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Data journalism grows up

Data journalism has evolved partly out of computer-assisted reporting (CAR) in the USA – bolstered by freedom of information (FoI), open data and journalism education. Jonathan Hewett traces the development and teaching of data journalism in the UK

“Data journalism is the future,” declared Tim Berners-Lee, the inventor of the world-wide web, in 2010 (Arthur, 2010). But using the term “data journalist” only a couple of years earlier would have produced puzzled faces in most newsrooms. “Journalists like us who use data in our reporting, you mean?” may have been the reasonable retort from some reporters, such as finance news specialists. Others may have made a connection with spreadsheets, databases and computer-assisted reporting (CAR). At university journalism departments in the UK, the response would have been similar, I

suspect. But a few years later, “data journalism” was appearing in job advertisements, university courses, discussions about the future of journalism – and even in book titles...

Indeed, it has evolved and diversified so rapidly that data work is now found among local newspapers, hyperlocal bloggers, international news organisations, investigative and specialist journalists and beyond. While many publishers sought to integrate data within their existing strategy, some initiatives focused particularly on data. One high-profile example developed out of Nate Silver’s statistical analysis of baseball and for US election forecasts. *FiveThirtyEight* became part of the *New York Times* and then launched as separate site, owned by television network ESPN. It grew from two full-time journalists to 20 (Silver 2014). In the UK, where some newspapers and the BBC assembled data journalism teams, Trinity Mirror (TM) piloted a fresh approach to data journalism with its standalone *ampp3d* team. Responding quickly to news with a tabloid-style approach, using bold graphics and interactivity, and geared for access on mobile devices and social sharing, the site reached places that few data projects had tried to go. Although it closed after 18 months, *ampp3d*’s impact was felt widely (Bradshaw 2015) and TM’s separate data journalism unit continued.

Such projects may seem far removed from the roots of data journalism in CAR, going back to the 1960s in the USA. Even if they had heard of this computer-assisted reporting stuff, very few UK journalists were using spreadsheets for data analysis by (say) 2008 – outside of financial and business journalism, at least. Even fewer people were actually teaching it here.

Tough times for investigative work

One factor underlying this situation in the UK involved the challenges faced by investigative journalism – the main focus for CAR. “Many would argue that the glory days of investigative journalism in the UK are well beyond us now,” Arjan Dasselaar suggested (2005: 221), attributing this to cuts in editorial budgets, fierce competition and legal liabilities. David Leigh, then investigations editor at the *Guardian*, bemoaned “difficult and frustrating times for investigative journalism in Britain” (Meek 2005).

Dasselaar’s survey noted also “some distrust towards new methods of information gathering, such as the internet”. While the BBC’s *Panorama* programme employed “computer researchers, journalists seem to consider going out and talking to people as superior to using Google”. Others felt that “information on the internet must be untrue, for otherwise it would have been picked up already” (ibid: 224) – a point well made, given recurring errors attributable to “facts” taken from websites apparently without checking (Orlowski 2007).

Signs of change were already evident in 2005, as more journalists grasped the opportunities offered by the internet, particularly financial reporters accessing records: “The advent of the internet has revolutionised this branch of journalism,” noted Dasselaar (op cit: 224). Even so, it was off the scale to anticipate the scale of a shift that five years later led to news organisations such as the *Guardian* dealing with huge volumes of data requiring detailed analysis. These included the Afghan war logs (92,201 rows of data), the Iraq war logs (391,000) and the US embassy cables (251,287) released through WikiLeaks (Rogers 2013a: 71).

Nerds plus words add up in the USA

Journalists on the other side of the Atlantic were far ahead of their UK counterparts. Already by 1999, a growing network of reporters, editors and journalism educators could look back on substantial developments in CAR over the previous ten years (Paul 1999). *When Nerds and Words Collide* reviewed progress since the 1989 creation of the National Institute for Advanced Reporting and the Missouri Institute for Computer Assisted Reporting (which became NICAR, the National Institute for CAR). Education and training formed a recurring theme in that report: notably how to train practising journalists and integrate CAR into journalism education at universities.

The resistance to change in among the latter, in journalism education, has been documented extensively (Hewett 2015). It is linked to another long-standing debate on the stance of journalism education towards employers; some critics attribute a lack of innovation partly to it having been a “handmaiden to industry, not its critic or visionary guide” (Dennis 1983: 3). In any case it is hard to disagree with Folkerts that “journalism education has, to a great degree, ignored the larger contours of the digital age” (2014: 63).

Even by the mid-2000s, the lack of UK networks such as NICAR in the USA for sharing ideas, skills and discussions was a pointed contrast with the situation not only across the Atlantic but also with many other European countries, such as the Netherlands, Denmark, Sweden and Germany. Again, this might have reflected the state of investigative journalism in the UK, which provided only 10 out of 450 delegates at the Global Investigative Journalism Conference in far-off Amsterdam in 2005 (Meek 2005).

Some CAR training was taking place in the UK, however, particularly through the Centre for Investigative Journalism (CIJ). Established in 2003, it had close links with

the USA – hardly surprising as it was founded by a journalist from the States. Gavin MacFadyen had worked as a producer of investigative documentaries on both sides of the Atlantic – including on *World in Action*, Granada Television’s campaigning series – and became the CIJ’s director. The CIJ’s first summer school in July 2003 offered what may have been the first intensive training conference in the UK (albeit with participants from outside the UK, too) on investigative techniques for journalists. It included a half-day introductory CAR course, plus advanced classes, explaining: “CAR is an increasingly important tool that enables journalists to add depth to their stories by accessing, making sense and presenting relevant government, financial, and social statistics” (CIJ 2003).

Transatlantic training triumphs

The influence of US journalism’s experience in CAR was clear from the seven trainers who led the CIJ sessions. They all came from or had close links with NICAR and/or its parent body, Investigative Reporters and Editors (IRE), and included already experienced data practitioners such as Brant Houston, Aron Pilhofer and Jennifer LaFleur. The leading role played by NICAR can be inferred from the 40 to 50 seminars a year it ran during 1994–99, and the estimated 12,000 journalists who attended its 300 conferences and seminars in its first ten years (Houston 1999: 7).

Houston became managing director of NICAR in 1993 (before it gained that name), having been database editor at the *Hartford Courant* and won awards for his investigative work. His book *Computer Assisted Reporting: A Practical Guide*, into a third edition by 2003 (Houston 2003), became a key resource, drawing on “what

many of us had learned about training” and providing “at least one road map for classes in newsrooms and journalism schools” (Houston 1999: 6).

Pilhofer was working as database editor at the Center for Public Integrity in Washington DC, and later led the development of data and interactive journalism at *The New York Times*. LaFleur had worked as database editor at the *San Jose Mercury News* before becoming IRE’s first director of training. She went on to be CAR editor at the *Dallas Morning News* and director of CAR at non-profit investigative newsroom ProPublica. As early as 1989, she had analysed the use of computers as part of her master’s degree at the University of Missouri School of Journalism (home to IRE and NICAR) (LaFleur 1999: 25).

The beginner’s CAR workshop at the 2003 CIJ summer school focused on “more effective searching techniques, resources and data on the internet, downloading data, and doing basic analyses using spreadsheet software such as Microsoft Excel”. An “intermediate track” involved moving “from filtering and sorting data in Excel to calculating rates and ratios for news stories, cross-tabulating data and generating graphics” before “showing how to select and filter information in a database manager and introducing users to summarising data effectively to find trends and story ideas” (CIJ 2003).

More complex techniques of data analysis were covered in an “advanced track” with “techniques of summarising data and using relational databases to compare different files of information to see connections that could lead to new stories”, and used Microsoft Access. It also offered participants the opportunity to “learn how to build their own databases when there is no electronic information or when governments or businesses refuse to release electronic data. Lastly, the track will include an overview

of the new and increasing use of mapping (GIS) software to visualise the results of data analysis” (ibid).

Freedom of information, better journalism?

Such CAR training became a core feature of CIJ summer schools, along with another theme relevant to the emergence of data journalism: the use of freedom of information (FoI) legislation. Passed in 2000, the FoI Act came properly into force on 1 January 2005 and was fundamental to the development of data journalism in the UK. For the first time, journalists had a legal right to request information held by public bodies, which now had to respond (although not necessarily by providing the information requested). This was a huge advance on the preceding code of practice on access to government information, introduced in 1994 as an alternative to FoI legislation (Brooke 2004). Drawing on her background as a reporter in the USA, Heather Brooke wrote an influential book on using FoI in the UK, *Your Right to Know*, partly out of her “frustration with the relationship between the citizen and the state in Britain, which was not as egalitarian as in America” (Brooke 2013). Primarily because a culture and legislative framework enabled access to information there, data and CAR techniques were becoming well-established among US investigative reporters in the 1990s, Brooke says:

The main reason was that the datasets were available. A typical story was to get hold of a list of school bus drivers and cross-reference it with a list of sex offenders or other offences. They are both public records in America, with no privacy law, so you could find out whether any of the school bus drivers were paedophiles or had other convictions (ibid).

The appliance of science to reporting

In contrast to the UK – and its lack of public data – the US federal FoI Act had operated since 1967. The timing seems coincidental, but it was same year in which Philip Meyer and colleagues at the *Detroit Free Press* produced a Pulitzer Prize-winning investigation into the causes of riots in the city, often cited as the beginning of CAR. Meyer saw the potential to apply social science techniques to journalism, having studied them the previous year while on a Nieman fellowship at Harvard. A course he took there also introduced him to computing in the form of an IBM 7090 mainframe machine (Meyer 1999: 4). In Detroit, Meyer deployed quantitative survey research, helped by two university professors, a team of 30 interviewers for field work – and a computer programmer. (This was not the first use of computing in support of journalism – in 1952, a Remington Rand Univac machine was used to help US television network CBS predict election results (Chinoy 2010).)

Having demonstrated “the application of the scientific method to the practice of journalism” (Meyer 1999: 4), he started to pass on his skills to other reporters in the same newspaper group as he developed his statistical and computing abilities.

Published in 1973, his *Precision Journalism* – subtitled *A Reporter’s Introduction to Social Science Methods* (Meyer 1973) – and its 1991 successor became landmarks in CAR. Meyer did not use public records in his investigative journalism until 1972 (Meyer 1999: 4), but his work converged with FoI in the use of computing tools and statistical techniques for analysis. As computers and software became more ubiquitous and easier for non-specialists to use, so US news organisations began to appoint dedicated database editors.

Grappling with hygienic spreadsheets

Interest in the UK seems to have remained very limited until more journalists began to realise the opportunities provided by FoI. From 2005, Heather Brooke trained hundreds of journalists in FoI techniques with the National Union of Journalists and elsewhere – and while she mentioned the value of obtaining information in the form of spreadsheets, she was not teaching analysis using them (Brooke 2013). She was also putting FoI through its paces herself as a freelance journalist – and learning CAR techniques to deal with the resulting data. One striking success published during the first year of FoI was an investigation with *The Times*. The resulting “justice by postcode” story, published on the front page, revealed huge disparities in conviction rates around the UK (O’Neill, Gibb and Brooke 2005). It also highlighted the greater experience in data analysis that journalists elsewhere in Europe had developed.

“I talked to the FoI officer at the Crown Prosecution Service about when they switched to electronic data. I got three years’ worth of data in Excel spreadsheets – which was great, but it was 42 different sets of records from different CPS areas,” Brooke recalls (2013; O’Neill and Brooke 2005). To help with the analysis, she turned to Tommy Kaas, who had run CAR training sessions at CIJ summer schools. He had set up the Danish International Center for Analytical Reporting (DICAR), which evolved from the Association of CAR in Denmark, set up in 1997 with other CAR pioneers such as Nils Mulvad, who taught CAR at the Danish School of Journalism.

A tipping point for CAR and UK data journalism

The fourth CIJ summer school (2006) was a turning point for CAR and data training. CIJ director Gavin MacFadyen noted a “surge in interest in computing. The rooms where those skills were being taught were packed and that’s the first time that’s happened. ... The whole landscape has changed and journalists see the value of using electronic tools that we’ve taken for granted and don’t really know much about” (Brooke 2006). CAR trainers at the summer school – mostly from the USA – were starting to use data about the UK, obtained from UK public bodies under UK FoI legislation, to demonstrate what could be done:

One of my very first FoI requests was for London councils’ inspection reports on restaurant hygiene. Most of them were electronic datasets, which I didn’t really know how to handle properly. It was around that time that Aron Pilhofer was over, and I gave him my restaurant inspection data. “This is really great for teaching,” he said. “I’m going to use this for our CAR classes in London.” He showed us different ways of analysing it using Excel – but also what the limits were, and how you could switch over to Access and write SQL queries to drill down into the data and find out very specifically which were the dirtiest restaurants in London. ‘I think that was a real transitional point because it was teaching using real data from this country rather than America, and obtained from FoI (Brooke 2013).

Another US CAR trainer, David Donald (then training director of IRE), was encouraged: “I think you’ll begin seeing many more in-depth investigative stories that will be based on using CAR,” he said (Brooke 2006). To support that growth, and to share tips and ideas among interested journalists in the UK, a mailing list called

BICAR emerged – inspired by the successful equivalents at DICAR in Denmark and NICAR in the USA. It was set up by Martin Stabe, then at journalism weekly *Press Gazette*, after post-CIJ summer school discussions in a pub with Brooke and freelance investigative journalist Stephen Grey. Alas, their enthusiasm seemed to outrun the wider interest among journalists for such a project, as Stabe recalls:

It never really amounted to much – there were almost no messages and it fizzled out quickly. There just wasn't the volume of material or people to make that viable, and I seemed to spend more time administering the server it ran on than actually having any content. I like to think that it was just ahead of its time (Stabe 2013).

Journalism education and training

Data-related work was also developing at City University London, where the CIJ was based and Brooke had become involved in teaching. I introduced FoI as part of the postgraduate Newspaper Journalism course at City in 2005; every student researched an FoI project to generate their own original story for publication. Some City students also worked with Brooke on other FoI/data projects, too. They included Elena Egawhary (BBC *Newsnight* and *Panorama*), James Ball (later data editor at the *Guardian*), and Alex Wood (who worked as a data journalist at the BBC World Service).

FoI became important not only for the data it enabled journalists to access (for data journalism stories and projects); it also acted as a gateway for students – a valuable bridge from more conventional reporting to data journalism. Many characteristics of

journalistic FoI work -- from spreadsheets and the analysis of changes over time, to patterns and statistics – underlie data journalism, too. Arguably FoI services as a useful introduction to computational thinking (Hewett 2014a).

A stuffy computer room hosted a dozen or so participants for a key training event for UK data journalism in July 2007. Two hugely experienced trainers, Aron Pilhofer (then database editor at *The New York Times*) and David Donald (by then data editor at the Center for Public Integrity in Washington), ran an intensive three-day “training the trainers” programme at City University London. Subtitled “how to teach computer-assisted reporting”, the course – arranged through MacFadyen and the CIJ – aimed to ‘show how CAR is successfully taught so that more CAR training can take place here and more home-grown, UK-based journalists can take advantage of these skills’. An outline of the course noted not only the importance of CAR – but also the lack of training in data-related skills and stories in the UK:

Computer-assisted reporting (CAR) has led many reporting advances the past 20 years in the United States, Europe and elsewhere. It’s both a method to discover stories that otherwise would go unreported and a way of adding depth and context to existing stories. Historically, the United Kingdom has offered little training in these techniques for experienced journalists and novices alike (CIJ 2007).

What may have been the first such course in the UK – geared explicitly towards increasing the teaching of CAR and of working with data, and their future development – brought together a number of people who were making their mark in data journalism and its training or education, or were to do so subsequently, including:

- Heather Brooke – FoI expert; went on to teach CAR and data at City University London.
- Martin Stabe – then new media editor at *Press Gazette*; later head of interactive news at the *Financial Times*.
- Cynthia O’Murchu – *Financial Times* reporter; later, investigative reporter on stories such as the data-intensive expose of the EU Structural Funds (jointly with the Bureau of Investigative Journalism), and deputy interactive editor.
- Stephen Grey – freelance investigative reporter; former editor of *The Sunday Times* Insight team; had investigated the CIA’s secret “extraordinary rendition” programme, analysing the details of more than 12,000 flights. Later he became special investigative correspondent at Reuters.
- Adrian Monck – then head of the Journalism Department at City University London; encouraged the development of the MA Investigative Journalism. Later, managing director, head of communications and media, at the World Economic Forum.
- Jonathan Hewett – then (and now) leading the MA Newspaper Journalism programme at City; later set up the Interactive Journalism MA with a dedicated module on data journalism.
- Francis Irving – then a programmer with innovative NGO MySociety; main developer of its FoI site WhatDoTheyKnow, and later chief executive of Scraperwiki (which helps organisations to collect and analyse data).
- Elena Egawhary – then completing the Newspaper Journalism course at City; later became BBC researcher on *Panorama* and *Newsnight*, and data trainer.
- James Anslow – then a lecturer on BA Journalism at City; later developed modules with a more digital focus.

- Mike Holderness – freelance journalist; ran training courses in online publishing and databases with the NUJ.

Also that summer, two university courses for postgraduates were preparing to welcome their first investigative journalism students. Both included the use of CAR techniques, and elements – such as data-mining or scraping – of what one might now call data journalism, and were led by experienced investigative journalists (Waterhouse 2011; O’Neill 2011a). At the University of Strathclyde, in Glasgow, Eamonn O’Neill set up an MSc Investigative Journalism after studying the development of courses at universities in the USA. Investigative classes had been “available on American campuses since at least the 1950s and possibly earlier” (O’Neill 2011b).

The Investigative Journalism MA at City University London was run by Rosie Waterhouse, formerly with BBC *Newsnight* and *The Sunday Times*. She was able to build also on the teaching experience at City, including the CIJ and its director, Gavin MacFadyen; the investigations editor of the *Guardian*, David Leigh; David Lloyd, former head of news and current affairs at Channel Four, and Heather Brooke. While these two courses represented an important step in journalism education in UK universities, and were followed by a BA in Investigative Journalism at Lincoln, it would be misleading to suggest that investigative journalism had previously been absent from the curriculum.

At the University of Sheffield, for example, Mark Hanna had developed an investigative module for journalism undergraduates, the first to include a requirement to use FoI (Hanna 2008). At City, some courses included investigative research techniques and FoI, and Leigh and MacFadyen had already run a specialist

investigative option. But such developments were relatively recent; O'Neill suggests that the UK "did not offer investigative journalism classes until the mid-late 1990s" (2011b). An earlier Investigative Journalism MA, at Nottingham Trent University, had been launched in 1997 (Hanna 2000) but ran into difficulties. It ceased after a number of dissatisfied students left the course (Adams 2001).

More online, more open data

Journalism education was also reflecting the industry's shift to the web, which was another factor that enabled data journalism to take off. Some courses focused specifically on online, such as the Online Journalism MA started by Paul Bradshaw in 2009 at Birmingham City University. He had noted data's significance for journalists, and had been teaching students to use Yahoo Pipes to aggregate, filter, mash and map since 2006. By 2010 he was also teaching data journalism to established reporters and news organisations' trainees (Bradshaw 2013), and made an introduction to data part of the core MA journalism curriculum at City.

Did the timing help the later courses to fare better? Online tools and web publishing were making new forms of storytelling possible. FoI was becoming better established and continuing to help journalists break stories. It was also at the heart of one of the biggest stories of the period in 2009, on MPs' expenses, even though the core material was ultimately leaked before it was due to be released (with redactions) under FoI legislation.

Although the MPs' expenses files were obtained electronically, it was not a database that the *Telegraph* obtained – it was a mass of PDF files. That meant the investigating

journalists “could mostly still operate like old-style reporters”, says Brooke (2013), cross-referencing names, addresses and other details – even if spreadsheets were involved (Winnett and Rayner 2009: 220).

The open data movement was gathering pace, too, emphasizing the importance of publishing data resulting from publicly-funded work, and in accessible formats.

Technology journalists Charles Arthur and Michael Cross had kicked off a “Free Our Data” campaign aimed at changing government policy (Arthur and Cross 2006). The data.gov.uk site eventually followed in January 2010, expanding to offer more than 9,000 datasets by October 2013. Spurred on also by the commercial possibilities, David Cameron made a series of commitments on open data after he became prime minister in May 2010 – complementing the momentum that FoI had provided for data journalism.

Dealing with data from FoI requests had been an essential part of James Ball’s route towards data journalism in 2007-2008, when he worked with Brooke as a student on the pilot Investigative Journalism course at City:

Lots of the early stuff I was doing was standardising FoI responses, getting them into a spreadsheet, and doing ... doing everything the hard way actually, because I hadn’t been taught lots of things that I would now do to make the process easier. ... But this was before anyone was interested in data journalism (Ball 2013).

WikiLeaks – and a journalism MA goes interactive

In 2010, the year after MPs’ expenses, and more significantly for data journalism, came the huge WikiLeaks releases of war logs from Iraq and Afghanistan, and of

cables from US embassies around the world. “It was a big deal for us – and it also made newsrooms see data people differently,” says Simon Rogers, who had launched the *Guardian*’s data blog the previous year (Rogers 2013b). Working on the war logs and cables also proved formative for Rogers’ successor as data editor, Ball, first at the Bureau of Investigative Journalism and then at WikiLeaks (Ball 2013).

Ball was soon teaching his successors at City University London, first on the MA Investigative Journalism. Data experience from the course helped Conrad Quilty-Harper gain a job at the *Telegraph* in 2010, where he became interactive news editor. The next step in data journalism at City was the MA Interactive Journalism, which I set up in 2011. This included a separate module dedicated to data journalism, led by Ball and Bradshaw, with input from Rogers – at the same time as his team grappled with data from the August riots that took place in London and other cities.

The Interactive Journalism course now has its fifth cohort of students (for 2015/16). Out of the first 36 graduates, 11 went on to work as data journalists, and a further eight in data-related roles (Hewett 2014b). Employers of these alumni include the BBC, *The Times* and *Sunday Times*, the *Guardian*, *Telegraph*, *Financial Times*, *Manchester Evening News*, *CityAM*, *Property Week*, investigative site *Exaro* and Trinity Mirror’s data journalism team (set up in 2013 to work with its regional newspapers and the *Daily Mirror*). The course also includes a specialist module on strategic social media, community and online engagement, and many alumni are working in this area – where data is also relevant, eg in analytics – as well as in more traditional reporting or editing roles.

Although a growing number of university programmes in the UK and elsewhere have included data journalism in their curriculum, the picture is mixed. As recently as 2014,

one journalism educator concluded that “the route into data journalism is not an obvious one and a period of studying journalism at a UK university certainly doesn’t seem to be part of that route” (Hannaford, 2014). Most journalism schools “don’t get it”, according to the head of interactive news at the Financial Times (Tinworth, 2014). This may reflect the particular complexities of running data journalism courses, which include ensuring its currency; the “million-dollar question” (McKerral 2013) of who will teach it; technical and statistical demands; and – in a market-oriented HE system – the need to attract students who may not be familiar with data journalism (Hewett 2015). At the same time, coding has been making its way into journalism programmes, at Cardiff, Goldsmiths and City, for example.

No longer an embarrassing reminder

A more comprehensive picture of data journalism as a developing theme in British journalism – alas beyond the scope of this chapter – would also need to take account of:

- training sessions run elsewhere (eg with Journalism.co.uk) by Bradshaw, Kevin Anderson (*ex-Guardian* and BBC) and others;
- work by the Open Data Institute and the Open Knowledge Foundation (OKF) (and its School of Data project), including efforts for more – and more accessible, reusable – open data;
- collaborative input from computer scientists and developers such as Tony Hirst of the Open University (and ‘data storyteller’ at OKF);
- data-related services developed outside mainstream journalism, ranging from UpMyStreet, PlanningAlerts and OpenlyLocal to MySociety’s FixMyStreet, GIS and mapping initiatives;

- interest in fact-checking and data-informed visual material in journalism;
- data in business/financial journalism, social media, sharing and analytics;
- closer cooperation between between journalists and developers, such as in hack days, the evolving Hacks/Hackers movement and the annual MozFest supported by the Mozilla Foundation;
- the development of data journalism across Europe, including the European Centre for Journalism's extensive work;
- free online resources, including MOOCs (massive open online courses) in data visualisation and data journalism, and the *Data Journalism Handbook*, supported by the ECJ and OKF;
- web-based services for scraping and coding (eg Scraperwiki), and for analysis and visualisation;
- data journalism at broadcasters, news agencies, magazines and specialist media;
- continued links with CAR and data journalists in the USA and beyond.

“The time has come to abandon ‘computer assisted reporting’,” Meyer asserted in 1999. “CAR is an embarrassing reminder that we are entering the 21st century as the only profession in which computer users feel the need to call attention to themselves” (1999: 4). Eleven years later, when Tim Berners-Lee declared data journalism to be the future, the technology editor covering this wondered pertinently: “how long will it take for the methods of data journalism [...] to filter through to everyday use in journalism?” (Arthur 2010).

Data journalism draws on wider foundations and aspirations than CAR, and it now appears to be flourishing. Certainly it is in everyday use in some parts of journalism,

although it takes many different forms and its practitioners vary from solo operators to large teams. Its spread, successes and diversity surely qualify data journalism to be a worthy successor.

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Note on the contributor

Jonathan Hewett is Director of Interactive and Newspaper Journalism at City University London. His research interests include social media, data journalism, and the teaching and learning of journalism. Jonathan has led and taught on journalism programmes since 1997. He welcomes suggestions, corrections and other constructive feedback, plus offers of help, funding, coffee and chocolate to J.C.Hewett@city.ac.uk or [@jonhew](https://twitter.com/jonhew).