Giles, 2017). For those working with data, this means being transparent about the data you are working with, providing

links to the original sources, and ensuring that original data files are available for download. Showing your work—what Jay Rosen (2017) calls “the new terms for trust in journalism”—allows readers to see the raw materials you worked with (and interpreted), and thereby opens a door to transparency-based trust in news.

The influence of data on your work is/will be wider than you might think. Finally, it is impossible to overlook the role that data also plays in shaping acts of journalism. We need to remember that the datafication of journalism is not just influencing data storytelling but also the wider journalistic profession (Anderson, 2018; Usher, 2016).

Analytics tools such as Google Analytics, Chartbeat and Omniture are omnipresent in newsrooms, giving journalists more information about the reading habits of their audiences than ever before. These quantitative insights, coupled with qualitative insights (see, e.g., programs like Metrics for News, developed by the American Press Institute), are informing the work of newsrooms large and small.

As highlighted in white papers published by Pars.ly⁵ and in recent academic research (Belair-Gagnon & Holton, 2018; Cherubini & Nielsen, 2016; Ponsford, 2016; Radcliffe et al., 2017; Zamith, 2018), it's clear that data is playing a pivotal role both in the positioning of stories (including literally how they are placed on homepages and promoted on social media) and in the decision making around what stories get covered.

Levi Pulkkinen, a Seattle-based reporter and editor and former senior editor of the *Seattle Post-Intelligencer*, argues that much of this data suggests that newsrooms need to do some things differently. “I think there’s a hesitancy in the newspaper industry among reporters to not recognize that what the metrics are telling us is that we need to change the content,” Pulkkinen (as cited in Radcliffe, 2017a) says, indicating that public affairs reporting (among other beats) may be ripe for change. “They like when we can tell them a whole story, or tell them an important story . . . but they don’t need us to just act as a kind of stenographer of government” (as cited in Radcliffe, 2017a).

Moving Forward: Five Ideas for Industry–Academy Collaboration

Data is shaping and informing acts of journalism across virtually all newsrooms and reporting beats. It can be a tool for telling specific stories—as exemplified among established players such as *The Guardian* and newer

5 <https://www.parse.ly/resources/case-studies/>

entities such as *FiveThirtyEight* and *Quartz* (Ellis, 2015; Seward, 2016)—as well as an important source for editorial and resource-driven decision making.

But beyond discrete stories and strategies, data portends a larger sea change in journalism. For better or worse, an embrace of quantification may well have major implications for what have been described as the Four Es of big data and journalism: Epistemology (what journalism knows), expertise (how journalism expresses that knowledge), economics (journalism's market value) and ethics (journalism's social values) (Lewis & Westlund, 2015). The data-related implications are therefore far-reaching—for how we teach, practice and research journalism.

We believe that, too often, the worlds of academia and news industry fail to recognize the generative potential that could come through greater collaboration between them (much like our point about collaborative journalism, above). As both parties grapple with the possibilities afforded by datafication, we contend that closer relationships between journalists and academics could be mutually beneficial. Below we outline five starting points to explore.

More partnerships between classrooms and newsrooms. The work undertaken by Paul Bradshaw offers a clear indication of how to do this. As part of the new MA in Data Journalism offered at Birmingham City University in the UK, Paul and his students have partnered with a number of news organizations, such as *The Daily Telegraph* (Bradshaw, 2018), the BBC, ITN, the *Manchester Evening News*, *The Guardian* and the Centre for Investigative Journalism.⁶ To extend this teaching-based partnership to improve research, these news organizations could open up their data journalism processes to (participant) observation by ethnographers, with the expectation that such scholarship would lead not only to peer-reviewed academic publication but also to public-facing reports that are intended for industry—like the kind produced by the Tow Center for Digital Journalism and the Reuters Institute for the Study of Journalism.

Undertake classroom projects with potential news value. Jan Goodey, a journalism lecturer at Kingston University in west London, has also demonstrated the ability to turn class projects into tangible reporting, having identified some potential conflicts of interest in UK local government. Their research—which included submitting, tracking and analyzing 99 separate FOI requests—revealed that these bodies were investing pension funds in fracking companies, while at the same time also acting as arbiters for planning proposals submitted by this nascent industry (Goodey & Milmo,

6 <http://bcu.ac.uk/media/courses/data-journalism-ma-2018-19>

2014). In some cases, students and their professors may have a longer time horizon to explore data projects, thus allowing them to do forms of data journalism that are elusive for journalists overwhelmed by ceaseless daily deadlines.

Reverse-engineer these relationships. Given the resource challenges that most newsrooms face, journalists could more frequently approach students and academics with stories that could benefit from their help. Arizona State University's Steve Doig, who won a 1993 Pulitzer Prize for Public Service at *The Miami Herald*,⁷ for a series which showed how weakened building codes and poor construction practices exacerbated damage caused by Hurricane Andrew a year before, actively consults on computer-assisted reporting problems.⁸ He won the George Polk Award (2012) for Decoding Prime, an analysis of suspect hospital billing practices for the California Watch investigative organization.⁹ His is an advising and consultancy model—with faculty and potential student involvement—that others could emulate.

Open the door to researchers and independent critique. Journalists are known to rely on academics as frequent sources for news stories, but they are often less comfortable opening themselves up to academic scrutiny. Compounding this problem are increasingly strident organizational directives against taking surveys or speaking to researchers without permission from upper management. But, just as journalists need good source material to do their work, for academics to do good research *about* journalism requires their having better access than they presently do. This is especially pertinent as researchers seek to understand what datafication means for journalism (Baack, 2015)—for how journalists use metrics (Belair-Gagnon & Holton, 2018; Christin, 2018; Ferrer-Conill & Tandoc, 2018), for how they tell stories in new ways (Hermida & Young, 2019; Toff, 2019; Usher, 2016) and so on. A little less defensiveness on the part of news organizations could go a long way towards developing a mutually beneficial relationship: Researchers get better access to understanding how data fits in journalism, and in turn news organizations can gain independent evaluations of their work and thus better appraise, from a critical distance, how they are doing.

Ensure your research is accessible. On the flip side, academics could do much more to ensure the openness and accessibility of their work. By now, dozens of academic studies have been produced regarding the “datafication

7 <http://www.pulitzer.org/winners/miami-herald>

8 <https://www.flickr.com/photos/juggernautco/sets/72157607210036175/>

9 <https://cronkite.asu.edu/about/faculty-and-leadership/faculty/doigbio>

of journalism,” with a particular emphasis on the evolution of tools for data storytelling and its impact on journalistic ethics and approaches (for an overview, see Ausserhofer et al., 2020). These studies could have tremendous relevance for news organizations. But too often they are locked behind academic journal paywalls, obscured by the overuse of jargon and altogether situated in such a way that makes it hard for journalists to access, let alone understand, the transferable lessons in this research. Where possible, industry outreach and engagement could be an integral part of the publication process, so that the benefits of these insights resonate beyond the journals—such as through rewritten briefs or short explainers for trade-press venues, such as Nieman Journalism Lab, or websites designed to disseminate academic work to lay audiences, such as *The Conversation*.

Conclusion

Data journalism, in the words of famed data journalist Simon Rogers (2012), now data editor at Google, is “a great leveler.” Because of its emergent character, virtually anyone can try it and become proficient in it. “Data journalism is the new punk,” he says (Rogers, 2012). This means that “many media groups are starting with as much prior knowledge and expertise as someone hacking away from their bedroom” (Rogers, 2012).¹⁰

Data journalism, of course, has a long history, with antecedents in forms of science and storytelling that have been around for more than a century (Anderson, 2018).¹¹ But as a nascent “social world” (Lewis & Zamith, 2017) within journalism—a space for sharing tools, techniques and best practices across news organizations and around the globe—data journalism is at a particular inflection point, amid the broader datafication of society in the 21st century.

There is a corresponding opportunity, we argue, for critical self-reflection: For examining what we know about data journalism so far, for outlining what remains to be explored, and particularly for pursuing a path that recognizes the mutual dependence of journalism as practice and pedagogy, industry and academy. For journalism to make sense of a world awash in data requires better recognizing, self-critically, the limitations and generative possibilities of data-driven approaches—what they reveal, what they don’t and how they can be improved.

¹⁰ See also Simon Rogers’ chapter in this book.

¹¹ See also Anderson’s chapter in this book.

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