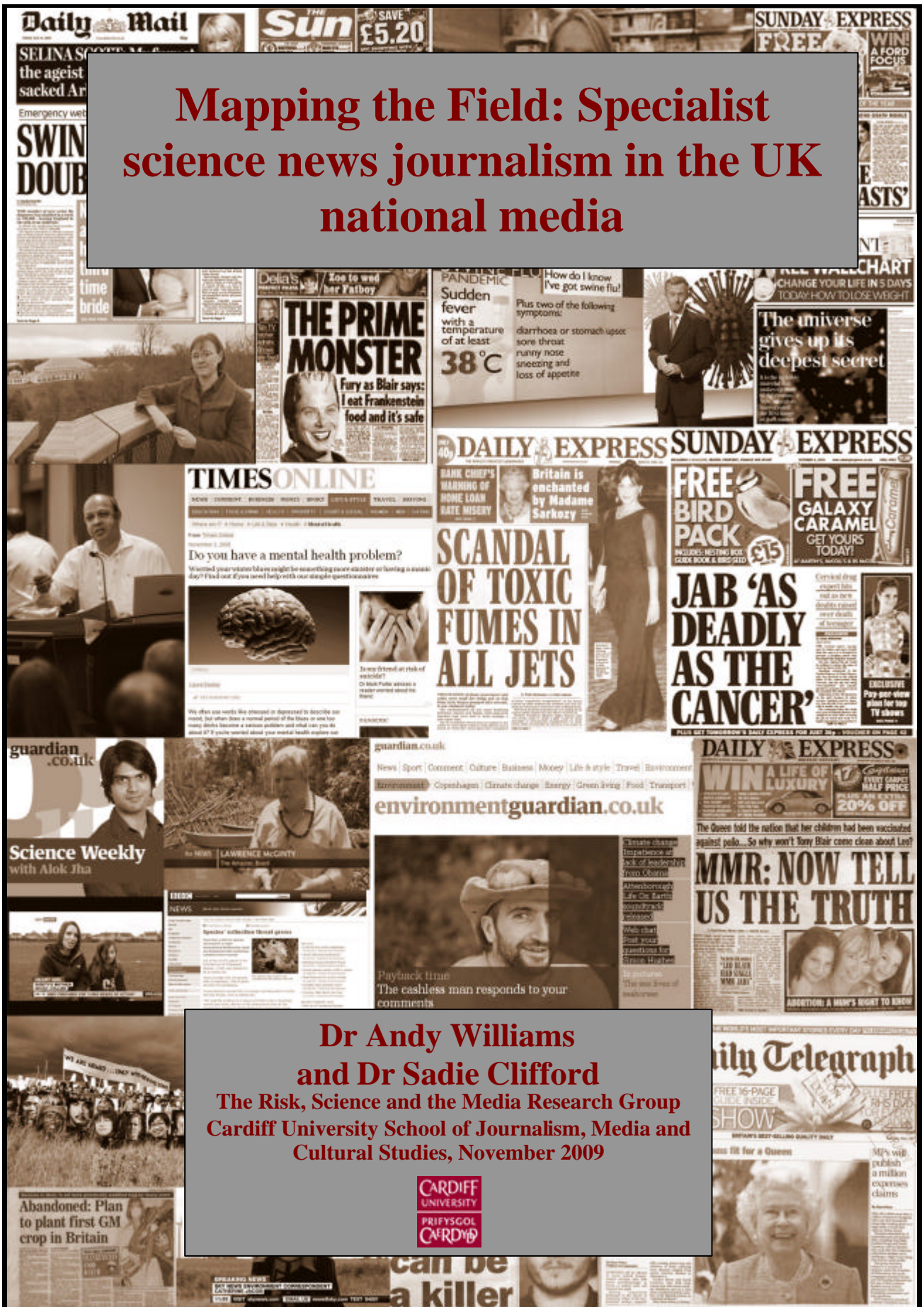


Mapping the Field: Specialist science news journalism in the UK national media



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Executive Summary:

There has been much debate about the quality of UK science news in recent years. But too many discussions have failed to take into account the fact that news is produced by reporters working under significant economic and institutional constraints. Science news is not formed in a social, economic, or cultural vacuum. It is written by people at news organisations which are cutting staff, investing fewer resources into news production than ever before, and in most cases publishing or broadcasting for a dwindling audience. Nowhere is this clearer than in the USA where the number of newspapers with specialist science sections fell from 95 to just 34 between 1989 and 2004, and where the cable news channel CNN recently axed its entire science and environment team. We believe any discussion of science news in the UK national media must be situated in the context of the economic and political conditions under which news is made, as well as the more particular political economy of specialist science journalism. Put simply, the ability of specialist journalists to produce independent news of a high quality is inseparably linked to the ability (or willingness) of news organisations to adequately resource their newsgathering activities.

This report is based on: 42 internet survey responses from UK national science, health, environment, and technology news journalists (we attained a response rate of 43%); 47 interviews with current and former UK national science, health, and environment news journalists¹; and five interviews with senior editors at BBC News, ITN, and *The Times* newspaper.

Numbers of science journalists over time:

In some respects the beat is in a far stronger position than at many points in the last two decades. The period between 1989 and 2005 saw an unprecedented rise in the numbers of science, health, and environment journalists in the UK national news media (numbers almost doubled from 43 to 82.5). As should be expected, these overall figures mask significant fluctuations at individual news outlets. The BBC is responsible for the lion's share of this increase, having moved from just two specialists to 30 in two decades. Most of this overall historic increase occurred in the '90s, and since 2005 there has been a period of stability on the science beat (there are now 82 journalists). 61% of survey respondents now believe that in terms of staffing levels the UK national science news beat is either stagnant or in decline.

Increasing prestige and growing appetite for science stories:

Long-term increases in the human resources devoted to covering science have developed alongside an increasing respect for science specialists within newsrooms. A fallow period in the 1980s and early 1990s when many specialists found it difficult to "sell" stories to editors has now ended, and most report a continuing and constant demand for stories. Although previous studies have found that in the past science specialists have suffered when their stories become big news – to be handed over to more senior journalists or generalist reporters – we found almost

no evidence that this practice (known as “bigfooting”) persists today. We also found that some specialists are valued advisors in newsrooms.

Increasing workloads:

On the other hand, however, workload increases have been widespread and in many cases are becoming problematic. Whilst the number of journalists employed on the science beat has not risen in the last five years, reporters state that workloads have increased significantly.² More than half of our survey respondents (53%) said workloads had increased a lot in the last five years, 35% said they had increased somewhat, 8% reported workloads as stable, and not one journalist was able to say their workload had fallen. Despite the fact there are now more specialist science, health and environment journalists than there were a decade ago, the overall amounts of content reporters are expected to create has clearly risen. This is acknowledged by editors, and it is a clear source of unrest among many journalists. Most of these workload rises can be attributed to increasing cross-platform and multi-media journalism and the rise of internet news. These increases are not all caused by pressure to produce more content, however. Many science specialists complain that a lot of their time is spent trying to convince news desks not to run poor-quality “bad science” stories they have seen on the news wires, in eye-catching press releases, or in the sensationalised or inaccurate coverage of competitor newspapers.

The problem of “pack journalism”:

A major consequence of increasingly resource-strapped newsrooms is that specialist reporters complain they are expected to rely too much on “diary stories”, and are not given enough time for independent journalistic work. In many news outlets, we were told, this leads to a centralised news-desk-driven homogenisation of science news coverage: a form of pack journalism in which journalists feel pressured to run stories not because of their news value, but out of fear their competitors will cover them and their title will be left out. This urge to “keep up with the Joneses” results in a self-perpetuating reliance on predictable news agency- and PR-led news (so-called “low-hanging fruit”) which discourages “original journalism”.

Time for checking facts and researching stories:

Workload pressures have led to a number of detrimental effects on how many specialist science news journalists work. Almost half (46%) of our survey respondents report they now have less time to research and fact-check stories than previously, and one fifth (22%) say they no longer have enough time to sufficiently fact-check the stories they put their names to. Although many also add that the research process has been made more efficient by the rise of the internet and the speed of modern communications.

The dominance of the diary:

Many news journalists told us they do not have enough time for “original journalism” and that their work was too dominated by the science news diary: a calendar of scheduled events deemed to be of news value. Typical diary stories written by science specialists involve one-off events like academic conferences, press conferences, briefings, and political summits, but also regular occurrences such as the publication of major research periodicals like *Nature*, *Science* or the *British Medical Journal*. Science news sources have become more aware of the importance of the diary and have become adept at exploiting the need to have a secure stock of stories waiting to be covered. One journalist told us diary-based press releases have become the “bread and butter” of science and health news, and another referred to them as “low-hanging fruit” because they are “easy stuff to turn around”. Only 23% of respondents reported that most of their stories originated with their own active journalistic investigation; 46% say they are more often than not the passive recipients of news story ideas from sources.

The rise of science public relations:

Whilst the extent of the influence of public relations varies widely between different news outlets, there is a general sense that PR has become an increasingly important and unavoidable presence over the last decade. Principally as an agenda setter, providing initial ideas for stories and a jumping off point for the journalistic research which follows, but sometimes as a “cut and paste” short-cut taken because of increasing workloads. A significant minority, 23%, believe science specialists rely on PR too much, and 25% of respondents said they now use more PR than previously. Most report that sifting through the hundreds of e-mails they are sent by press officers every day is a significant workload issue in itself.

The future of specialist science news in the UK national news media:

Despite the gloomy picture painted by many science journalists most do not believe that their news beat is under serious long-term threat. Most do not think that science news has been hit any harder than other specialist patches, and believe that as long as there are serious news organisations there will be a need for the knowledge and expertise brought by specialist science journalists. 56% of survey respondents disagreed that science specialists are a dying breed in the UK (although 53% also disagreed that there would be *more* science journalists in the UK in ten years’ time). This qualified optimism was confirmed by the senior editors we interviewed.

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1. Introduction

There is no shortage of comment about the state of UK science journalism. One often hears complaints from many quarters that falling news budgets and decreasing staffing levels at national news organisations are leading to poorer quality journalism about science. But it is also common to hear competing claims, which emphasise the strength of specialist science journalism in the UK.

To take two recent examples: at the 2009 World Conference of Science Journalism the Minister for Science and Innovation Lord Drayson praised British science reporters as “among best in the world” at “speaking truth to society about science”; barely three hours later, and in the same room, Guardian columnist and doctor Ben Goldacre referred to a room full of these journalists as “murderers with blood on [their] hands”. His argument was that science journalism was now of such a poor standard that it was having a serious detrimental impact on public health at least in part because of the increasingly harsh economic and institutional constraints under which journalists now operate. Amidst such varying claims, what is lacking is empirical research on the subject. This targeted research aims, at least partially, to fill this gap.

The first part of this introduction (part 1.1) examines the arguments in favour of specialist science journalism. The next part (1.2) looks at the criticisms made of specialists. We then go on to reflect on the assumed link between good science journalism and the public understanding of science (1.3) before concluding (in part 1.4) by examining what the present study does (and what it cannot do).

1.1 In praise of science specialists

It is well known that news organisations rely in large part on a pool of generalist journalists who are willing and able to report on a wide range of events and topics as the news occurs. But most have also traditionally divided the labour expected from their journalists into a series of areas of specialism known as news beats. The subject areas covered by these beats have varied over time depending on what editors, news proprietors, and publics have regarded as newsworthy, but the job of the “beat reporter” has remained relatively constant. Assigning reporters to a specific beat allows them to accumulate expertise of a specific field, as well as to build good working relations with relevant news sources who can provide information and opinion: the raw material which is then fashioned into news stories.

Many practitioners and commentators believe there is a clear qualitative difference between science news reported by specialists and that produced by others. A decade ago the influential *Third Report on Science and Technology* from the House of Lords Select Committee on Science and Technology characterised science news in the UK as split dichotomously between that produced by specialists and non-specialists. Specialists, it states, “value their reputation for accuracy, and often go to some trouble to get the story right”. Their stories are “usually the product of some journalistic research”. Generalist journalists do not receive such praise, and are criticised for undoing the good initial work of their more thorough and diligent colleagues when

science stories have been elevated from the science pages and become of more general interest. “What may have started as a science story, presented with care by a specialist science writer”, says the report, may then become a “news story, subject to a very different set of values and criteria” (House of Lords Select Committee on Science and Technology, 2000). The news values of non-specialists identified by the committee include over-simplification, and an unhealthy emphasis on conflict and controversy. It also strongly criticised the misleading use of the journalistic norm of “balancing” conflicting views on a scientific issue giving equal weight to voices representing the scientific consensus and those seeking to gain credibility for “minority views” (Allen 2002). Nine years later, in a well-attended public debate at the Royal Institution between science minister, Paul Drayson, and doctor and science writer, Ben Goldacre, Drayson made a similar distinction:

I believe that we really do have an admirable and improving standard of science reporting in this country, but *when* it’s written by dedicated science correspondents. To me, a science journalist means someone who spends the majority of their time engaged in the reporting of science; who writes primarily about science and therefore someone who really knows about the subject.

Talking of recent cuts to science news staffs in France and the United States, the minister continued, “it is very important for us to support our science journalists in their fight for their budgets within their media organisations and to recognise where they are doing a great job”.

Science journalists themselves have also made public pronouncements on the differences between their own approaches and the supposedly more sensationalist, and less rigorous coverage of their colleagues. Michael Hanlon, science editor of the *Daily Mail* (formerly at the *Daily Express*), for example, has decried the gullibility of his generalist colleagues for being led by the carefully crafted public relations materials of environmental NGOs during the media debates over genetically modified foods, and condemned the “irresponsible scaremongering” (Hanlon 1999) which resulted in “brainless reporting” of this story (Hargreaves 2000). Another broadsheet science specialist has spoken of how she felt when the Human Genome Project became a popular news story after years of relative obscurity: “It’s like being an anthropologist when the first package tourists arrive. You’re studying something rather obscure that you understand and a few other people understand and you try and write stories about it and suddenly other people arrive and the whole thing gets simplified” (Kitzinger et al 2002).

Some researchers have argued that “specialist science reporters tend to be better educated in science when compared to their general news peers”, a fact which it is suggested leads to better journalism (Weigold 2001). Research has also shown that science specialists report science issues and events differently to their colleagues. On some issues, for example, these correspondents are more likely than other journalists to lead a story with evidence from scientific research, rather than construct their news with primary reference to the ethical, legal and social implications of science (Boyce 2007; Kitzinger et al 2003). Likewise research on contentious science stories such as the MMR vaccine, GM foods, climate change, stem cell research and animal-human hybrid embryos has consistently found that these specialists are often more likely to favour scientists than non-scientists as news sources (Hargreaves et al 2003; Williams and Gajevic 2009).³

Perhaps understandably, scientists and other science communicators (such as science press officers) often express greater levels of trust in specialist reporters, believing that greater knowledge of the field leads to more accurate and better-quality representations of their research (Peterson et al 2009, Boyce 2007, Anderson 2005). One prominent science communicator has stated: “quite simply when science reporters cover science stories, the stories are better” (Fox 2009). Another, when asked about the challenges of communicating the controversial science behind the MMR vaccine in the UK, said, “Generally we’ve not needed to work very hard with the health correspondents. [...] I mean, they know the science, they know the evidence, and they try to present that evidence” (Boyce 2007, p. 31).

1.2 Pitfalls of specialist science journalism

But this admiration from scientists and science communicators also alerts us to one of the most commonly made complaints about specialist science writing. From the very first sociological studies into science journalism it has been suggested that at times specialists get too close to their news sources and lose their critical edge. As Simon Pearson, the night editor of *The Times* newspaper told us (in an interview for this research), “a specialist correspondent has the time, hopefully, to build up specialist contacts, though that has to be weighed up against the danger of the specialist correspondent going native”. Dorothy Nelkin argued in 1987 that the sheer complexity of some scientific claims and evidence leads specialists to trust scientists as news sources far more than they would sources from other sectors. She states: “Many journalists are in effect retailing science and technology more than investigating them, identifying with their sources more than challenging them” (Nelkin 1987).

Her point is clear: specialist journalists rely on news sources to obtain the raw material of their news articles and broadcast pieces. The image of journalists as fearless muckrakers locked in conflict with powerful sources as they battle to unearth buried stories and speak truth to society was always a myth. But the economic and institutional realities of modern news production mean that the everyday working life of most journalists is more bound by routine than previously, and that relationships with news sources are far more consensual than traditional “conflict models” imply. Media scholar Herbert Gans uses the metaphor of dance to describe relations between journalists and sources in news production, suggesting that while “it takes two to tango, sources usually lead” (Gans 1979). More recently academics have also tended to cast journalist-source relations as consensual, showing how day-to-day relationships are cooperative and not conflictual (Blumler and Gurevitch 1995). They locate mutually beneficial exchange-based relationships where sources trade information for coverage in news media which the journalists provide (Ericson *et al* 1989; Jones; 2006).

Research on science journalism has continued in this vein. Boyce suggests that one of the main criticisms made about science specialists is that “their relationships with sources are too familiar to remain ‘objective’” (Boyce 2007), and Hargreaves states that “science and science journalists are inclined to operate in alliance with each other, rather than in analytical tension.” (Hargreaves 2003). Haran et al have argued that at times the specialist science journalists ally themselves too closely with science and with scientists, suggesting this leads them to display uncritical optimism

when reporting claims about the benefits of stem cell science (Haran et al 2008). Journalists themselves have also voiced concerns about the proximity of this relationship, suggesting that it sometimes leads science specialists to act more like advocates for science rather than detached critics. Former BBC World Service science correspondent Toby Murcott has written about this danger, noting the fact that much science journalism now does little more than convey the information about science that is handed down to them by sources. He writes, “wholesale support of an entire field of endeavour is not journalism, it is priesthood”, and argues that specialists should always seek to play the role of “intelligent critics” of science, as well as “translators” of complex information (Murcott 2009).

Identifying a similar danger former *Science*, *Nature*, and *New Scientist* journalist David Dickson has written:

There has been a tendency in recent years to assume that science journalists should, almost by definition, be part of the “science promotion” business. This is particularly strong among those who argue that the low esteem in which science is widely held is primarily the results of a “bad press” – and that science journalists have a responsibility to help reverse this situation. [... But] science journalists should not be seen, or see themselves, as part of a public relations effort, however much those with responsibility for promoting a particular scientific activity or programme seek to recruit them their cause. (Dickson 2004)

A recent editorial in *Nature* explored this problem further, asking whether science journalists were cheerleaders for, or watchdogs of, science. “Many tend to think of science journalism as a kind of public-relations service, existing purely to explain new scientific findings to the masses”, says the piece. It goes on to suggest this kind of laudatory reporting is not enough, concluding: “society needs to see science scrutinized as well as regurgitated if it is to give science its trust, and journalists are an essential part of that process” (*Nature* 2009).

But this kind of journalistic scrutiny is becoming more difficult in UK newsrooms, many of which have been hit by cuts, and in which workload demands have continually increased over the last two decades. Interrogative, critical, investigative reporting is expensive. It costs in time, money, and human resources, all of which are in increasingly short supply. Staffing pressures coupled with the demands of multi-platform journalism have meant that reporters are under more pressure to simply process pre-packaged sources of news such as those provided by public relations professionals. Journalism’s contraction in the past two decades has been more than matched by an unprecedented expansion in the field of PR (Cottle, 2003; Davis 2002 and 2008; Fletcher 2006; Franklin 1997 and 2006; Larsson 2006; Maloney 2006; Manning 2008; Miller and Dinan 2000).

This has been true in the field of science communication as much as anywhere else. Not only have the masters of applied science in the pharmaceutical, energy, and biotech industries hugely expanded their public relations efforts, but so have political, public and non-governmental bodies such as government departments, universities, research councils, professional associations, charities, pressure groups, and specialist science publications (Goepfert 2008; Lewis et al 2006, 2008a, and 2008b; Dinan and Miller 2007). This has led some specialist journalists to reflect on

the need to guard against the undue influence of well-resourced, but ultimately self-interested, PR teams. Put simply, “as newspapers employ fewer people with science-writing backgrounds, these press offices are employing more. Whether directly or indirectly, scientists and the institutions at which they work are having more influence than ever over what the public reads about their work” (Brumfiel 2009). In the words of David Dickson, science journalism “needs to maintain its independence, and avoid becoming an extension of the public relations industry” (Dickson 2004). Reading the accounts of some journalists it might seem like Dickson’s appeal came too late. Former science and health journalist Nigel Hawkes described changes in his working routine brought about by the rise of PR when speaking to Cardiff University researchers in 2006. He declared, “We are “churning” stories today, not writing them. Almost everything is recycled from another source [...]. It wouldn’t be possible to write so many stories otherwise.” He went on to explain:

Yet even more is expected, filing to online outlets is now considered to be part of the job. Specialist writing is much easier because the work is done by agencies and/or writers of press releases. Actually knowing enough to identify stories is no longer important. The work has been deskilled, as well as being greatly amplified in volume, if not in quality. [...] There is much more PR these days. I get hundreds of press releases in my mailbox every day, and I get lots of calls from drugs companies offering to pay for me to go to this international conference or that convention. [...] It’s become a lot easier to use PR because of the technology. It’s very easy and convenient, and as we’re producing so many more stories, we use it. [...] If you’re not feeling too energetic it’s almost as if you could surf this great tidal wave of PR all the way in to the shore and not come up with any original material all day. (Lewis et al 2006)

1.3 Specialist science journalism and the public understanding of science

Aside from these debates, it is also worth noting that there is considerable disagreement about whether more science journalism, let alone more science journalism written by specialists, will improve the public understanding of science. Many previous discussions of science journalism and the role it plays have relied on what has become known as the “deficiency” or “deficit” model of science communication (Ziman 1992, 2000). Scientists and other science communicators have tended to see the news media as little more than a “transportation system” whose primary role is to disseminate information about science, health, or the environment to an expectant public waiting to be educated (Hughes et al 2006). This model is problematic for a range of reasons. Firstly, it falsely reifies and unifies science, masking its processual, dialogic, and often highly contested nature (Gregory and Miller 2001; Labinger and Collins 2001). Secondly, it allocates too much power to scientists and marginalises the importance of the public and of the media (scientists decide which ideas are to be disseminated, journalists merely translate and simplify this information, and the public simply “absorb, in an impoverished and lessened form, ideas which stem from scientific activity” (Bucchi 1998)). Thirdly, it relies on over-simplified conceptions of how audiences consume media, painting the public as empty vessels to be filled up rather than active subjects contributing to the interpretation of the news they read. Finally, the deficit model fails to understand that the news media itself is not a neutral

conveyor of scientific knowledge, but a highly complex constellation of actors and institutions with their own politics, values and practices all contributing in their own ways to the mediation and construction of information about science (Kitzinger 1999).

The critiques of the deficit model have led some commentators to claim there is no unproblematic link between coverage by specialist science journalists and public understanding of scientific issues. Content analysis research into the coverage of cloning and genetic medical research carried out at Cardiff University found that it was a very “science-driven story” which was reported heavily by specialists and was dominated by scientific news sources. However, accompanying public opinion research found that despite this the public did not feel informed as a consequence of their media consumption. The research concluded:

We find little evidence to support the idea that the presence of more science, scientists and science specialists in the media will increase the public understanding of science. On the contrary, a “science for science’s sake” approach [to the media] seems the one least likely to generate public engagement and therefore public understanding. (Hargreaves et al 2003)

1.4 What this study does (and what it cannot do)

This study is more of a data gathering exercise than a fully-formed analytical or theoretical intervention in the ongoing debates about science journalism, its place in society, and its possible roles in fostering (or hindering) the public understanding of science. The arguments surrounding specialist science journalism briefly rehearsed above offer an insight into the complexity of some current debates, but a research project of this scope cannot begin to resolve any of them. It does, however, address the political economy of science journalism, i.e. how things like media ownership, business models, resource levels, working routines, and labour practices effect the production of the news. In so doing it does some of the empirical groundwork we believe is essential to discussions of the future of specialist science news.

- The following chapter, **section 2** explains the research methods we used to produce this report.
- **Section 3** sets out the important economic contexts around the current crisis in news journalism which we believe need to be discussed if one is to understand the challenges faced by specialist science journalists in the UK today. It also looks briefly at the state of science journalism in the USA, where this news beat has been hit particularly hard by staffing cuts in recent years.
- **Section 4** provides new figures on the number of specialist science, health and environment news journalists in the UK national media today, comparative information which shows how this beat has broadly expanded over the last 20 years. It also presents analysis of some recent contractions in the field.
- **Section 5** identifies indications that science journalists have enjoyed increasing levels of prestige within the newsroom over the last decade as editors have realised how popular science, health, and environment news is with audiences.

- Despite these positive developments **section 6** outlines findings which point to widespread, and in some cases problematic, workload increases among science journalists, and looks at the impact of online and cross-platform journalism on the beat.
- **Section 7** details the problems associated with the dominance of “diary stories” within contemporary science journalism, and how many reporters feel unable to pursue their own independent lines of journalistic enquiry.
- **Sections 8 and 9** look at the decreasing amounts of time journalists report they have to research and fact-check their stories, and what many identify as the growing influence of public relations on science journalism.
- Our final chapter, **section 10**, presents the views of journalists and key senior editors about the future strategic importance of science journalism in the UK national news media.

2. Methodology

Initial mapping exercise

In collaboration with members of the Science and the Media Expert Group we generated an initial working database of 97 UK national journalists working in the fields of science, health, environment, and technology across all platforms and news organisations.⁴ This list was modified throughout the research period as we communicated with journalists and editors until we gained the most complete record it is possible to gather. The initial database was used to send out links to our online survey to specialist science journalists and to contact them to ask for interviews.

Online survey of specialist science journalists

An online survey was sent to 97 UK national science news journalists, and was answered by 42 of them (giving us a 43% response rate). Respondents were spread relatively equally between the fields of specialist science, health and environment journalism. 53% of our respondents said they regularly cover health, 58% regularly cover science, 43% the environment, and 21% technology. Around a quarter came from the BBC, and three quarters from the commercial news sector. Two thirds of the newspaper journalists who responded came from the broadsheet press, and one third from the tabloids and mid-markets. These proportions roughly reflect the dominance of the BBC as an employer of science journalists in the UK national news media, as well as the fact that the broadsheets employ more specialists than the popular and mid-market press.

The survey was designed to gather full data about the current size of the UK specialist science news journalism workforce in different sectors and on different platforms, to measure expansion/contraction in this field over the last 20 years, and to evaluate changes in workload, working routines, and working conditions which have occurred in science journalism in comparison with other news beats. The research team used web-based software available to Cardiff University through its subscription to a bespoke service provided Bristol Online Surveys.

Qualitative semi-structured interviews with specialist science journalists

Forty two semi-structured telephone interviews lasting on average 38 minutes were carried out with specialist science journalists to gain more detailed and expansive qualitative information to supplement the quantitative data obtained from the survey. The full extent of the overlap between the interviewees and the survey respondents could not be determined because those who completed the online survey were given the option of doing so anonymously. We do know for sure, however, that 18 of those who filled out the survey were also interviewees. We also interviewed 5 former specialist science journalists and editors to gather longitudinal data and add a more pronounced historic perspective to the picture which emerged from talking to serving journalists. Some journalists were willing to go on the record and were happy to be named in the

report, but most decided to contribute to the research anonymously. For this reason we have, in most cases, removed identifying information from the quotations we include in this report.

Qualitative semi-structured interviews with senior editors

Five further semi-structured interviews with senior editors at UK news organisations lasting on average 25 minutes were completed in order to gather specific data about the strategic importance of specialist science beats in relation to other specialist areas of news journalism such as politics, business, and economics. These interviews were also designed to give us further data about past, current, and future levels of contraction/expansion in specialist science news. We interviewed: BBC head of newsgathering Fran Unsworth; editor of the BBC news website Steve Herrmann; deputy editor of the BBC's multimedia newsroom Craig Oliver; ITN's deputy editor of network news and head of newsgathering Jonathan Munro; and *The Times* night editor Simon Pearson.

3. Economic contexts

Any discussion of specialist science reporting must be situated in the context of the political economy of the news in the UK more generally. Commercial news organisations make their money from selling news to readers, but also from selling readers to advertisers. This was put to us baldly by the former science editor of the *Independent* Tom Wilkie:

the role of journalists on newspapers and magazines is effectively to fill the white space between advertisements, in order to attract the sorts of readers that the advertisers want to reach. [...] Now, if at the same time you can actually do things that you enjoy and that you think are fun and informative and educational, then that's a bonus. But the point is that newspapers exist, in broad brush terms, to make a profit.

Wilkie is talking about the national print media here, but he made clear that the point is analogous in the commercial broadcast media. Indeed, even the publicly-funded BBC News has been under increasing resource pressures in the last decade, has undergone a series of staffing cuts, and is far from sheltered from the vicissitudes of the market economy.

3.1 The crisis in commercial news

As of March 2009 national newspapers were generating volume sales of an estimated 3.9 billion a year, down by 15% on 2003 (Mintel 2009). Longer-term trends in circulation have been, on the whole, equally bleak. Since 1980 the Murdoch-owned newspapers the *Sun* and *The Times* are the only significant UK titles to have seen significant rises in circulation, and even they are in decline at the moment (see appendix 1). Television news audiences on the main terrestrial channels are also falling. For instance, between 1996 and 2006 people watched television news for an average of 108.2 hours per year, but by 2006 this had fallen by almost 20 hours to 90.8 hours. The hardest hit news provider has been ITV, whose share of this audience fell from 35% to 26% between 2001 and 2006 (Ofcom 2007). The traditional news media's loss has, to a limited extent, been the internet's gain. Internet news audiences have expanded, and news-related advertising revenue on the internet has followed suit. People now consume news differently, and in far more numerous ways, than previously. And more importantly, since the advent of free news online, they do not want to pay for it.

3.2 The effects of the crisis on journalism

The commercial effects of dramatic audience decline in the traditional media have been stark. The profitability of print and commercial television news has been hit hard, and while audiences have migrated to the internet advertising profits have not followed them in any noteworthy way. News organisations have reacted to this crisis in profitability in a number of ways, but one almost universal impulse has been to cut costs by cutting staff. Another has been to produce

more news content (either in the form of increased pagination and extra supplements in newspapers, or by branching out into cross-platform and multimedia internet journalism). Research carried out by Cardiff University from 2006 found that while the number of journalists in the national press has remained fairly static for 20 years, they now produce three times as much printed copy as they did (Lewis et al 2006, for a detailed breakdown of historic employment levels at national newspapers see appendix 3).⁵ When one adds to this the extra work associated with producing online news one cannot avoid the simple conclusion that journalists are now required to do far more with the same amount of time.

3.3 The political economy of science journalism

This bleak recent history has, of course, had an effect on specialist science journalism. Simon Pearson, the night editor of *The Times* was candid in his summation of the uncertainty faced by print journalism:

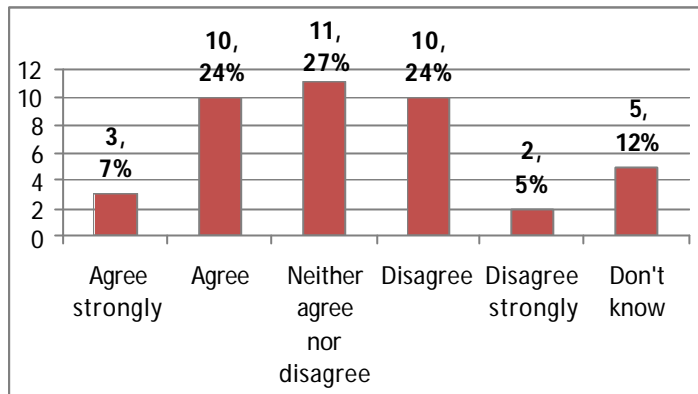
The sums don't add up for newspapers anymore, it's a very confused time and if you asked me, "Where are we going?" I don't know. "Am I going to be working exclusively for a web platform in five years time; will the newspapers still be around; where are we going to get our revenue from?" I don't know. We've got declining newspaper sales and a rising number of people reading their stuff online but not paying for it. I don't know where we are going.

In this context feelings of uncertainty about the future of specialist news journalism were common among current specialists we interviewed. One health journalist told us, "I don't think anyone in journalism is safe because the profession is going through profound change, not least because of the internet". Another commented:

The internet is producing convulsions across journalism. Nobody can really understand how you can make money from the internet and finance journalism through the internet. I think it's going to take a decade to shake down and they'll find new models for generating income from internet sources, but at the moment people don't know. Clearly, if a newspaper's putting its content online for free, then there are issues about how you raise revenue and that will have knock-on issues as to how you can staff up operations.

However, journalists were evenly split on whether or not commercial imperatives are damaging the field of specialist science journalism.

Figure 1: Commercial imperatives are damaging the field of specialist science journalism



n=41

Almost a third of survey respondents agreed that commercial imperatives were damaging science journalism. A similar number disagreed, and almost 40% were unsure, or did not have an opinion either way.

Some journalists even went so far as to express surprise that, given the poor economic state of the news industry, there were any specialists left in the UK at all. As Tom Wilkie put it, “set against this economic background, it seems to me quite remarkable that there’s any specialist science reporting being carried on in our national newspapers at the present moment”.

3.4 Science journalism in the USA

Wilkie’s concern might seem hyperbolic, but it is backed up with a solid knowledge of how specialist science news has fared elsewhere in the world. Another important economic context for this study is the current dire state of specialist science reporting in the USA. After a boom period in the 1980s and early-to-mid 1990s recently there has been a significant decline in recent years in the amount of resource that American news organisations are prepared to spend covering science. In 1989 a total of 95 US newspapers had dedicated science sections (Brumfiel 2009). By 2004 this number had fallen to just 34 (Mooney 2008, Russell 2006). A global survey of science journalists carried out by *Nature* found that one in three US reporters had seen cuts to the beat at their organisation in the last year (Brumfiel 2009).

A number of the UK journalists we interviewed for this study remarked on the fact that when they cover science events in the USA they encounter fewer and fewer American journalists. Tim Radford the former science editor (and current freelancer) at the *Guardian* told us that when he attended a recent major science conference he was struck by the low numbers of science specialists in attendance. Even a prestigious local newspaper did not send a reporter:

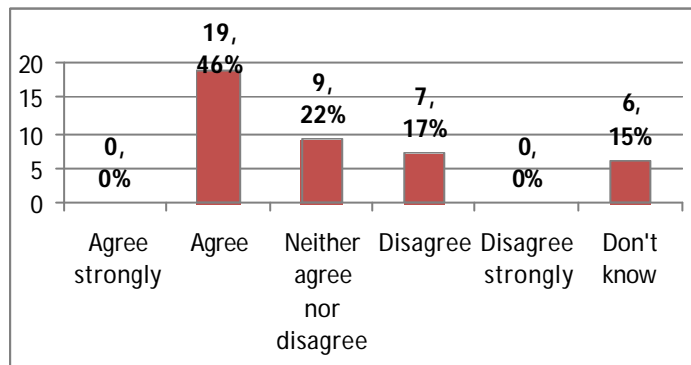
The thing that horrified me was that the *Chicago Tribune* which once ran 16 pages on the apparent fraudulent behaviour of Dr. Robert Gallo back in the eighties did not send a reporter to the American Association for the Advancement of Science

meeting in Chicago. It just picked up agency copy because they didn't have a science editor.

Newspapers are not the only ones cutting science journalists. In 2008 the cable news organisation CNN cut its entire science, technology, and environment news staff, which consisted of Miles O'Brien, its chief technology and environment correspondent and six producers (Brainard 2008).

Although there are no current indications that any UK national news organisations are following suit many specialists in this country are clearly concerned about the situation in the United States, and some worry serious cuts might also be applied here.

Figure 2: I believe the cuts to science news we have seen in the USA will be replicated in the UK



n=41

Almost half of respondents believed that the swingeing cuts the US science journalism cohort has suffered will be replicated here. As one told us, "I think there must be a danger of that happening in the UK [...] simply because... what's the saying? When America sneezes Britain catches a cold. There has to be a danger of that". Another said, "without a doubt, the situation in America has been very tough for them and there will be big pressures here. Papers will probably fold in this country and science jobs will be lost".

4. Map of the field

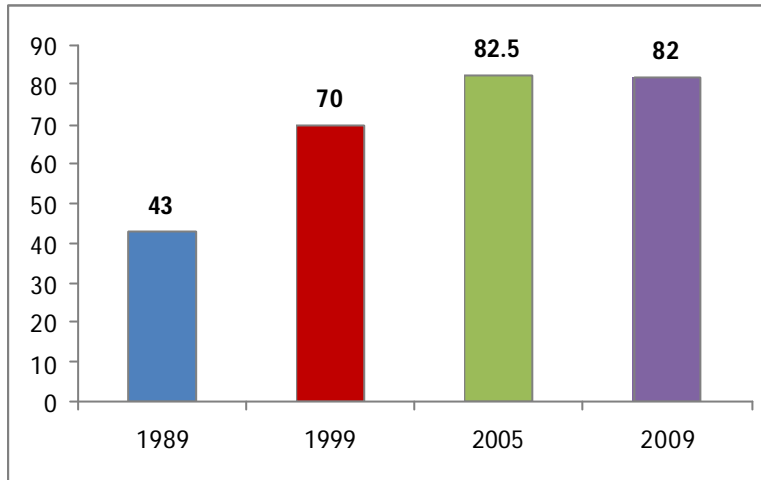
Generating reliable comparable figures detailing numbers of specialist journalists across the last two decades is very difficult. News organisations rarely keep records of overall historic numbers of news journalists, and, even if they do, they hardly ever retain breakdowns of the numbers of journalists who worked on different news beats. They are also notoriously unwilling to give up information about staffing numbers because of commercial sensitivity. Consequently the most reliable way of obtaining this information is to survey and interview current and past journalists. This method is also fraught with difficulties. Firstly, it is time-consuming, complicated, and somewhat akin to piecing together a large jigsaw puzzle without a picture to guide you. Secondly, the memory is not an exact tool and many of those we spoke with made clear the information they were giving us is not official, and might not be completely reliable. Thirdly, it was sometimes difficult finding serving or former journalists who were working at, or had knowledge of, each of our news outlets up to two decades ago. The UK's news industry has been through significant changes in this period, and journalism staffs are fluid and changeable rather than fixed entities.

To guard against these problems we instituted a number of checks and balances into the research process. Firstly, a number of long-serving current and former science, health, and environment journalists were willing to speak to us and acted as valuable sources of information. We ensured that a proportion of those reporters with whom we spoke had a good historic overview of expansions and contractions in the field over the last 20 years. Secondly, we had initially planned to gather most of the data on present and historic numbers of journalists using our online survey, with 15 spoken interviews with science journalists as qualitative supplements. We soon found this aspect of our survey data needed far more checking and contextual information than we had originally foreseen, so we revised our plan and increased the number of interviews with science journalists to 47, more than tripling the number we had initially promised to conduct. This allowed us to cross-check individual accounts extensively. Thirdly, the data we gathered relating to historic numbers of print journalists was further checked by looking for science, health, and environment journalism by-lines using the Nexis media database, and consulting the historic newspaper collections at the British Newspaper Library at Colindale.

4.1 Historic numbers of science, health, and environment news journalists

In 1989 there were a total of 43 such journalists working across the broadcast and newspaper sector. This figure had risen to 70 by 1999, and had almost doubled to 82.5 journalists in 2005 (the 0.5 represents someone who works half-time). At the time of writing in October 2009, there are 82 specialist science, health, and environment news journalists in the UK national media.

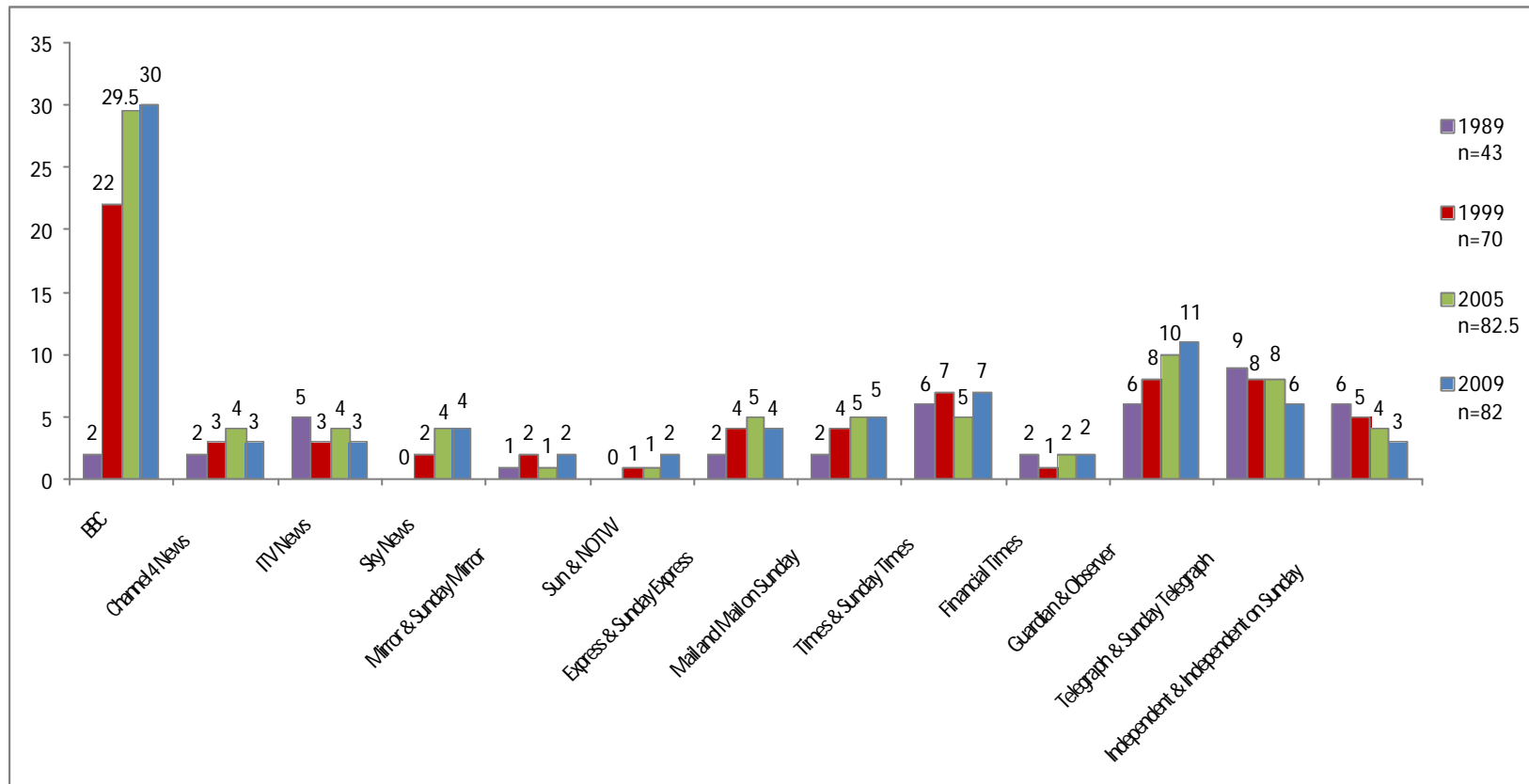
Figure 3: Historic numbers of science, health and environment specialist news journalists in the UK national media⁶



As these long-term figures show, the number of journalists covering these elements of the science beat has almost doubled since 1989. The period 1989-2005 shows the most significant increases, and in the last four years there has been no industry-wide increase in the numbers of these journalists.

Of course, these total figures mask some significant fluctuations at various news organisations across the decades. Figure 4 presents a breakdown of the number of journalists at UK national news outlets over the same period.

Figure 4: Historic numbers of science, health, and environment journalists at UK national news outlets

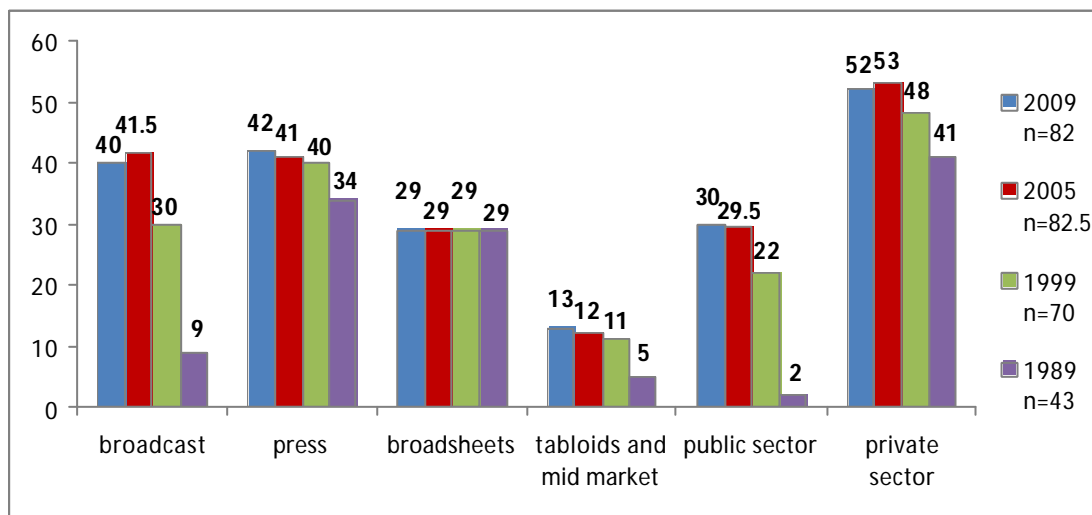


The BBC has seen the most impressive gains moving from a period in the late 1980s in which two journalists covered the whole beat to the present day in which it is staffed by 30 reporters. Other broadcasters have maintained numbers at fairly constant levels. The tabloids have increased their staff slightly (the *Mirror* recently added a science editor, and the *Sun* has invested in a specialist environment journalist), and the mid-markets have both seen significant increases (although the *Express* has recently lost a “hard” science specialist). The *Guardian* has also been slowly increasing the numbers of specialists it employs, but recent increases in the numbers of environment journalists (they now employ six) have occurred at the expense of “hard” science staffing levels (which have dropped from three to just one in four years).

The Times has increased its broader science staff significantly in recent years, although as Figure 4 shows the core science, health, and environment team has remained fairly stable. The figures in this table for the *Financial Times* also belie the size of the science team employed by this newspaper down the years. This publication’s primary focus on the business and economics of science, health and the environment means that many journalists who cover patches like the biotech, pharmaceutical, and petrochemical industries were not included in this table, for example (for further details of science-related staff peripheral to the core journalists represented here see appendix 2).

There have also been significant losses at some news outlets. For example the *Telegraph* newspapers have lost three specialists over the last two decades. They have moved from the position of being the news outlets which employed most science specialists in 1989 to being among those which employ the least today. In 1989 they employed more than one fifth of the science correspondents in the UK media, but today they employ just 7% of the total. The *Independent* and the *Independent on Sunday* also now employ fewer specialists in this area having halved their 1989 total from six to three after a series of cuts to their newsroom staffing levels.

Figure 5: Historic numbers of science, health, and environment journalists by news sector



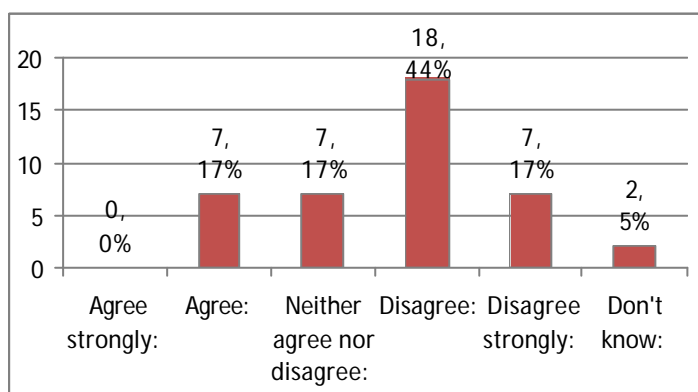
Each cluster of columns in Figure 5 visually displays the proportional rise or fall in the numbers of specialists within each news sector. It is clear from this graph that the steepest increases have been in broadcast and at the BBC in particular. The press has gradually increased the numbers of science specialists, with all of these increases taking place in the tabloids and mid-market newspapers rather than at the broadsheets.

When we set out to collect this data we had hoped to be able to provide historic and current breakdowns of the numbers of “hard” science, health, and environment journalists within these total figures. This proved to be impossible, however, because of the multiplicity of journalists who cover (and covered) multiple briefs (for example, being a science and environment correspondent, or a science and medical editor). It is difficult to determine what proportion of their time is taken up with covering which part of their brief and therefore equally hard to tabulate the information in a systematic and rigorous way (discursive mini-narratives showing current and past staffing levels in these beats are included in appendix 2, however).

4.2 Recent contraction in the science beat

As well as identifying these long-term trends in employment levels on the science, health, and environment beats we asked journalists about their perceptions of changes in human resources devoted to this area in the near past. Firstly, we wanted to find out whether current specialists thought their field was expanding or contracting.

Figure 6: In terms of the numbers of journalists the field of specialist science news in the UK is expanding



n=41

A clear majority of respondents (61%) think that, in terms of the number of journalists employed, this specialist area it is either stagnant or in decline. Only 17% think it is expanding.

A series of recent cuts at specific news outlets have caused a feeling of gloom across many sections of the UK science beat, even at news outlets unaffected by science job losses. The BBC science and environment team lost a science correspondent (Christine McGourty) last year, and is due to lose another member of the science and environment team in 2010. The *Daily Express*

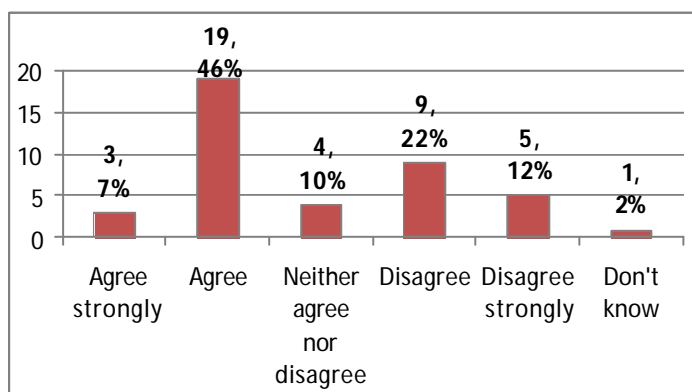
has cut its dedicated science correspondent and this role has been taken on by the paper's health specialist, who must now cover both fields. The *Daily Telegraph* recently lost two well-respected science specialists in ex-science editor Roger Highfield (who left to edit the *New Scientist* in 2008) and his former deputy Nic Fleming who was controversially sacked the same year (Press Gazette 2008). This established team of two senior science writers has now been reduced to one journalist, Richard Alleyne, a long-serving general news reporter who has, presumably, had to get to grips with the science beat without the guidance of experienced colleagues. Whilst the *Guardian* has expanded its environment news team to six, it has left the hard-science specialism under-staffed. In 2005 its science team was staffed by three journalists (Tim Radford, Alok Jha, and Ian Sample). But now Sample cuts a rather lonely figure, and is faced with the unenviable job of covering an entire broadsheet science beat on his own. To teams which have experienced serious workload increases since the rise of cross-platform and multimedia journalism these losses should not be taken lightly.

4.3 Recent cuts in context

While there have been some serious losses to specific areas of the science beat, as the overall figures presented above suggest, it would be an exaggeration to say the whole field is in serious danger. Most of the journalists we spoke with were also keen to state they do not believe recent cuts have been specifically and strategically targeted at reducing the amount of science journalists working in UK national news media. Many told us these job losses should be seen in the context of cuts across the board in a news industry facing unprecedented long-term pressures such as declining audiences and the rise of the internet, as well as more immediate problems caused by an extreme contraction in the advertising market and severe economic recession.

With a few exceptions, science journalists do not think their beat has been hit harder than other areas of news coverage and recognise cuts have been applied everywhere.

Figure 7: The science news beat is not losing more journalists than other specialist beats



n=41

Just over half believe the science news beat is not losing more journalists than others. A significant minority (a third of respondents) disagree, however. Some at the BBC, for example,

are unhappy the science and environment team have lost a member of staff in three of the last rounds of cuts. Likewise, some newspaper journalists point to continued high staffing levels in politics, business and economics specialist beats (although as science specialists are likely to feel cuts to their patches more keenly they might be inclined to overstate their case in this respect). But most are resigned to the fact that the whole industry is under pressure, and that broad economic constraints are the cause of most of the cuts which have taken place. One journalist summed this up:

I would say that the changes in science journalism probably mirror the changes in journalism. I know that there's sometimes a tendency to treat science journalism separately, but overall you're subject to the same kind of changes in working conditions, the same economic constraints, I think, as everyone else, really.

Another reminded us that specialist journalism is an expensive, resource-intensive, practice which different news providers have approached differently when placed under economic pressure. He said, "I really think the changes everywhere are not just some kind of vendetta against science. I really think it's just about specialist journalism in general... that it's expensive to do. [...] So I don't think science has been meted out special treatment." Another told us that his outlet was taking a very different view of how best to ride out the economic downturn. "The strategy here", he said, "is that in dark times and in recession you protect your specialists, because that's what can make you stand apart when we emerge".

5. The (increasing) prestige of science journalism within the newsroom

5.1 The bad old days

The increasing numbers of science journalists in the newsroom has, our data suggests, been accompanied by a general trend of increasing amounts of prestige for science, health, and environment journalists within the newsroom. This has, we believe, been prompted by an increase in regard for how popular such news is with readers. Michael Hanlon, the science editor of the *Daily Mail* (and formerly of the *Daily Express*) summed this up for us:

I think there's generally more of an acceptance that science is something of interest to the general public. I think it used to be seen as something a bit geeky, a bit nerdy, perhaps a mere special interest, something which belonged in magazines and the inside pages and stuff.

Similar sentiments were expressed by a range of reporters at the broadsheets, and at broadcast organisations. Hanlon went on to suggest that the amount of complex science coverage given serious treatment in the press has substantially increased over the past two decades:

I think that's changed now and although we talk about the dumbing down of British culture and how things are perceived, [...] generally speaking, there's an assumption that people *will* be interested. Some of the coverage of things like hybrid embryo production, cloning – they're extremely detailed – this is above A-level biology knowledge you'd really need to have to understand this stuff. And it does go in newspapers, and I don't think it would have done 20 years ago. [my emphasis]

This was partially confirmed by a number of interviews we conducted with former science editors from national broadsheets, who painted a dark picture of the difficulty they had convincing editors to run science stories in the late 1980s and early 1990s.

Tim Radford the former science editor at the *Guardian* complained that during some dry periods he only managed to get reports in the newspaper at times when news was in short supply (“I got stories in the paper routinely on a Sunday for Monday in August”). In the late 1980s, especially, he said “it was quite hard to get stuff in when there was a busy news list. [...] I actually had this game called, how many stories can I write and get left out in one day? [...] I think my record is five”. Tom Wilkie of the *Independent* had similar memories and told us of the strategies he and his fellow science writers developed to give his stories a higher chance of being included in the next day's newspaper. “I knew perfectly well that if a science story was to be got in, then it had to go in on one of the earliest pages to go to press”, he explained, “[it] was more likely to stay in if you got it in early”.

Radford told us that the articles he routinely offered to editors were “good stories”, but that “news desks weren't used to seeing science as a news story that could be exploited”. Nigel Hawkes the ex-science editor, and later health editor, of *The Times* recounted similar

experiences. “When I first went to the *Times* in the 90s, I had a real struggle getting any science in the paper at all. I had several years when I was desperate. It was awful. [...] There was almost nothing going in. And you get really desperate on a daily paper when you’re not getting stuff in”.

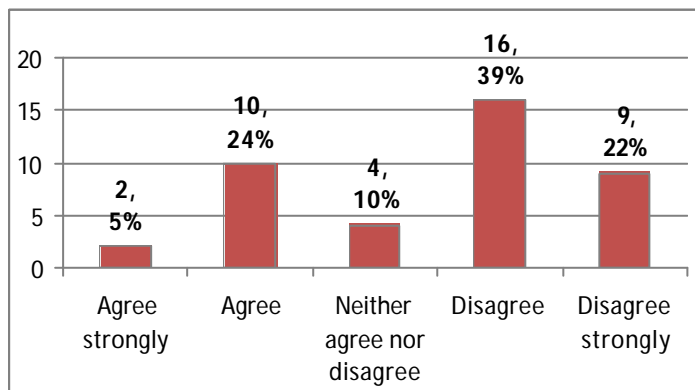
“But then,” he explained, “it got better”. Throughout the nineties a new wave of science writers gained respect and credibility in the newsrooms of the UK (mainly broadsheet) press. Tim Radford continued:

Things changed, and I’m very proud of the fact that I was part of the pressure for change, although the same pressure was going on in *The Times* I know from Nigel Hawkes, and in *The Telegraph* from Roger [Highfield]. we started to be expected to turn up to morning conferences and throw things in.[...] Tom [Wilkie] arrived at *The Independent* with the bloom and radioactive dust of Chernobyl all over him because he’d done such a good job for *The New Scientist*, and Susan Watts, too, followed him fairly quickly [...] to *The Indie*, and their existence was a stimulus to *The Times* and *The Guardian* and *The Telegraph* to beef up their coverage of science.

5.2 The view from today’s newsroom

National news journalists on today’s science beat face many challenges, but a lack of status in the newsroom is not one of them. We asked science journalists a number of questions relating to the esteem with which they are held in their workplace, and the picture which emerges is largely positive.

Figure 8: I have difficulty convincing editors to run science stories



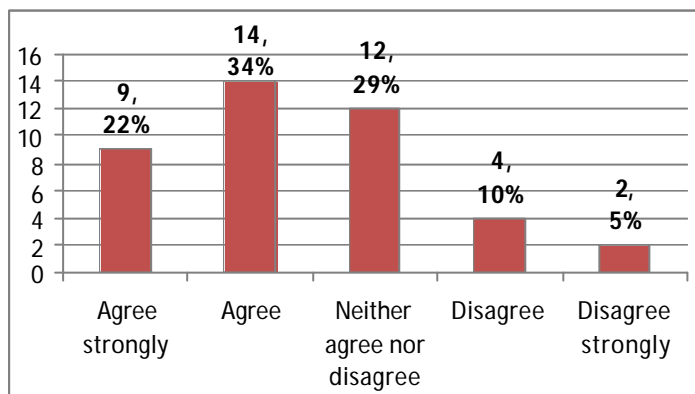
n=41

12 journalists (29%) agreed that they had trouble convincing editors to run science stories today, but 25 (61%) stated this was not a problem for them. One journalist explained that he still had to compete with other areas of the news to get science stories published, but that he felt that his judgements of news value were taken seriously by editors. “We have to fight to get our stories in and if it’s a science story or a political story, we know it’s usually going to be the political story”

he said, “but I think we get a fair crack. And if I go to them and said, ‘this is a really big deal, we’ve got to put this on the front page,’ then they listen”.

A number of interviewees cited the example of the coverage of the launch of the European Organisation for Nuclear Research’s (CERN) Large Hadron Collider as an example of a recent high-profile science story which would have been very difficult to convince editors to run previously. He told us “that was a particle physics story leading the news”, and went on to suggest that even complex and abstruse science stories are seen as increasingly important. “When we do physics stories, chemistry sometimes, they do very well”. Health journalists were often similarly effusive. One told us, “Every day there’s a health story that someone’s getting really excited about, at least one if not more. [...] I think there’s a big appetite from the audience but also internally [from editors]. When it’s health, everyone’s interested, it affects everybody”.

Figure 9: There is a real appetite for specialist science stories among my editors



n=41

When asked whether they agreed there was an appetite for science stories among editors 56% replied in the affirmative; only six respondents (15%) disagreed. This seems to be true of the high-end broadsheet press and broadcast news as well as the more popular and populist areas of the news market. Tom Feilden, Science Correspondent for BBC Radio 4’s *Today* programme, told us about the increasingly mainstream nature of science, health and environment news, and how it has become a much more readily accepted part of what any news outlet should offer its audience.

Now you find that science is incorporated into the running order at a much earlier point. And they’re doing stories about climate change or about healthcare that are just general news stories, and I think that’s a good thing. I don’t think science should be hived off and treated as either, ‘look what the boffins have come up with now, let’s all stop.’ Which is the way it used to be on radio. [...] There’s an awful lot of coverage of stem cells, health and fertility stuff, cancer and an awful lot, of course, on climate change and the environment. So I’d have said although it’s changed, moving from a bespoke niche service to more general, I think probably the coverage has gone up. And I think it’s better that way.

Appreciation of this move away from the ghetto-isation of science news was echoed in the words of BBC science correspondent Pallab Ghosh, who pointed out it is not only seen as a potential “and finally...” piece on broadcast news any more. Referring to the serious political elements of science stories he has covered such as climate change and the banning of certain pesticides by the EU he points to a gradual coming of age in the role played by science journalism

I think that in my time, in the 20-plus years that I’ve been a science journalist, I think in national media there’s been a gradual maturity in what’s seen as a science story. [...] I feel that in my time as a science correspondent, I’ve been doing more grown up stories and been regarded as not just the person who does the funny item at the end. Although there’s still an element of that and, in some ways, long may that be the case because there is a place for doing those fantastic pictures coming from [the] Hubble [space telescope] and that sort of thing.

It is not only highbrow news outlets which seem to value science and health news at the moment. One national broadsheet reporter remarked to us on the increasing levels of coverage received by certain kinds of scientific research in the mid-market press:

there seems to be an awful lot of newspapers which splash on health stories these days, particularly the *Daily Express*. Three days out of five, I’m starting to gain the impression that if it’s not Maddie McCann it’s going to be a cancer story on the front of the *Daily Express*. The *Daily Mail* is also extremely interested in health stories, it does give them quite a lot of prominence, and by that I do mean science health stories... great breakthrough stories. [...] It does seem as if all newspapers seem very interested in what’s being released in *Nature* or what’s being released in *Science*.

Some journalists pointed out that the prestige of science and health journalism has risen to such an extent that the sheer volume of certain kinds of stories might actually have a negative societal effect. While noting that it is a good thing news editors have become more interested in the findings of serious science and health periodicals, one reporter was wary about the kinds of coverage these studies routinely prompt in some quarters. When asked whether there is an appetite for specialist science and health stories from editors she replied:

Well I mean there are two sides to that question. One is, is there an appetite for stories that are about health? And the other one, is there a *balanced* attitude to stories that are about health? And I think that yes, there’s a massive appetite for stories that are about health, probably more than there was ten years ago. But the answer is, are all those stories what you would consider to be justifiable on the front page, and I would’ve said probably not. [...] I think that a lot of them are not the kind of scientific developments that would warrant a front page story in most people’s eyes.

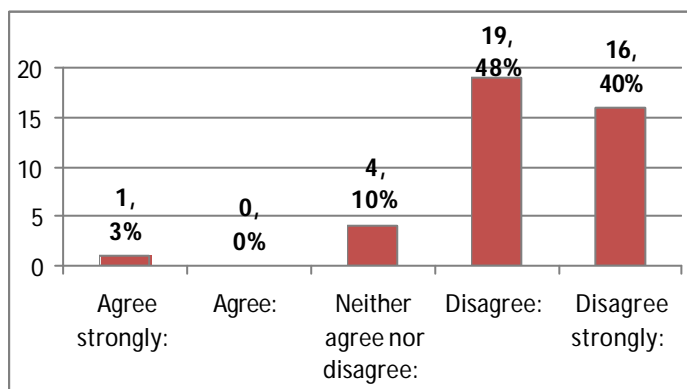
similar notes of caution were sounded by a small number of journalists, usually with reference to so-called “kill or cure” stories about health research, and the possibility that findings might be exaggerated, and accuracy sidelined, in the drive to produce stories with high news value.

5.3 The problem of “bigfooting”

The term bigfooting is used to describe the process by which more senior or powerful reporters are given news stories that have been covered by a junior journalist once the story makes it to the top of the news agenda. It is also sometimes used to talk about the similar, but slightly different phenomenon of diffusion: the process of a story being covered by other journalists once it becomes heavily politicised, or it develops a strong economic or foreign affairs element. A strong indicator of the prestige of science journalists within newsrooms is their ability to hang on to stories they have covered once they become lead news items. As we discussed in the introduction bigfooting and diffusion in science journalism were problems identified by the third report of the House of Lords Select Committee on Science and Technology (2000). It was emphatic in its differentiation between science news produced by specialists and that by generalist and other news reporters. A number of the submissions it received took the view that problems occurred when stories which had been followed and reported by science and health specialists became big news and were then handed over to political journalists or general reporters.

We found very little evidence that this is still a problem in UK news organisations. Firstly, we asked science journalists if editors take science stories off them once they become big news.

Figure 10: Editors often take science stories off me if they become really big



n=40

Only one journalist agreed with this claim and 88% of respondents disagreed (40% of whom disagreed strongly). Many reporters we interviewed said that far from having science stories taken off them, it is more often the case that they are given extra stories to cover because of the high regard in which specialist editorial knowledge is held. One told us, “I have never seen a science or a tech story of note taken from a specialist, only pushed on to them”. Recently-retired health and science journalist Nigel Hawkes told us this used to happen in the past, but editors have since learned valuable lessons.

On one or two occasions it was [a problem]. MMR being an example, that's the one everyone quotes, and GM food being the other big one, they both got out of control. I think [...] news desks are aware of that danger now a bit more than they were. [...] It hasn't happened in recent years.

Serving journalists were equally adamant that this is no longer a serious concern. Some explained that when a story becomes very important, or starts to clearly span different specialist beats, it is only right that more journalists should be involved with producing it. One suggested:

It's clear that someone with an economics background is going to be able to report certain bits of the climate change story better than I am because they have a better understanding of the economics. But there's also the case that they may not understand quite as well the ultimate objective of the carbon market, and so on. So I think in an ideal world we would collaborate, the different specialisms and so on would collaborate. [...] Being big-footed, I think that's what you're talking about, having stories taken away from you... it doesn't really happen, to be honest.

We found evidence of this kind of collaboration across the broadsheet sector, and sometimes also in the mid-market newspapers. One national broadsheet journalist emphasised that it was logical that once a science or health story becomes very big it would start to impact on other specialist beats. But even then he was adamant that he should, and usually does, have some kind of input into how the story is written.

If somebody brought in a swine flu angle about education, or border closures, or anything that really wasn't coming from the medical or the scientific research side, I would still, I think, expect to have some input on that story. I think there's a pretty strong tradition of, if you have the story or you bring in the story, it's not taken off you and given to someone else to write. But if they come up with another angle [...] I would expect to be aware, or offering advice, or working with colleagues on a story if it impinged on my patch, as it were.

5.4 The advisory role played by specialist science reporters

As this journalist makes clear, the job of the specialist science journalist should not end with producing, or directly collaborating with others on, by-lined stories. Another important role they can play is an advisory one, providing (often un-credited and unofficial) briefings about scientific issues to editors, general reporters, or journalists from other beats. The (2000) House of Lords report cited earlier also identified this role as one that should be fostered and encouraged among science journalists, and gently suggested that some inaccurate reporting of controversial science could be avoided if beat reporters with in-depth knowledge of a story were consulted more regularly. The same year the UK's national academy of science the Royal Society produced a set of guidelines for newspaper editors on the reporting of science and health, which made a similar suggestion. It states:

Journalists must have access to authoritative advice about the credibility and legitimacy of the science that they wish to report. Most national newspapers have specialist science journalists. The science staff should be consulted about science stories covered by colleagues who are not scientists. (Royal Society 2001)

Our evidence suggests this guideline is now largely adhered to by national newspapers and broadcast organisations.

Journalists we spoke to across news platforms, outlets, and sectors largely agree this is now a core part of their daily work. We asked one how often he was consulted by editors and colleagues about stories with a science element:

All the time. [...] I see that as very much part of the job... to advise other parts of the news operation on particular stories. You follow these things day in and day out. They want advice on how important the story is. [...] My experience is that people have valued the specialist expertise [here], valued their input on how important the story is, where it should go in the running order, that sort of thing. And that's all part and parcel of the news machine for me.

This kind of response was very common in our interviews. Specialists are also clear about the value of their specific knowledge in these situations. A number of interviewees gave us examples of instances where their influence avoided mis-reporting, or unnecessarily sensationalist coverage of science. One told us:

People do ask us for advice all the time, and they'll say, "we've just seen something on PA, we're not sure about this, what do you think?" That happens extremely frequently. We see that as part of our role really, to advise people on what the story is that they're looking at. Is it a story? Who has done it? What's the size of the survey, the sample etc? Something that has a great top line and then you realise actually it's done on five people or on 20 mice or something and it's supposedly the cure for cancer. So all the time, yes, people do ask us for our advice on that, thankfully.

This was confirmed by senior editors we interviewed. Jonathan Munro, the deputy editor of network news at ITN, said that he valued the ability of ITV News' science editor, Lawrence McGinty, to offer advice on the validity of breaking specialist news stories:

It's very easy for us, as non-specialists, to pick up a newspaper and see a headline about, let's say, climate change and if Lawrence is around and you're able to pick his brains, he will be able to advise you very quickly whether actually what is being headlined is genuinely new or not because he's got the background knowledge. [...] We get an awful lot of stuff which is floated out of news releases which is essentially what you might call the "medical breakthrough department"... new treatment for whichever ailment a drug company's working on. Sometimes they are fantastically new and very important and genuinely big stories, but sometimes they are drugs companies who are trying to play a public relations game in order to

secure funding, and you need a degree of expert knowledge to be able to wade through that very quickly.

6. Workload increases

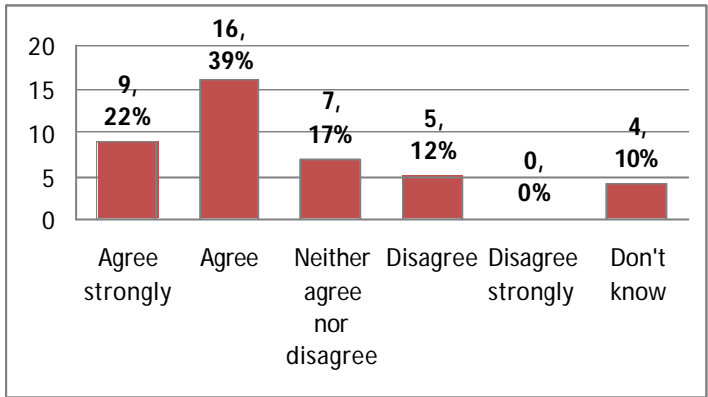
The obvious differences between the ways in which journalists on different platforms work mean that it is impossible to get comparative data from our interviewees based on the numbers of stories they produce in a day. Even within individual news organisations the development of cross-platform journalism has meant that different kinds of journalists work in very different ways, and produce significantly dissimilar output. At the BBC for example, despite its plans to make all its news journalism less platform specific, currently there are people who still write primarily for the web, and those who produce news mainly for broadcast outlets. The demands of the media on which they work mean they generate varying amounts of stories a day. A health correspondent working mainly for television might work on one story per day, or every two days, for example, whereas a health reporter working for a national news website might be expected to write between two and five stories a day.

Despite these differences, certain dominant trends are clearly observable. The impact of multi-media and cross-platform work, and the increasing number of outlets for which journalists are expected to produce material is clear when talking to journalists from all news organisations. Some are under more pressure than others, but almost all feel their workloads have increased. Broadcast specialists talk of the rising demands of multi-platform work and a recent proliferation in the number of news outlets to be serviced. Although a broadcast correspondent might work on one news story in a day, it is not unusual for them to have to produce content relating to that story for multiple television and radio news programmes, as well as come up with textual news stories, blog posts or other multimedia content for the website. A newspaper science journalist would obviously be expected to write about far more stories per day, and they are also increasingly being asked to produce text, audio, and video for content-hungry websites.

6.1 Producing more specialist content

Despite the fact there are now more specialist science, health and environment journalists than there were a decade ago, the overall amounts of content reporters are expected to create has clearly risen. This is acknowledged by editors, and it is a clear source of unrest among many journalists. We asked whether more specialist science news was produced now than a decade ago, and the answer was clear.

Figure 11: More specialist science news is produced now than a decade ago

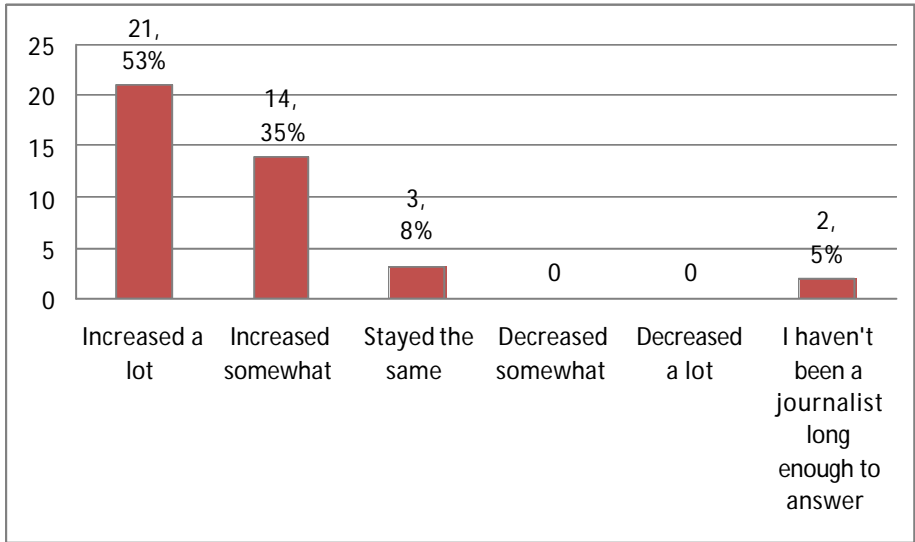


n=41

61% of respondents told us they believed more specialist science news is being published or broadcast than a decade ago. This has clear implications for the workloads of those expected to write and shoot science news.

When we asked specialists whether they actually produce more content than previously 81% of respondents told us they did, and only two journalists (5%) disagreed. We also asked specialists to broadly measure this change over time so we could gauge the degree to which they felt workloads had risen.

Figure 12: Has your workload increased or decreased in the last five years?



n=41

More than half (53%) said that workloads had increased a lot in the last five years, 35% said they had increased somewhat, 8% reported no increase or decrease, and not one journalist was able to say their workload had fallen. It is instructive to compare this data with increases in the workforce over the same period. The most immediately striking fact is that at a time when the

number of science journalists in the UK has, broadly speaking, remained constant the perceptions of workload increases among those journalists have increased significantly.

One newspaper journalist told us, ‘I think in terms of output, it’s probably a lot more than it used to be – I’m churning out more stuff basically. Even though I pick two stories where I think I’ve got a good chance of getting a [page] lead, there’s still another four that I’m writing shorts on each day. I’m just covering all the bases, basically. So yes, it feels like we’re expected to do a lot more’. Another complained that workload issues were reducing the space for creativity needed to be a good journalist. She said, “with fewer staff everybody just has to write more stories. It’s all become extremely... on this professional level, it’s almost as if we’re working in banks”.

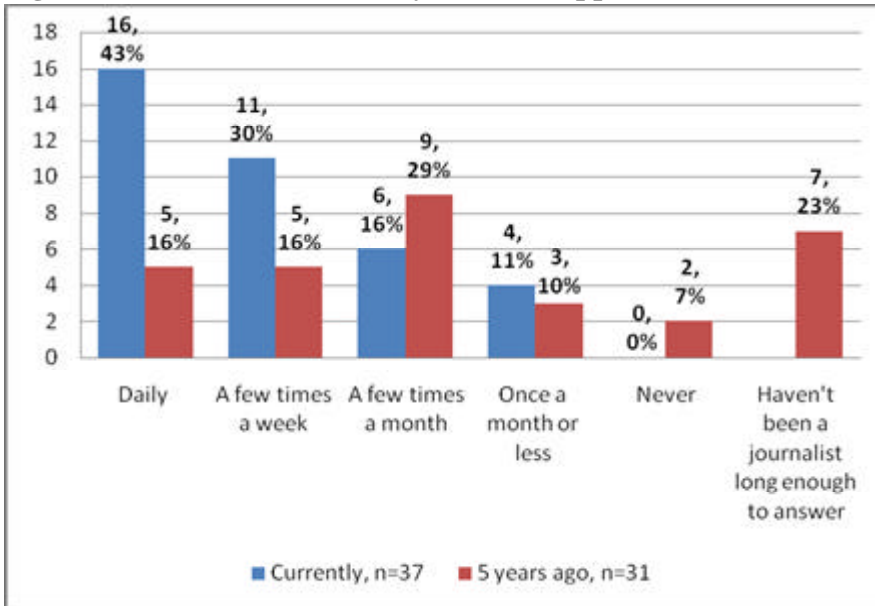
6.2 “The web is never full”

Different news organisations have diverse approaches to the amount and the nature of the science news they publish online. Some aim for volume and try to cover more stories than others, and some purposefully limit the amount of content they put on the web. But whichever approach is taken there is no escaping the fact that more content is published online than can be broadcast on television or radio news bulletins or published in newspapers. The embrace of internet news and the impact of increasing media convergence lies behind most of the workload increases indicated by our findings above. As one journalist put it, ‘The web is never full’. He continued:

You can always do more stories. As opposed to if you’re working as a radio correspondent, let’s say, when the programme editor says they don’t want it then you just don’t do it. But with the web you can always do it, there’s always room to put it up which means that the temptation is therefore to do everything. The tendency is perhaps to do stories that are not particularly huge but they’re quite interesting so you do them.

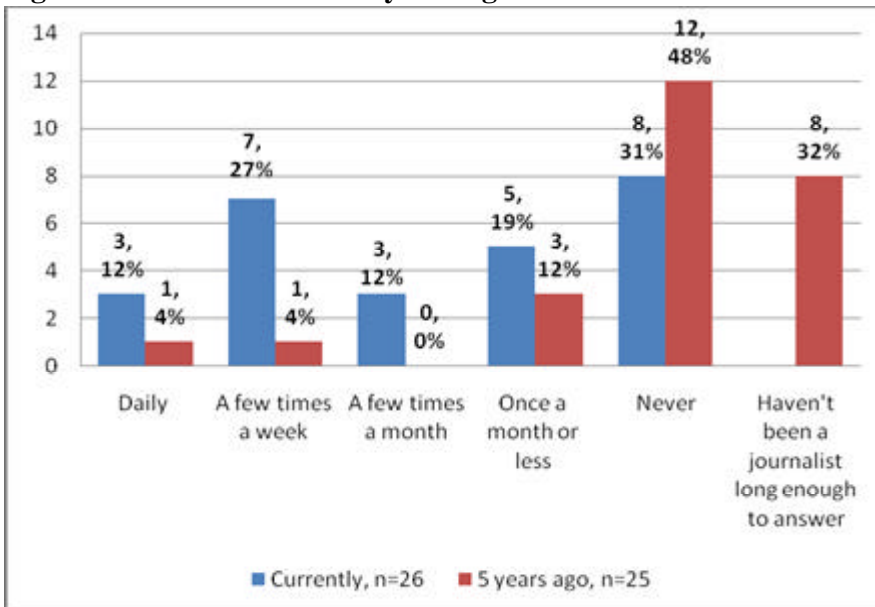
We asked journalists a number of questions about how often their work appears in different online news formats currently, and at different points in the past, in order to find out how the web has changed their working routines.

Figure 13: How often does/did your work appear in online news stories?



Ten years ago only four of our respondents wrote any online news. As the chart suggests, this format had become far more popular by 2004. By 2009, however, it is clear that writing stories for the web had become a far more widespread practice. Almost half of our respondents (43%) write online news daily, 30% more than once a week, and a further 16% multiple times in a month. We also canvassed specialists about how often they blog.

Figure 14: How often do/did you blog?



Although the response rate in this category was noticeably lower than for most of our other questions the results still give us a valid insight into increases in this cross-platform work (26

answered about their current blogging habits, and 25 about blogging five years ago). None of our respondents blogged ten years ago. By 2004 a few pioneering science journalists report blogging occasionally, but by 2009 a total of 18 contributed to blogs.

When we interviewed reporters to add qualitative information to these raw figures we found that not all expressed negative sentiments about the increasing amounts of work they are expected to do since the rise of online journalism. One national broadcast journalist explained that the challenges of multi-platform work are very taxing, but also extremely satisfying.

Basically in the old days, I might have gone [on location], just filmed for a feature for [the television news] and come home. These days we film the feature, which was a task in itself... that was our main task. But we also gathered material for a feature for the radio for [another news outlet], we did a couple of extra bits of video for the website, we did a diary for the website with stills, and a news piece for the website with more stills. It's a massive increase. I think it's really good. It's very hard work, very, very hard work, but very rewarding.

This kind of positive characterisation of changing working conditions was by no means exceptional. At the BBC, which has well-resourced internet news teams covering health, and science and the environment, we also encountered high levels of satisfaction with the amount of time journalists had to produce well-researched online content. In addition to teams of correspondents and news writers each BBC specialist online team also has an on-demand video journalist producing bespoke multi-media content for the news website.

One specialist explained that the demands of producing web content were mitigated by the new opportunities that multi-media journalism offers reporters.

I suppose the main thing [...] is that you have to think about all sorts of different ways of telling a story, so audio, video, images, etc, and trying to factor all of those into the mix; and that can be a bit time consuming. [...] So yes, cross-platform working has entailed increases. But a lot of people, I think most people, see it as an opportunity rather than a chore because there are all these different and exciting new ways of telling stories – which is what we do – and telling them in the most vivid way possible.

The implication that most reporters happily accept cross-platform work is an exaggeration, however. Of those we interviewed those who accepted the extra work without complaint were in a somewhat smaller group than those who complained about it, or who suggested that more journalists were needed to cope with the changes.

Older, longer-serving, journalists were most likely to dismiss the importance of science content on the internet. Nigel Hawkes, for example, clearly believes that stories published in the newspaper are preferable to web content:

What you want, if you're a newspaper journalist... well I don't know... my generation of newspaper journalists... what you want is a page lead, you want page

three of *The Times* or the splash. That counts for a hell of a lot more than an awful lot of stuff on the web. Somehow the web doesn't have the same clout.

This level of scepticism is not limited to veteran reporters. Some journalists admitted to us (under condition of anonymity) that they do not spend as much time on web content as they do for the newspapers for which they write.

I adopt a two tier approach, almost. There's the stuff that I work on which I know is going to make a good splash in the newspaper, and there's the stuff which I know is going to be read by 200 people on the website. And as much as I would love to spend equal amounts of time on all of my stories, I do find myself, if I'm asked to write up a press release for the website, quite often just writing it up as a press release. And I've given up arguing about the quality issue because they don't ... they just want stories.

A number of journalists, especially those new to the job, are neither damning nor enthusiastic about these workload increases, however, and appear to have simply accepted them as a fact of life. As one reporter told us:

We do get through quite a lot of copy a day. And some people call it churnalism and people look at that as again a negative thing, but sometimes I think you have to cover all the bases, and you make a choice whether or not you want to really investigate one story fully, or you want to cover five stories to as adequate standard so that they can be accepted and go online.

The next 3 sections look in detail at some of the major effects of increasing workload on the working conditions and working routines of science journalists, and by implication on the quality of the news they are able to produce.

7. The balance between “diary stories” and “original journalism”

In most national newsrooms there is a certain amount of tension, perhaps even of struggle, between news editors staffing news desks and specialist reporters covering news beats. This is not an especially new phenomenon, and it is not limited to the specialist science beat. News editors, of course, have a lot of power in today’s centralised news rooms. They are largely responsible for filling the news pages on a day-to-day basis, deciding the balance of different kinds of news subjects in each edition, and for commissioning individual stories. For science, health, and environment journalists these are the people to whom they have to “pitch” or “sell” story ideas before they are free to write them. Fairly often news editors will also ask specialists to cover stories encountered elsewhere which they believe are newsworthy. They are also often the people in charge of what is known as the news diary: a calendar prepared well in advance of any given news week containing details of routine and one-off events which are deemed to be of news value. Typical diary stories written by science specialists involve irregular events like academic conferences and meetings of scientists, press conferences, briefings, and political summits, but also regular and predictable occurrences such as the publication of major research periodicals like *Nature*, *Science* or the *British Medical Journal*.

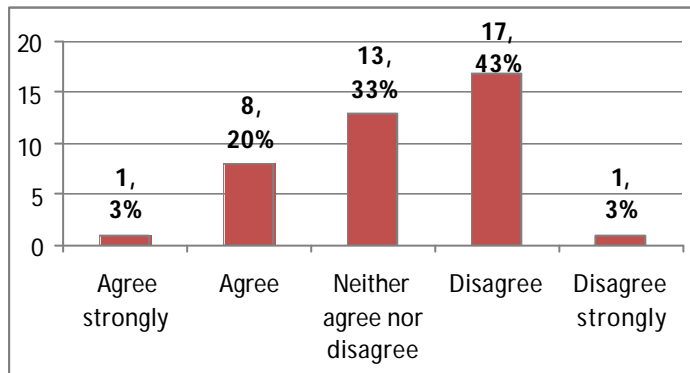
Science news sources have, in recent years, become more aware of the importance of diary stories in the daily and weekly news cycle. With this knowledge in mind many influential sources have become adept at exploiting news desks’ need to have a secure stock of stories waiting to be covered on any given day. The international science and health journals have all developed efficient media management departments which release embargoed information about what they see as their most important research findings in advance of publication to ensure the media is sufficiently prepared to cover their stories. One journalist told us these press releases have become the “bread and butter” of science and health news in the UK. Another referred to them as “low-hanging fruit” because “it’s easy stuff to turn around”. Former BBC World Service science correspondent Toby Murcott explained this cycle of dependence further:

There’s a clear pattern. On Wednesday evenings, you’ll get two or three stories from *Nature*, on Thursday evenings you’ve got two or three stories from *Science*, on Friday and over the weekend it’s time for the medical journals, Monday it’s *PNAS* [*Proceedings of the National Academy of Sciences*]. And there was this constant tension whereby general editors would say, “why do you always follow these bloody press releases, why can’t you go and source stories of your own?” And then if you didn’t follow the press releases and did source stories of your own, say, “but why’s everybody else got this story and we haven’t?” [...] That’s a constant, constant tension, and the science journals do extremely well out of it, but I think science news as a whole suffers. And the only way you can change that is to free up a significant amount of time for a science journalist or one of the team, or however many it is, to actually go and just talk with scientists, or trawl through the more obscure areas of publication, or just do something other than mechanically reproduce the major science news stories from the press releases.

Shrewd press officers from other organisations, who know about the dominance of these publications in the diary, schedule their own events and press releases so that they do not clash or enter into competition with them. There is a very real sense, then, in which certain kinds of diary stories, if allowed to dominate a journalist’s routine can be seen to eat away at the autonomy they have to choose what news gets covered, and to cover it as they see fit.

We asked all of the specialists we interviewed about the proportion of diary stories and off-diary stories they covered in order to gain an insight into the degree of independence they had in their professional lives, and the amount of time they were afforded to actively search for news stories themselves, rather than passively cover events and some striking trends emerged. But first, we asked a related survey question about whether news stories originate with the journalist contacting sources, or sources coming to the journalist.

Figure 15: Most of my stories originate with me contacting potential sources



n=40

Only 23% of respondents agreed that most of their stories originate with their own, active, journalistic investigation. Twice as many journalists (46%), on the other hand, disagree with this, and suggest that they are more often than not the passive recipients of news story ideas from outside agencies.

Whilst it is suggestive, this survey finding cannot be simply and unproblematically used to criticise a proportion of specialist science journalists as passive processors rather than active seekers of the news. A number of people pointed out that it makes very little difference to the work entailed in producing an article or a broadcast package whether a story is a diary story or not. The amount of research, preparation, and production work involved in this process is often the same for diary stories as for off-diary stories. This point was made particularly by broadcast journalists, who pointed out that it did not matter whether a story had been planned a year in advance or decided on the day before, the amount of work involved in planning, researching, and shooting or recording a story was the same. Equally, some journalists defended the reporting of diary stories because, quite simply, they were often very important. International scientific journal articles, at least in theory, represent the best of what the scientific community has to offer and have gone through rigorous processes of peer review.⁷ We were told that press conferences at government departments and international summits on climate change were in the diary for the reason that they were very significant events that deserve to be covered. And a number of

journalists made the point that a diary story produced well by an experienced specialist can be treated with independence, rigour, and creativity, and does not necessarily lead to uniform and unthinking content across the news media. In short, just because a piece is a diary story does not mean that it will be covered in the same way by every journalist.

Many journalists, however, associated the dominance of diary stories with a succession of inter-related negative aspects of journalism practice, namely: the centralisation of news production taking editorial power and control away from specialists; a tendency among news editors to pressurise journalists to cover certain stories simply because they have been covered elsewhere (either by the press association, in eye-catching press releases, or by competitor news organisations); a growing influence for the expanding field of science PR; a subsequent increase in “bad science” stories being produced; and a growing homogeneity of science news in the national media.

7.1 Pack journalism, or “keeping up with the Joneses”

In the 1970s Timothy Crouse the *Rolling Stone* reporter coined the term “pack journalism” to describe political journalists’ tendency to rely on one another for news tips or to be similarly dependent on a single news source for generating stories (Crouse 1974). Our interviews with specialists identified a slightly different, but related, phenomenon in the way science is covered by many national news outlets. One specialist explained the problem: “the most important thing to our newsdesk is to cover everything the other news outlets might do, so that inevitably means covering the diary more.” Another expanded on this :

I feel generally like... a lot of the papers, they’re almost becoming quite homogenised. We all do roughly the same kind of stories. I feel that often I need to cover all the stories that are out there that day, because you never really quite know at the same time which papers might go for which ones. Or even though I may think a story is better suited to [my news outlet], I still try and cover all of them if I think [news outlet X] might go crazy on one story, or [news outlet Y] might do another. So essentially I’m still covering all the stuff. [...] I think news editors, even though you’ve explained to them about the stories, there’s a real sheep mentality. If other papers have done a story they think, “why haven’t we done it?” So you have to make sure that you’ve covered everything really.⁸

Different newsrooms across the UK national media allow differing degrees of autonomy to their teams of specialist science journalists. It is clear from our interview data that some newsrooms have almost completely avoided this problem. One journalist who worked at one such place told us:

I’m fortunate in that my beat is reasonably flexible and I’m left to my own devices quite a lot. My editor will call on me maybe once a week and say, like, we’ve got [some stories] that have to be covered and if I’m available, then I’ll do one of those stories. But a lot of the time I can do my own stuff. So I think [at my news outlet]

you probably get a little bit more time to do independently sourced stuff than you would [at others].

Although these newsrooms are isolated examples, there are pockets of resistance to this pressure within the science, health, and environment teams of most UK news organisations. Professional reputation and seniority within an organisation often provide a shield against editorial demands and guarantee a degree of independence. But all too often we found that where one senior journalist had protected themselves from the kinds of demands outlined above there was often a junior colleague in the same newsroom who was consequently unable to avoid them.

The pressure to keep up with the competition is so intense on some titles that journalists spend their time writing stories they know have little chance of being published just in case a competitor runs with it and they later get reprimanded by superiors. One journalist explained the phenomenon:

I know on other newspapers' reporters get rung up at twelve o'clock at night saying, "Why haven't we got this piddling little story on page 9?" And what that leads to of course is that people file everything, so they maybe put half a dozen ideas in a day and maybe write three, four, or even five of them, in the hope that they won't be blamed for missing the story.

One national press reporter admitted this was something he did on a regular basis:

We write more stories than we used to, or I do, just because I'm trying to cover more bases. And sometimes I write stuff not really with the realistic expectation that it will go in tomorrow's paper, but just in case if they appear anywhere else then our news desk will want to match them. And it also covers my back, if you like, to suggest that I've been aware of this story and I've written it and I've put it up for consideration, and it's not my decision to make, then, whether or not it gets in the paper.

This is not an isolated example. Another journalist told us, "back-covering is a universal problem for specialists when dealing with news desks in any organisation. More stories are produced by our health and science team than make it into the paper."

Critiques of this kind of destructive and wasteful institutional practice often lay themselves open to accusations of "golden age-ism", and are accused of harbouring the uncritical assumption that things were once better in a mythical past. Craig Oliver, the deputy head of the BBC's multimedia newsroom, acknowledged that journalists under pressure will sometimes be tempted to take "the simple option", but he also said that complaints about the dominance of diary stories have always been common in newsrooms. "You will always get a situation where journalists say, 'I would like to spend a lot more time digging and looking at things,'" he said, "and there will always be tension there between the day-to-day realities of needing to make sure that programmes and newspapers are full, and the desire to actually spend a bit of time digging away at something. And that will always be a tension. But I've worked in the industry now for about

15 years and it is not a new complaint, and I suspect if I'm in the industry in another 15 year's time, I suspect it will maintain. It's a reality."

In order to get a historical perspective on the dominance of the diary we asked former journalists how things had changed over the last decade. Nigel Hawkes, who has served as both science editor and health editor at *The Times* was unequivocal. He began by pointing out that before the rise of media management in science news even the diary stories were independently sourced, and that this gave specialists far more power when negotiating with the news desk:

Nature I suppose was a weekly fixture and *Science*. But even so, you still had to read them yourself, they didn't have press releases. And you had to spot the story which wasn't always easy. So I think that meant actually that the science correspondent had considerable power because he, or she, could tell the news desk what was a story and what wasn't. And they didn't know any better. They weren't really seeing all the stuff coming across their screens as they do now. Now they see *PA* filing a lot of science, and they might see press releases. So they think their opinion is as good as yours.

Hawkes went on to link the passive sourcing of stories to the rise of science public relations.

I think most of the stories now are diary stores, because there are so many press releases coming out all the time. You couldn't say they were independently sourced if you happen to spot it on *Eurekalert* or something, that's not independently sourcing, is it? I don't know how many stories are independent these days. Latterly I was doing health and I did get some independent stories. But I wouldn't say I went out looking for them desperately hard.

He associates current reliance on diary stories with a slackening in the role of the journalist and suggests that by the time he had retired in 2008 his role had changed considerably, "the thing was you could get through the day on the diary stories, and nobody would say you hadn't done a day's work", he said, "but you'd feel that was a bit of a cheat". He explained that a big problem was that journalistic routines had changed to such an extent that finding original stories was no longer a habitual part of his job. Hawkes admitted, "I suppose I'd lost the knack of finding them". This sentiment was echoed in the words of a national broadsheet reporter who said that covering the diary left little time for his own investigations, and complained that when he did approach news editors with original journalism they sometimes did not understand what he was offering. He told us, "sometimes if you come up with a good exclusive story, the question is, so what time's the embargo? And you're like, 'no, wait a minute, this is just ours.' And that seems to flummox them, which can be a bit of a problem in itself if people get too used to dealing with the diary." We were even told of a number of instances where reporters gave original exclusive science stories to rivals at the press association or other newspapers to convince news editors that they should be covered.

This might seem depressing, but the very fact that some journalists complain so bitterly about the problem is evidence that there is a strong will to produce more independently-sourced science news and provide original and distinctive copy. This reporter was one of many who expressed

concern over some current journalism practice, but also a deep-seated commitment to quality science news:

I think it's really important, and it's vital in science, as well as everywhere else, to retain the capacity to do really good, high quality, original journalism, and that's vital. Obviously there's the 24-hour news cycle... huge pressures there... and that impacts undoubtedly on the ease of producing original journalism, but it's vital that people and news organisations invest in original journalism.

7.2 The gate-keeping role of science specialists and quality control: "I spend more time telling them not to do science stories than I do doing them"

This impulse to defend the quality of science journalism underpins one of the core journalistic roles which emerged when we asked reporters about the balance of independently sourced stories and diary stories. The tension between specialists and news editors discussed in this section often manifests itself in disagreements over which stories should be covered.⁹ These disagreements lead science journalists to play the role of gate keeper, trying to make sure that poor stories do not get published or broadcast. One specialist likened this role to triage in a hospital accident and emergency ward. Another memorably told us "part of my job is acting as a shit filter". The "shit" which must be filtered can come from a range of different sources including newspapers, news agency material, and press releases. One health specialist said that editors at her outlet "seem to think the [news] wires are gospel". Even when she has spent hours "bottoming a story out", checking it for consistency and accuracy, she complains that she still sometimes has difficulty convincing them not to run it if it is not strong enough. One health specialist made a similar point about editors being seduced by PR copy or the output of other newspapers:

Sometimes we see something, we see a piece of research, we'll get a press release about it, and you just think well that's crap but we know that [news outlet X] or the [news outlet Y] are going to jump on it. [...] It's sometimes difficult for us then because we get pulled into covering the stuff that they've done, or getting into debates about why we don't want to do it.

This journalist, in common with some others we spoke to, had developed specific strategies for dealing with this kind of pressure from editors.

And sometimes you can head it off at the pass, and sometimes you look at stuff and say, "oh God, I know this is going to come up." And I write like a knocking brief, if you like, to go to early meetings or planning meetings saying, "look, we know this is coming up but we're not proposing to do it for these reasons." And that has worked in the past. It's time consuming but that can head things off at the pass.

Such minor disagreements between specialists and news editors are incredibly common across UK news outlets. Others complained about the time they have to spend talking editors out of covering stories which emanate from a sensationalist press releases. One health journalist made

this point with reference to stories about “wonder drugs” which purport to be more effective than they actually are.

If you’re getting the “brilliant new drug” line, then I have to talk to my news desk about why it isn’t a brilliant new drug. So that causes me difficulties, and historically that’s been a problem actually. So I have to go to the news desk and say why we’re not doing a wonder drug story. [...] It’s a very tempting sort of story for a news desk to run, they love miracle cures. [news outlet X] has got a miracle cure on the front page most days, but it’s just never normally like that... and our readers, I would have thought, understand that. But even so, news desks just really like it. And the papers that you would think would know better [...] sometimes [run them] and that causes more problems, or it can do.

This complaint was shared by many journalists we spoke to, who talked about how time-consuming it is to “sort the wheat from the chaff” when dealing with the exaggerated claims of public relations departments. “Universities are employing press officers who are more and more skilful at making rubbish research look good”, he said, “and they’ll send the press releases to your boss as well as to you. So you’ll ignore it because you’ll check it out and realise it’s absolutely rubbish. But they’ll have put a very exciting first five words, and your boss will read it and go, ‘Why aren’t we doing this?’”. The ensuing conversations, he told us, “make life fifty times harder”.

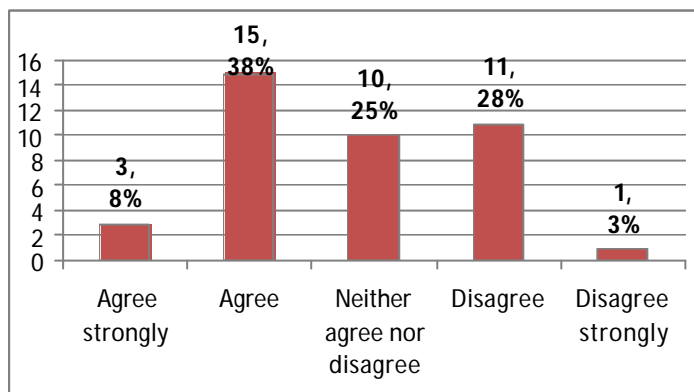
Although it should be noted that such confrontational relationships are not a feature of all organisations. Channel 4 News’ science correspondent Tom Clarke explained that at his organisation this kind of intervention from specialists was explicitly welcomed, and he was not alone. He gave us a specific recent example to illustrate this point:

Often at [the morning meeting] I’ll maybe knock down a few stories. On the front page of [news outlet X] today there was a story about this girl who was killed by a cervical cancer vaccine, and I said, “We need to treat that one really, really carefully, because people do occasionally die after vaccines. It doesn’t necessarily mean there’s anything wrong with the vaccine.” I’m expected to put a bit of expert critique on a story that may not be the one I’m doing that day. [...] I spend more time telling them not to do science stories than I do doing them. “That’s not a good science story. We should steer clear of that. We shouldn’t touch that with a barge pole. That’s a puff piece for so-and-so, that’s a PR company trying to generate more interest in this.” There’s a lot of bad science in health and medical journalism and it’s our job to try and gate-keep as best as possible.

8. Time for research and checks for accuracy

Previous research on the working routines of news journalists in the UK has found evidence that they have increasingly less time to check up on the veracity and accuracy of stories than previously (Lewis et al, 2008b). The workload pressures identified in section 6 suggest that the same might true for science, health and environment journalists in the national media. We asked journalists whether they now had less time for research and fact-checking than they had before.

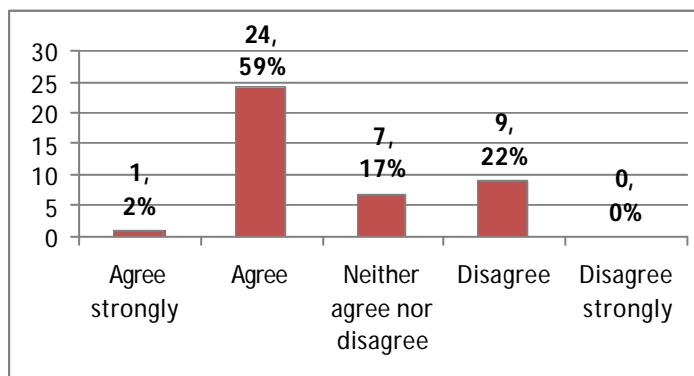
Figure 16: I have less time to make checks on facts and source material than I did previously



n=40

While 31% of respondents disagreed with this statement, 46% agreed that they now had less time available for this kind of work. We also went one step further and asked if journalists thought they had enough time to make adequate checks on the facts which form the basis for their science stories.

Figure 17: I have enough time to make adequate checks on the information I include in stories



n=41

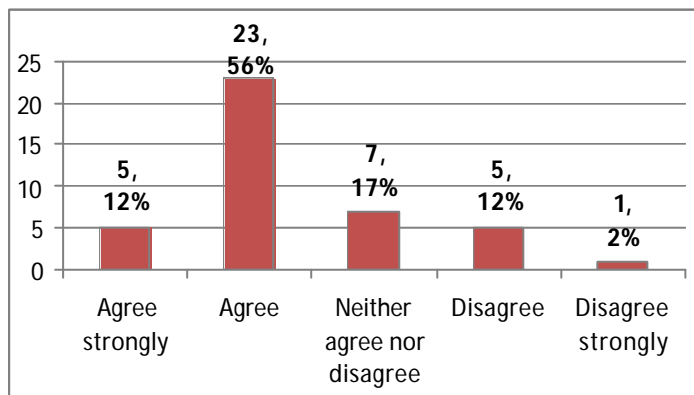
A clear majority (61 %) told us they did have enough time, which suggests that even though journalists are under increasing pressure most of them still feel they are able to do the important work of researching a story to an adequate standard. However, it is disturbing that over a fifth (22%) of our national specialist journalists do not think they have enough time to sufficiently fact-check the stories to which they put their names.

Most of the journalists we interviewed underlined the overriding importance of verifying information and “standing up” news stories, even though time is increasingly short. One national science journalist said:

I don't think that because [...] your time is pushed [...] that would compromise the accuracy or what you'd put in, the quality of the report. I don't think most of the people I work with would ever let that happen, because that's paramount for us; getting the story as accurate as possible and doing as good a job in presenting the science and presenting what the story is as possible.

Another backed this up, suggesting a journalist might have to work unpaid overtime to get the job done, but that checking facts is not an area with any space for compromise. “We get probably less time on a story than perhaps we might have done, but you're still not going to do a story until you've checked the facts, until you've made sure that it is what it says it is. We just might have to work somewhat longer hours to do it.”

Figure 18: I don't have the time to research many of my stories as much as I'd like

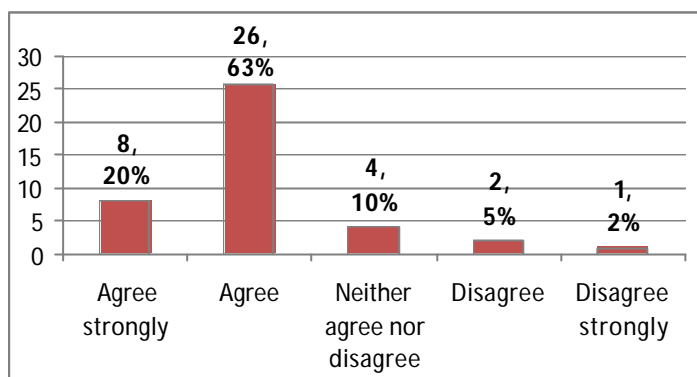


n=41

We also asked whether journalists have as much time to research their stories as much as they would like. The answer was clear: more than two thirds of respondents (68%) said they did not, and only 14% (six reporters) said they had as much time as they would like.

A number of specialists pointed out that while there was now less time for this kind of checking and research work technological advances such as the searchable internet and e-mail had cut the time needed to check out a story, and had made this element of journalism much more efficient.

Figure 19: The internet and the speed of modern communications has cut the time needed to research and produce news stories



n=41

Almost all of our respondents agreed with this sentiment. When asked whether he now had less time to research and check facts Clive Cookson, the science editor of the *Financial Times*, told us, “maybe there is but it is easier to check things for accuracy because you can use the internet. The internet does help you check things for accuracy, whatever people say, and you can check reputable sources. So, yes, I would say [we have] slightly less time but it’s more efficient than it was”.

Other reporters were keen to underline both the potential implications of their journalism on public health, and the need to identify if researchers might be overstating the importance of their findings. They said this demanded greater rigour and accuracy than in many areas of journalism. Sam Lister, Health Editor of *The Times*, said:

It’s always important to have third party appraisal. For instance, if you are covering the latest cancer treatment development, it’s important to seek the opinion of independent scientists or organisations such as Cancer Research UK and ask: “What do you think about this? This person's saying that their work's the biggest breakthrough in cancer care in 30 years.” They will go, ‘No, it's not. It's important but...’ You need all those important caveats in. You must treat your readers as adults. They are bright, and they can quickly spot when something isn’t going to cure them the next morning. You should not suggest that it is. It’s dumbed-down, cartoon journalism and it’s to be avoided at all costs.

He went on to suggest that not all newspapers took the same approach to factual accuracy, and told us that, while the high-speed nature of daily print journalism meant errors could creep in, there were stories published in some newspapers where reporters and editors were either not checking their facts, or were deliberately turning a blind eye to the caveats.

A number of journalists admitted workload pressures had impacted considerably on this element of their job. One National newspaper journalist suggested he was slightly unhappy about some of his current working practices, but that they had not, to date, had any significant negative effect on the quality of the news he produces.

It used to be the case that if I was doing a *Nature* paper for the newspaper, I would spend a good afternoon on it. I would make calls the night before to people in the States and that kind of stuff. Whereas now I can be asked to do it for the website on the day and I turn it around in an hour. It's not something I'm particularly proud of, but actually so far, touch wood, it hasn't backfired that much yet, because they're pretty reliable, the press releases you get from places like *Nature*, and obviously you can read the paper and access it.

Many explained that the process of verifying information in a news story can be very time consuming when it is done properly, and the sheer number of stories that need to be written puts pressure on the amount of time available for this work. One journalist said that she ideally likes to get three independent opinions before writing in order to get a good overview of a story. "With two, you can just have people disagreeing: with three, you get that sense of perspective with what you're writing about" she said. She went on to admit that these days she often has to settle for two, and sometimes only one independent check because of the time it takes to track down sources and find people willing to comment.

One national health reporter went even further and told us:

We hardly ever have enough time to research something properly, I am often lucky if I get to read the research paper and talk to the author. It's exceedingly important to do this but there are just so many things to stay on top of it is often impossible to do. We have to take more on trust than I'd like to.

A broadsheet specialist confirmed that sometimes they simply run out of time for checks and have to take copy directly from the Press Association's newswire.

It mainly happens I think late at night and somebody's got something out on the schedule and it's on PA and you can't reach the researcher and it's ten o'clock. And you really need to go with what you have and hope that PA's got it right, and understand enough to be able to explain it a bit... why it's important and that kind of thing. But that's a constant problem, just because of the nature of the media.

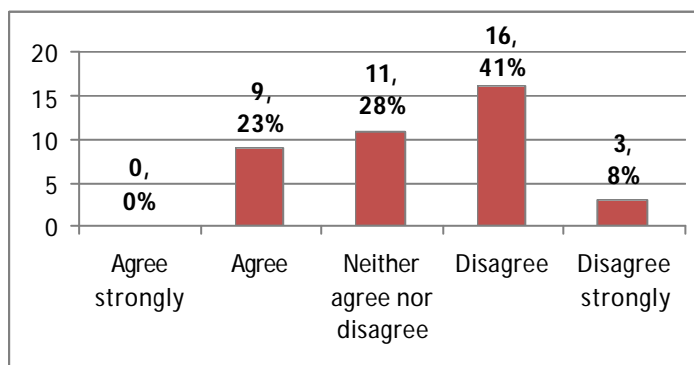
9. The role of public relations

Journalists and academics alike have provided evidence of the increasing role for public relations in science, health, and environment journalism (Davies 2008; Lewis et al 2006, 2008a and 2008b; Machill et al 2006; Nelkin, 1987; Dunwoody, 1979). Whilst the extent of the influence of public relations varies quite widely between different news outlets, there is a general sense that PR has become an increasingly important presence over the last decade. Principally as an agenda setter, providing initial ideas for stories and a jumping off point for the journalistic research which follows, but sometimes as a direct textual subsidy, a journalistic short-cut, which is used to counter-balance the need many face to produce more science news.

Most science journalists fiercely deny they produce “churnalism”, or cut and paste the words of others into their material and pass it off as their own. One summed this sentiment up when he told us “we don’t just copy press releases, we use them as a guide [...] and then go off and speak to the researchers and get the paper and get comments from other charities, organisations or other experts. So each story gets quite a lot of effort put into it, despite the fact that it was flagged up to us and not our story found independently.” A minority, however, have accepted “the cut and paste job” as an unpalatable but necessary part of modern journalism practice. Almost all of the journalists we spoke to included checking PR “wires” such as *EurekaAlert* and *AlphaGalileo* among their most routine tasks, and most also complained about the sheer volume of PR material they are sent (and subsequently have to read and check) every day. A significant minority of reporters also told us they now routinely cut and past material from press releases and news wires.¹⁰ As one national press reporter said, “I don’t think journalists like relying on press releases and it’s always great when you find something yourself. But you do rely more on press releases I must admit.”

We asked specialists whether they thought science reporters relied on PR material too much.

Figure 20: Science specialists rely on public relations material too much



n=39

Half of our respondents disagreed this was the case, but a significant minority (around a quarter) thought the use of PR in science news was problematic. It is worth bearing in mind that as this statement invites journalists to be self-critical one would not expect many to agree. We also asked a series of other questions around the use of PR, and obtained a similar spread of results.

Most journalists do not think they use more public relations copy now than previously, and most believe that people who argue journalists rely too much on PR are often exaggerating. However, 25% of respondents state they use more PR than previously, and a third believe those who argue reporters rely too much on PR are *not* exaggerating.

9.1 The rise of science, health, and environment PR

Despite the different levels of reliance on PR we found, almost all of the journalists we spoke with remarked upon increases in the amount of public relations material they are sent on a daily basis. One journalist told us of “the huge explosion in communications officers and PR people all of whom seem to be bombarding you all the time”. Many also talked about the increased effectiveness and efficiency of science communicators in dealing with the media and offering news subsidies which are actually usable. Nigel Hawkes and Tim Radford offered us a historical perspective on the rise of science PR. Hawkes explained that when he started out the problem he faced most on a day-to-day basis was actually finding stories. He discussed the challenges of developing a network of useful and authoritative sources, and described speculative visits to libraries, archives, and government bodies such as the patent office in order to dig out stories. And then, from the early 1990s things started to change. He told us:

We went from famine to feast in the period between 1990 and say, well, now. You’ve gone from a period when you were scratching around for stories and you were glad if you found one, to one where you’ve always got a choice of four or five. [...] All the journals put their stuff on the web, and all the universities put their stuff on the web, and it’s instantly accessible, which was never the case. So there’s been a major change really. [...] And because it’s all written in a form that you can just cut and paste, we’re back to the old problem of churnalism. It’s terribly easy to write perfectly coherent stories just by cutting and pasting press releases.

Radford commented, “the other thing that’s become very clear is the conscious and manipulative media management that was a feature of city reporting and of political reporting has spread very quickly to science. [...] In the sense that every university now has a press officer [and] they’ve got much more effective over time.”

One working news journalist echoed these sentiments, and told us about the skill with which PR material is often presented:

PR plays a much, much bigger role in health journalism than [...] when I started out. It’s a much slicker operation. All charities, even all the universities, the journals, they know now. They put out a press release effectively with a story half-written for you with a lot of comments and all the statistics in there. And apart from checking through that and perhaps wanting to speak to somebody to add more in, a lot of it’s already there.

They went on to reflect that this has its advantages, because it cuts the time journalists need to research a piece, but it also entails disadvantages in terms of the independence of the article

produced from this copy. “It’s is good and bad really, isn’t it? Because [the PR] is putting across a story a certain way, whereas before if you had a bit more time you might have gone about something slightly differently.” This reporter then gave an example of how the rise of pro-active and well-staffed public relations teams has changed working routines:

I remember when for health stories, say [around four] years ago, there was a health story in a medical journal, then I would have to ring around a lot of places to get comments on it... maybe from a charity. Whereas now, you often get all those comments already out emailed to you, sometimes even the day before. So you’ve got all that kind of thing ready, which cuts out you talking to somebody. Essentially they’re saying what you were going to ask them, but you can’t always be sure, can you?

9.2 Processing PR as a workload issue

Even if a journalist never reproduces public relations material in news content, it is difficult to avoid PR content completely. Because of the institutional rise of PR in our increasingly promotional culture, and because of the proliferation of press offices in the institutions which act as sources to science, health, and environment journalists, sifting through the large amounts of publicity material received every day has become a serious workload issue. A large proportion of many journalists’ daily routine is taken up with scanning press releases in case they contain newsworthy material. According to one journalist, “you get bombarded by press releases and phone calls all the time, which in itself is quite time-consuming... just having a quick look and deleting them or answering the phone.”

A broadsheet specialist gave us an insight into exactly how many press releases journalists need to deal with. “I get into the office about half past nine and start putting in phone calls. And then basically face [...] a barrage of emails. If it’s not 150, it’s 200 a day.” They continued, “A lot of it’ll be PR that’s telling you that some new invention will solve swine flu [...] and we’re not talking about a university or anything, it’s merely just a product placement dressed up as some kind of science or research.” But this does not mean such e-mails can just be ignored: “you can’t just, you know, not read it because sometimes it’ll look really good... like, really credible until you get to the end and they mention some brand name, or something”.

Another national science journalist explained that even if a press release does not look like it will lead to a credible story they sometimes have to waste valuable time checking it out because of the fear that a competitor newspaper might write about it:

PR departments churn out stuff and throw it at you, and [...] if they’re throwing it at you, you know they’re throwing it at your rivals. And therefore you have to always be aware that if your rivals run it, you have to be able to tell your news editor why you decided not to run it. So you have to check it all out. So therefore they interfere with your time, and by doing that they force you to look at what they’re doing. I would’ve said a larger proportion of stuff is driven by PR now than it ever was.

10. The future of specialist science reporting in the UK national news

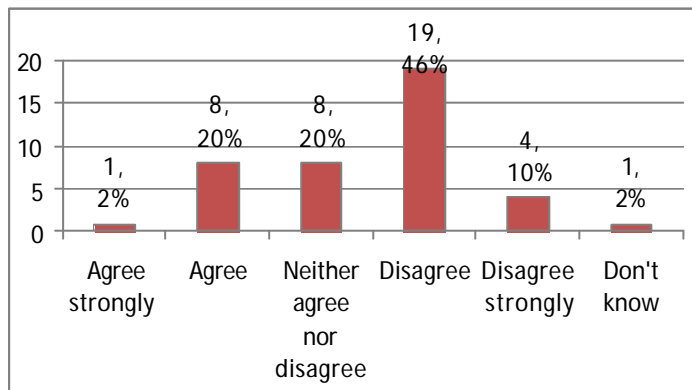
10.1 The view from specialist journalists

The combined pressures outlined in this report mean that some journalists have serious concerns about the future of their beat. But most are secure in the belief that science, health, and the environment are not areas that news organisations can afford to cover badly. Talking of the future of the science beat James Randerson, the *Guardian*'s environment editor told us:

You look across the Atlantic and think things are looking pretty hairy over there. And, to be honest, we're still in the midst of cuts and no one's quite sure where it's going to end. So I don't know. When I'm being optimistic, I [say], well, fundamentally I do think there is an appetite for this stuff. And I think [...] people who read serious papers want a serious treatment of these issues, and therefore to make that happen, you need specialist journalists who are good at their job.

Despite some of the more bleak findings of this research it should be emphasised that, with certain caveats, science journalists do not think that their specialism is under serious threat.

Figure 21: Specialist science news journalists are a dying breed in the UK

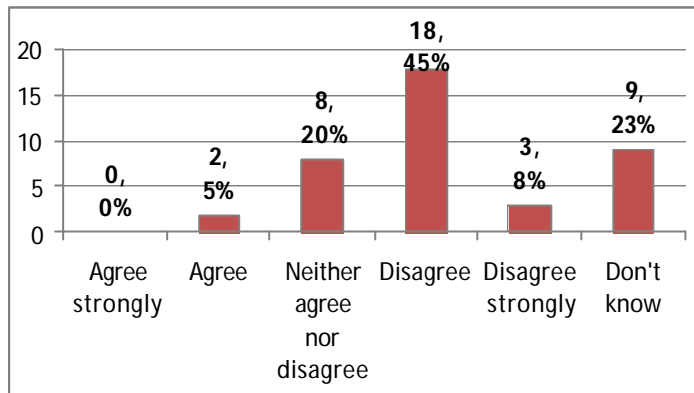


n=41

Around one fifth (22%) were worried that the science beat might die out completely, but most (56%) disagreed that science specialists were a dying breed in the UK national news media.

However, most do not think the historic rise in the numbers of science journalists seen over the last two decades will continue into the next ten years.

Figure 22: There will be more specialist science reporters in the national news media in a decade



n=40

Only two reporters (5%) agreed that there would be more specialist science journalists in ten years' time; more than half (53%) disagreed.

Clive Cookson the long-serving science editor of the *Financial Times* was optimistic about the future of the beat. He told us as long as there was demand for science news from readers there would be a need for specialist reporters to produce it:

I think it's got a bright future. I don't know quite what the shape will be. But assuming that journalists are employed at all, I'm sure that science will be one of the key specialities. I don't think you could have a serious news organisation without a science specialist, or more than one. [...] I think there will be pressure on specialists during the recession, but I think science will survive as well as, or better than, other specialities.

A national broadsheet health journalist with whom we spoke was also confident about the future. This journalist pointed out that despite the conflicts which clearly exist between specialists and editors there are strong pragmatic reasons why news organisations should protect their science and health journalists. He suggests that, as well as valuable expertise, specialists offer a steady stream of stories and story ideas to busy news editors:

I think there will be news editors who think... not even necessarily "these guys really know their stuff and that's why I should keep them", but "they provide me day in day out with stories... What I can lose is a general reporter who I'm always having to send out on to things, who's not necessarily bringing in stories". [...] I'd say it strikes fear into the hearts of most news editors to have a must-have story break and no science reporter or health reporter working that day.

Others were less sanguine. James Randerson, for instance, conveyed his enthusiasm for the (broadly defined) science beat, and told us it is "vitaly important" that well-qualified specialists cover science. But, he said, "the question then becomes: how do you preserve it? What kind of

special treatment do you give it? And why do you give it special treatment over, say, legal affairs or economics or whatever?” Despite his clear views about the necessity of specialist science journalists he says it is difficult to justify treating science any differently to other areas of the news. In a period of intense pressure for the news industry in general it is very difficult, he argues, to claim special status for science. He continued:

I’m prepared to advocate and shout from the rooftops for [science journalism]. But how do you argue against someone who’s saying, “we have to have a populous that understand the economic crisis we’re in, in as much detail as possible because we can’t let the bankers get away with this”, or “people need to understand what’s happening to the economy so they can make sensible decisions about their mortgages”. All of that also has a very strong public interest case I think.

As well as interviewing science, health, and environment journalists we also spoke with five senior editors at UK national news organisations in order to gain some snapshots of opinion from key decision makers about the future strategic importance of specialist science news. The next two sections look at how senior editors at the BBC, ITV, and at *The Times* see the future of science news at their organisations.

10.2 The view from senior editors : the BBC and ITV

The BBC is by far the biggest employer of science news journalists in the UK national news media. In the last 20 years it has moved from having a total of two specialist correspondents covering the whole beat to a team of 30 journalists working to produce science, health and environment news across its news outlets. It has come under some criticism in recent years, however, for its decision to cut two correspondents from its science and environment team. ITV, on the other hand has maintained its specialist team at roughly the same size for the last two decades, and for most of that period it has been fronted by the respected science editor Lawrence McGinty.

The need to cut staff is seen as an unpalatable fact of life at many news organisations, but those editors we spoke to strongly claimed that cuts had not harmed their news organisations’ ability to cover science well. Steve Herrmann from the BBC told us:

We have had to make savings, and the specialist areas have been one of the areas we’ve had to look at, but in doing so we’ve been conscious of the value of the specialist journalism to the BBC News effort, and the excellence of what we do and the credibility of what we do. And so as far as possible we’ve tried to safeguard that capability, so we’ve tried not to do anything that’s going to fundamentally damage our ability to continue to bring specialist journalists to bear on stories.

Fran Unsworth the BBC’s head of newsgathering told us there were no immediate plans for further cuts to the team. She explained that those which had recently been made to the science and environment cohort were part of a general series of job losses across the organisation, and that they could be justified by the recent merger of the online, television, and radio science and

environment journalists into one team. She said, “the reason that we feel able to make those savings is because we brought together the online operation with the radio and TV operation. We felt that we could lose two people because we’re going to get people to work across every different medium”.

Managers we spoke to were also clear-eyed about the workload pressures faced by their staff. We asked Steve Herrmann the editor of the BBC website about the key problems relating to journalists’ workload at the BBC. He replied:

I think the pressures in BBC News around that come from two things: one is multimedia working, where people feel pressure because they are increasingly working in an environment where they need to deliver, or help deliver, to more than one platform; and secondly, because sometimes, I’m not saying this is always the case and it’s certainly not a rule, but sometimes, the key limiting factor preventing you from doing that extra story or that extra bit of breadth is the actual human effort you have to do it rather than the space on the page, or print deadlines or broadcast duration.

The two elements of this answer, relating to pressures of producing content across platforms and the consequent rise in the volume of work chime well with what specialist science journalists told us.

Despite this editors are emphatic in their support of science journalism in their statements to us. Fran Unsworth told us the future of specialist science, health, and environment news at the BBC was “extremely secure”. Craig Oliver, the deputy head of the BBC’s interactive newsroom underlined this. He commented, “the BBC prides itself on its specialists, and in many ways its unique selling point is having this number of people who are genuine specialists in an area to talk about something”. Steve Herrmann added that these areas are very popular with the audience, and for this reason they remain a very high priority:

Science, environment and health – I really don’t think that I’m exaggerating – I would say that they are central to what we do and I wouldn’t want to compromise any of them. They do well with the audience, all three of those genres are popular, and we know they matter to the audience just from looking at the statistics.

A similar commitment to the future of science news was made by Jonathan Munro, the deputy editor of network news for ITN. He made it clear that good specialist science, health and environment coverage is essential to any news provider’s ability to maintain trust among its audience.

What’s important for audiences, I think, in news programmes is credibility. Credibility is the biggest single currency in which we trade and your credibility is damaged if you run stories which aren’t very well thought through, aren’t very well researched, aren’t genuinely new etc – all of which you avoid with a serious correspondent who knows his or her domain, and we’re lucky enough to have that

in science and medicine. And I think if you gamble your credibility away, you lose the foundations on which news programmes are made.

Talking about climate change and other important science stories due to dominate coverage over the coming decades he told us, “I think science journalism is alive and well here, and I think it will continue to be alive and well here for a very, very long time to come”.

10.3 The view from senior editors: *The Times*

The Times has recently re-affirmed its commitment to science journalism. In October 2009 it launched a monthly science supplement called *Eureka* which covered news and features relating to experimental and applied science and their social, cultural, political and economic contexts. James Harding, editor of the newspaper told *Press Gazette*, “we believe that many readers want a broader read about how science can transform our lives and our planet, which demands rigorous, engaging and exceptional reporting. No other newspaper has made the commitment to cover these subjects with as much depth and breadth as *The Times*” (Barros 2009). To publicise the launch it ran a nationwide series of high-profile advertisements claiming to have the largest team of science journalists of any UK newspaper. The definition of science journalism used in this research was focussed principally on named science, health and environment news correspondents, and is (necessarily) quite limited. As our entry for *The Times* in Appendix 2 shows, however, the broader science team the paper currently employs is indeed very well staffed. In addition to two science news journalists (editor Mark Henderson and reporter Hannah Devlin), two health news journalists (editor Sam Lister and correspondent David Rose) and an environment news editor (Ben Webster), others who cover the broader science beat include one science features writer (Anjana Ahuja), an ocean correspondent (Frank Pope), an energy editor (Robin Pagnamenta), a countryside editor (Valerie Elliott), and three technology writers (editor Nigel Kendall, correspondent Mike Harvey, and reporter Murad Ahmed). The first edition of *Eureka* also contained contributions from across the newspaper’s other specialist beats (for example, from religion correspondent Ruth Gledhill and literary editor Erica Wagner) and from a number of high profile scientists (including Martin Rees the Astronomer Royal and President of the Royal Society).

Simon Pearson the night editor of *The Times* told us that:

the editor clearly believes in science on two fronts. He believes commercially that there’s a lot of interest out there in science, and I think he believes that for *The Times* as a community science is important. And therefore, he’s in the second year of his editorship and he’s [...] putting a lot of the investment available to him into science.

Tracking the commercial viability of a specific area of specialist news is notoriously difficult to do, but there are indicators at this newspaper that science sells.

We think health and science is... clearly people are interested in them; commercially it’s a very important part of the mix of a newspaper. [...] I would say

we get an enormous amount of traffic when we have good science stories. That's letters pages in print, online traffic, and we tend to get a lot of follow-up on radio and television as well.

The supplement, too, was a specific commercial success. "We put on an extra 25,000 sales on the day we launched *Eureka*. [...] We believe there is an appetite for science, a big appetite for science, but we're only just, I think, beginning to tap into it", Pearson said. It remains to be seen whether *Eureka* will be able to sustain itself in terms of advertising revenue. It has already secured long-term sponsorship from the companies BMW, Shell and BAE (Barros 2009), but advertising in this specialist area in the UK is a notoriously difficult market to break into.¹¹ In 2003 the *Guardian* began publishing a fortnightly science supplement called *Life*, which folded in 2005 largely because of difficulties securing advertising in a market dominated by the popular science weekly *New Scientist*.

We asked this editor about whether he took seriously the charge that science journalism places too much emphasis on diary stories. He told us science is still, to a large degree, "bound by the diary" and that in some ways this is unavoidable because of the way the science community so strictly enforces embargoes on its major findings:

The science community quarantines science coverage to a certain degree with embargoes and with organised press coverage. And I think science coverage is still based around the diary event. We may get some exclusives, we may have scientists phoning us up and saying, "Look, I've got something really exciting here I want you to come and have a look at it," but by-and-large the coverage of science is about a time and a date in your diary where you go and talk to scientists.

This is something *The Times* is hoping to change as far as is possible, however, as it strives to generate a reputation as the newspaper which covers science better than anyone else.

I think it's fair to say that the editor, he'd like to see us getting more and more exclusives. And the question is: how do we do it? And how do we do it without breaking embargoes? Because we want to be part of all the research [...], but we also want to screw our opponents, and we think science is a fantastically exciting area in which to try and get a leap ahead of everyone else. The launch of *Eureka* is one way he's trying to do it. [...] We'd like to be the number one science paper where people come to us irrespective of embargos and give us stories.

Despite the fact his science team is so well-resourced Pearson is candid about the kinds of workload pressures all journalists face in the current changing news media environment. "Cross-platform working is increasing and there's no doubt that the workload of your average subeditor or your average reporter is heavier than it used to be". But he finished by confirming his newspaper's commitment to original and distinctive science journalism.

But, if we get a sniff of a good story, a good science story or any really good exclusive, we'll pour resources into it and the cross-platform working and all the

rest will drop. We'll put two or three people onto it and we'll get everything we possibly can. And if we have to take them out of the mainline for a week or two weeks, in order to get that story, we'll do it. We don't do it recklessly and we don't do it as a matter of course, because we have to manage resources quite carefully, but if we get a sniff of it then we'll go for it.

11. Conclusion

Specialist science journalism in the UK stands at a crossroads. In some respects the beat is in a far stronger position than at many points in the last two decades. Long-term trends in employment levels show there are now far more specialist journalists covering science, health, and the environment than there were 20 years ago. The increasing human resources devoted to covering science have developed alongside an increasing respect for science specialists within newsrooms. The expertise of science journalists is, on the whole, valued by editors, and today's specialists no longer have to battle as hard as some of their predecessors to get their stories published or broadcast. Journalists report high levels of demand for science, health, and environment stories. We also found that "bigfooting", where science journalists lose control of stories to more senior colleagues once they become more generally appealing to news audiences, seldom occurs in any UK newsrooms.

On the other hand, however, workload increases have been widespread and in many cases are becoming problematic. The most often-cited reason for this are the rise of cross-platform journalism (particularly on the internet) and many centralised news desks' unease about "missing" stories which might be published by rivals (what we have identified as a form of "pack journalism" borne out of a perceived need to "keep up with the Joneses"). It is clear from this phenomenon that in many newsrooms the increasing respect for science specialists has its limits. In many cases it does not extend as far as trusting their judgements of the news value, or the scientific value, of potential stories in the form of wire copy, press releases, or the output of competitor news organisations.

Whilst they are far from universal, these problems have placed a significant number of specialist journalists under pressure in their daily routines. Put simply, science journalists have more work to do and the circle between increasing output and decreasing resources must be squared somehow. In many cases this is done by shaving off the time devoted to tracking down, checking, preparing, and researching stories. Most claim this has not affected the quality of their journalism, but many worry that it will in the future. However, many also told us the increasing usefulness of the internet and the speed of modern mass communication have cut the time needed to produce science news. Others admitted that they counter the pressure of increasing workloads by relying more on "information subsidies" such as those provided by the public relations industry (Gandy 1982).

Despite these serious concerns, however, many senior editors clearly value the work done by specialist science, health, and environment reporters, and see the work they do as essential to the strategic future of their news organisations. Most reporters believe their bosses when they say science journalists have not been unduly targeted for cuts and that they are valued for the distinctive experience and expertise they supply. In the words of one specialist reporter:

I think the lessons of MMR and countless other issues have been learned over the past few years. Editors know you can become unstuck as a news organisation covering science if you don't know what you're talking about and you have specialists who know what they're talking about. And conversely I think it can

really boost your credibility as a news organisation if you have good science journalists and people who really understand the subject and aren't just doing what everyone else is doing, but really bringing an analytical eye that's based on experience and knowing the beat.

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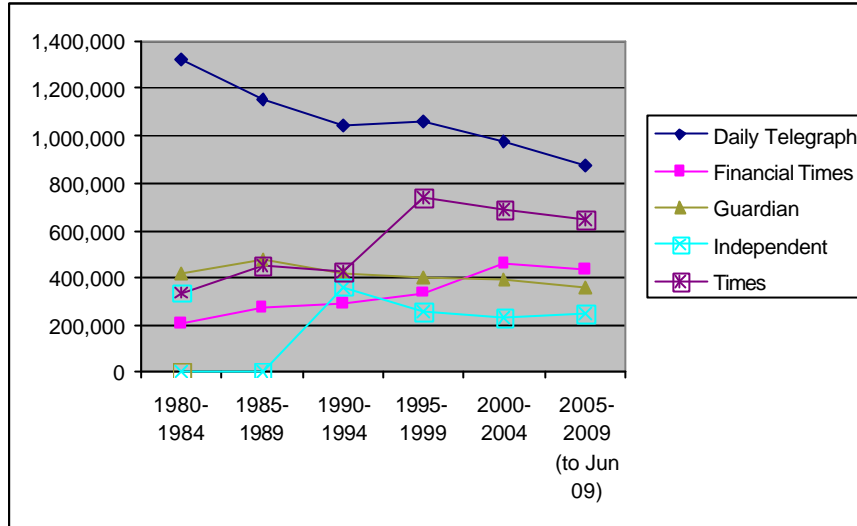
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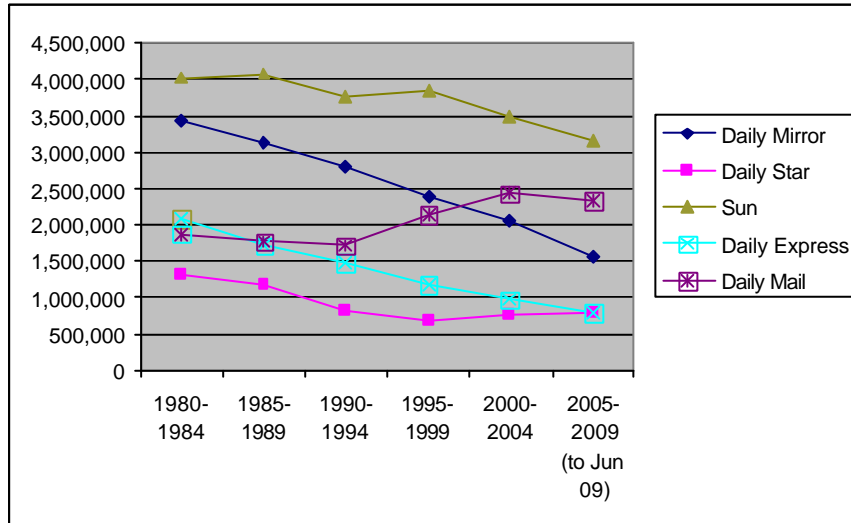
Appendix 1: Circulations at UK national newspapers, 1980-2009

Circulation at UK national broadsheet newspapers 1980-2009



Source: ABC 6-monthly average circulation figures

Circulation at UK national tabloid and mid-market newspapers 1980-2009



Source: ABC 6-monthly average circulation figures

Appendix 2: Expansion and contraction in the science, health, and environment beats at individual news outlets, 1989-2009

The figures in section 4 present comparative figures for the numbers of journalists explicitly named as science, health, or environment news specialists at national newspapers and broadcast organisations in the UK during the last 20 years. For the purposes of presenting reliable comparative figures we have chosen to exclude journalists who are not primarily news-oriented (such as feature writers), as well as a number of specialist reporters who cover areas on the margins of the science news beat (such as rural affairs, social affairs, technology, energy, nature, and oceans specialists).

This appendix consists of mini-narratives detailing fluctuations in the science, health, and environment beats at all of the individual news outlets considered by this report. Each one drills down behind the overall figures presented in section 4, providing information about the journalists we counted as well as notable marginal cases we decided not to include.

Tabloids and mid-market newspapers:

The Daily Mirror and Sunday Mirror:

Specialist staffing at the *Daily Mirror* has remained fairly constant at a low level over the past 20 years, with a recent improvement in the area of science and environment. From 1987 until 2003 the medical correspondent was Jill Palmer. Lorraine Davidson was health correspondent between 2003 and 2007, and the post is currently held by Emma Cook. The paper appointed a science and environment editor, Mike Swain, in 2006, and until this point there had been no such specialist for at least 20 years. Prior to this, in the 1960s post-Sputnik era, there had been two full-time science writers.

Between 1997 and 2004 the health brief at the *Sunday Mirror* was held by Sharon Collins. There were no other science-related posts at this paper between 1998 and 2009.

The Sun and News of the World:

The Sun currently employs a health editor, Emma Morton and an environment editor, Ben Jackson. Another health writer, Kate Whighton, is not included in our figures because she works on health features. The environment post was created in February 2009, and there had not been an equivalent post previously. In 1999 there was one health correspondent, Lisa Reynolds, and in 1989 no news journalists staffed the science, health and environment beat (although Vernon Coleman was employed as ‘the *Sun* doctor’, and wrote health advice and feature stories). The *Sun* also currently employs a technology reporter who covers consumer electronics, and a “*Sun*

space man”, Paul Sutherland, who is employed on a freelance basis and covers space technology stories.

Current environment editor Ben Jackson told us health has been “a big growth area” in the last decade, but environment coverage is now also very important. He describes this as a result of growing environmental awareness in the UK in general, and in News Corporation’s current senior management specifically:

It’s no secret that James Murdoch is very interested in the environment as well, and I think that was something that it was a side of an issue that he wanted to propel under his guidance into an area that was perhaps better reported in the paper.

There are currently no science, health or environment journalists at the *News of the World*, nor have there been in the past twenty years.

The *Daily Mail* and the *Mail on Sunday*:

The health brief at the *Mail* is currently held by medical editor Jenny Hope and health reporter Daniel Martin. In addition to this the paper employs an environment editor, David Derbyshire, and a science specialist Fiona MacRae. The *Mail* also employs a science editor, Michael Hanlon, who is not included in the figures presented in section 4 because he almost exclusively writes features and not news stories. Twenty years ago only one health journalist staffed this broad beat, but since then staffing levels have increased. Expansion has been gradual, with one science and one health news post added by 1999. By 2005 there were two health and two science news specialists. By 2009 one of these science posts had been replaced by the environment editor position.

At the *Mail on Sunday* Lorraine Fraser was medical correspondent between 1989 and 1999. In 2005 the science correspondent was Eleanor Mayne, but there were no health news journalists. She had left the paper by 2009. The patch is now represented by medical correspondent Jo McFarlane.

The *Daily Express* and the *Sunday Express*:

Two science-related posts exist at the *Express*, and both involve mixed briefs. Victoria Fletcher is health and science editor, and John Ingham is environment, defence, transport, and travel editor. In 2005 and 1999 there were three journalists with single briefs: one science, one health, and one environment specialist. In 1989 there were two reporters covering this beat: Clare Dover was medical correspondent, and the environment writer was James Davis.

Twenty years ago there were no science-related correspondents at the *Sunday Express*. By 1999 one health specialist had been added. By 2005 there was an environment correspondent (Stuart Winter) as well as a health writer. There are still currently two writers on the broad science beat,

but they both cover more than one brief: Lucy Johnston handles both health and social affairs whilst Stuart Winter deals with environment and foreign news.

Broadsheet newspapers:

The Times and Sunday Times:

The Times has a long tradition of employing science writers. Arthur Hazlitt, science editor in the early 1960s, was joined later in that decade by science reporter Pearce Wright. When Hazlitt died and Wright took over as editor the reporter post was not filled. However science coverage was then maintained and supplemented by the *Nature News Service* (news provided by staff writers on the journal *Nature*). By 1989, alongside Pearce Wright, there was an environment correspondent, Mike McCarthy, and two health writers, Thomson Prentice and Allison Roberts. There were still four writers in 1999. Nigel Hawkes was now science editor and Nick Nuttall the environment correspondent. In health the medical correspondent was Ian Murray and the medical reporter Helen Rumbelow. The environment post was empty between 2003 and 2006, which cut the core staff on this news beat to three. Nigel Hawkes had become health editor, with Sam Lister as his deputy, and Mark Henderson was science correspondent. There are currently five core science-related news writers on this beat at *The Times*. The science editor is Mark Henderson and he works with science reporter, Hannah Devlin. The environment post has been restored with Ben Webster as environment editor. Sam Lister is health editor, and David Rose as health is health correspondent.

Other *Times* writers outside the news team we have outlined here include the science features writer (Anjana Ahuja), an ocean correspondent (Frank Pope), the energy editor (Robin Pagnamenta), a countryside editor (Valerie Elliott), and three technology writers (editor Nigel Kendall, correspondent Mike Harvey, and reporter Murad Ahmed).

The *Sunday Times* staffing has remained reasonably stable over our twenty-year period. In 1989 there were two science-related correspondents, one in health and one in environment (the former Neville Hodgkinson, later Aileen Ballantyne, and the latter Richard Palmer). By 1999 there were three writers. The environment post had gone, but there were two specialist science journalists: an editor, Jonathan Leake, and a correspondent, Steve Farrar. The single health journalist was medical correspondent Lois Rogers. In 2005 and 2009 the total number of writers on the broad beat had returned to two. There was (and is) one health journalist, and the combined science and environment brief was (and still is) carried by Jonathan Leake.

The Financial Times:

The figures presented in section 4 for the numbers of people staffing the broad science beat at the *Financial Times* somewhat belie the size of the science team employed by this newspaper over the years. This publication's primary focus on the business and economics of science, health and

the environment means that many journalists who cover patches like the various hi-tech, biotech, pharmaceutical, petrochemical, and other energy industries were not included in our figures, and neither were those who write about healthcare from a policy standpoint, such as the *FT*'s public policy editor Nicholas Timmins.

During the 20-year period singled out by our research there was almost always one “hard” science and one environment correspondent at the paper. A notable exception to this was in 1999 when there was no environment correspondent for a period of three years: Bridgit Bloom left the role in 1998, and current specialist Fiona Harvey joined in 2002.

Changes in the staffing of the broader science beat in different sectors have followed changes in the corporate news agenda. For instance the newspaper has recently beefed up coverage of the energy industry and environment beat, where there are now four people covering the environment, energy, and the petrochemical and nuclear industries. The flipside of this is that the previously very well-staffed pharma and biotech patches are now covered by only one journalist, the pharmaceutical and biotechnology correspondent Andrew Jack.

The *Guardian* and *Observer*:

In 2008 the *Guardian* made a strategic decision to aim to position itself as a global leader in coverage of the environment and climate change. To this end it now employs six news journalists on this patch: the long-serving environment editor of the newspaper John Vidal, the website environment editor James Randerson, correspondents David Adam and Alok Jha, and two overseas environment correspondents, Suzanne Goldenberg in the US, and Jonathan Watts in Beijing. This is clearly a large increase on 2005, when there were two environment writers (John Vidal and Paul Brown, who was later replaced by David Adam), and 1999 (John Vidal and Paul Brown). In 1989 John Vidal was the only environment writer.

The “hard” science patch is somewhat depleted as a result of Alok Jha and James Randerson’s move to environment. Currently the science editor Ian Sample is the only science journalist. In 2005 this patch was staffed by three writers (science editor Tim Radford, and correspondents Ian Sample and Alok Jha), an increase on 1999 when there were two specialists covering science. In 1989 there was also just one. Health has remained fairly constant in terms of staffing levels: health editor Sarah Boseley is currently the sole full-time *Guardian* specialist, although the *Observer*’s Denis Campbell now writes across both titles. In 2005 there were two journalists (Sarah Boseley and correspondent James Meikle), in 1999 there was one (Sarah Boseley), and in 1989 there was also only one (Andrew Veitch). Not included in our figures are journalists such as social affairs editor John Carvel, who covers the NHS and health policy, and a number of technology journalists such as Charles Arthur and Bobbie Johnson.

Science, health, and environment staffing at the *Observer* has remained stable for the last 20 years. At each point in time chosen for our study – in 1989, 1999, 2005 and the present day – there was one science, one health and one environment journalist. Robin McKie has held the science post throughout this period (although he had been promoted from science correspondent to science editor by 1999). The health correspondent post was held by Annabel Ferriman in

1989, and in 1999 a medical correspondent post was occupied by John Illman. Jo Revill was health editor in 2005 and Denis Campbell is currently the health correspondent (although the merger of many *Guardian* and *Observer* staffs into a cross-title “pod” system means he now writes for both titles). In 1989 the environment correspondent was Geoffrey Lean, and in 1999 this job was held by Anthony Browne. By 2005 Juliette Jowit was environment editor, and she continues in this role today.

The Daily Telegraph and Sunday Telegraph

The data we gathered relating to these papers paints a picture of slow decline in the size of the science and health beats in the last twenty years. In 1989 the “hard” science beat was staffed by Roger Highfield, Adrian Berry, and Christine McGourty, and in 1999 the patch was covered by Adrian Berry, Aisling Irwin, and Roger Highfield. By 2005 this team had been reduced to two: editor Roger Highfield and correspondent Nic Fleming. The *Telegraph* lost these respected science journalists in 2008 when Highfield left to edit the *New Scientist* in 2008 and Fleming was sacked. This beat is now the sole preserve of one journalist, Richard Alleyne, who was previously a general news reporter. The health beat has remained constantly staffed by two journalists for most of the period we have surveyed (current staff are medical editor Rebecca Smith and health correspondent Kate Devlin), and the environment beat by one reporter. For a long time the environment was covered by veteran journalist Charles Clover. He left in 2008, however, and Louise Gray is now environment correspondent.

At the *Sunday Telegraph* science and health staffing have remained relatively stable whilst the environment patch has been subject to some changes. There was one science and post throughout the period of our study (John Delin in 1989, Robert Matthews in 1999 and 2005, and Richard Gray in 2009). The health beat was attended by one medical correspondent in 1989. In 1999 this role was played by Jacqui Thornton, and in 2005 a number of journalists (Karyn Miller, Michael Day, and Beezy Marsh) covered the patch at different times. The current health specialist is correspondent Laura Donnelly. Nobody covers the environment beat at the moment. In 2005 the correspondent was David Harrison, in 1999 the post was vacant, and in 1989 Greg Neale and David Brown occupied the role at different times.

The *Telegraph* has also historically had a strong technology team. We have not counted current technology journalists such as Urmee Khan in our figures, nor have we included past tech journalists such as Robert Uhlig, Ben Rooney, and Tom Standage.

The Independent and Independent on Sunday:

These papers have suffered several rounds of cuts over the last two decades, notably in 1991 when the daily and Sunday staffs were merged, in 1994 when the offices moved to Canary Wharf, and in 2008 when Independent News and Media announced it would cut the London staff by 40%. In 1989 the *Independent* had two science posts, with Tom Wilkie as editor and Steve Connor as correspondent. There were two health journalists (Celia Hall was medical editor and Sharon Kingman was health correspondent), and two environment reporters (editor David

Nicholson-Lord and correspondent Richard North). By 1999 there was one science editor (Steve Connor), a health editor and a health correspondent (Jeremy Laurance and Cherry Norton) and two environment correspondents, Mike McCarthy and Geoffrey Lean. In 2005 the team still stood at four: one science editor (Steve Connor), a health editor (Jeremy Laurance) and two environment editors, Mike McCarthy at the daily and Geoffrey Lean at the Sunday paper. By 2009 this had been reduced to three: Steve Connor is still science editor, Jeremy Laurance is still at health, and Mike McCarthy is now environment editor.

Broadcast news:

Channel 4 News:

There has been little change in staffing levels of science journalists at Channel 4 News over the last 20 years. The current science correspondents are Tom Clarke and Julian Rush and they are supported by one specialist science producer. In 1989 there was one science correspondent and one specialist producer, and this rose to two correspondents and one producer in 1999. By 2005 there were two on-screen journalists and two specialist producers, but one of these producer roles was cut in 2007. The correspondents have fairly broad and flexible areas of specialism covering “hard” science, medical science, and environment stories. Health stories which deal with the politics of health are not covered by a designated health correspondent, but instead by the social affairs correspondent Victoria Macdonald. Channel 4 News also employs a technology correspondent, Ben Cohen, who deals mainly with stories relating to digital technology, the internet, and consumer electronics.

ITV News:

In the last twenty years the ITV team has fallen from five to three. In 1989 the broad science beat was covered by five specialists: veteran science editor Lawrence McGinty and two specialist producers working with him; and one specialist environment correspondent with their own specialist producer. The environment post was relatively short-lived, however, and was axed two years later. By 1999 McGinty was covering the science, environment, and medical health briefs, again supported by two specialist producers. In 2005 Sue Saville had been hired as medical correspondent, and McGinty had become science and environment editor. Both on-screen journalists were supported by one producer each. By 2009 the team had been cut to three: one of the specialist producer roles had been axed, and one producer was left supporting both McGinty and Saville.

Sky News:

The 24-hour Sky News channel was launched in February 1989 on a tight budget and with a fairly small staff. There were no specialist science, health, or environment journalists there at this

time. In the mid-1990s, during the first wave of mainstream environmental awareness, the organisation briefly employed an environment correspondent but this post did not last long. By 1999 the specialist staff had grown to two on-air health correspondents (Thomas Moore and Nicola Hill). Hill had left by 2005 but by this time Sky had employed an on-air environment correspondent (Catherine Jacobs), and two specialist producers, to join Moore. The current team still stands at four.

BBC News:

The growth in the BBC's specialist science, health, and environment news teams over the last twenty years has been extraordinary. In 1989 just two specialists were assigned to these areas (James Wilkinson covered television, and another correspondent was responsible for radio news), but by 2009 the cohort had grown to 30. This is mainly because of the proliferation of news outlets at the corporation over this period (for example, on *News 24* and the ever-expanding BBC website). The increase is also down to a general expansion in specialist journalism under former director general John Birt.

In 1999 separate teams had developed for different areas of this broad beat. The television and radio science and environment team consisted of eight specialists: two specialist producers and six correspondents (Pallab Ghosh, David Whitehouse, James Wilkinson, Christine McGourty, and two other correspondents working for *News 24*). In addition to this there were four journalists working on the nascent science index on the BBC news website (Jonathan Amos, Damian Carrington, David Whitehouse and Alex Kirby), and Susan Watts was a dedicated science journalist at the flagship nightly news programme *Newsnight*. There were six specialists covering broadcast health and medical news: two producers and four correspondents (Fergus Walsh, Richard Hannaford, James Westhead, and Karen Allen). A further three journalists staffed the website's health news team under index editor Richard Warry.

By 2005 both teams had expanded further. The science and environment team included 7.5 correspondents (environment analyst Roger Harrabin; environment correspondents: Sarah Mukherjee and Tim Hirsch; science correspondents: Pallab Ghosh, Fergus Walsh, and Christine McGourty; and science and environment correspondents: David Shukman and Sue Nelson, who at this point had a half-time post), and three specialist producers. The online science news index staff under Jonathan Amos had grown to 4.5 journalists. Susan Watts was still at *Newsnight*, Tom Feilden had become the Radio 4 *Today* programme's science specialist, and Matt McGrath was BBC World Service's science correspondent. The broadcast health team had acquired one more specialist producer bringing their total up to three, and the four correspondents were Jane Hughes, Branwen Jeffries, Jane Dreaper, and Adam Brimelow. Richard Warry on the health news section of the website now managed a team of 4.5 reporters, who were now "co-sited" with the broadcast health journalists to encourage them to co-ordinate coverage and prepare the ground for increasing cross-platform journalism.

By 2009 the health, science and environment specialists, and all of the internet health and science journalists had been merged into one large team. Most of the correspondents now consider themselves to be multimedia journalists. They are expected to specialise in producing

content for one platform, but are encouraged to work across different media on demand. There are now three specialist producers, and four science and environment correspondents who produce principally for broadcast news (environment analyst Roger Harrabin; environment correspondent Sarah Mukherjee; science correspondent Pallab Ghosh; and science and environment correspondent David Shukman). One correspondent is to be made redundant in the coming year. 6.5 journalists cover science and the environment online (science correspondent Jonathan Amos; environment correspondent Richard Black; journalists: Paul Rincon, Mark Kinver, and Victoria Gill; video journalist Rebecca Morelle; and 0.5 journalist Jason Palmer, who also works half of his time on the website's technology news index). Susan Watts and Tom Feilden are still at *Newsnight* and *Today* respectively, and Matt McGrath is still the World Service science correspondent. There are currently five health and medical correspondents (Fergus Walsh, Jane Hughes, Branwen Jeffries, Jane Dreaper, and Adam Brimelow), three specialist health producers, and 5.5 specialist internet journalists (including Anna Marie Lever, a video journalist who produces bespoke multi-media health news content for the BBC news website).

The 2009 figures for the BBC presented in section 4 exclude the new post of "Assignments Editor" which has recently been created within the merged science, health and environment team. This is because this person does not generally produce news content, and plays an administrative role liaising between the science specialists and various editorial figures.

Appendix 3: Editorial staffing levels at UK national newspapers, 1985-2004 (source: Lewis et al 2006)

This table summarises information taken from the annual accounts filed at Companies House for the major national newspaper groups between the years 1985 and 2004. The research work in collecting this data was carried out by Cardiff University for The Joseph Rowntree Charitable Trust and the Media Wise Trust in 2006. It is included here to offer a source of comparison with changes in the number of specialist science, health and environment beat during this period.

While employment levels were slightly lower in 2004 than in 1985, the data in Table 1.1 suggest a gradual increase in the average number of editorial employees among national newspapers over the last decade.

Average employment for UK national newspaper companies

Year	Ave. editorial employees ¹²
2004	741 ¹³
2003	713
2002	651
2001	583
2000	623
1999	523
1998	502
1997	500
1996	530
1995	533 ¹⁴
1994	497
1993	497
1992	513
1991	545
1990 ¹⁵	947
1989	552 ¹⁶
1988	461 ¹⁷
1987	427 ¹⁸
1986 ¹⁹	555 ²⁰
1985 ²¹	786 ²²

These data are based on the average number of employees and also average editorial staff at the following companies: Express Newspapers Ltd (the *Daily Express*, the *Sunday Express*, the *Daily Star*, the *Daily Star Sunday*), The Financial Times Ltd (the *Financial Times*), MGN Ltd (*Daily Mirror* and *Sunday Mirror*), News Group Newspapers Ltd (the *Sun* and the *News of the World*), the Telegraph Group Ltd (the *Daily Telegraph*, the *Sunday Telegraph*, the *Weekly Telegraph*), Guardian Newspapers Ltd (*Guardian* and the *Observer*), Independent News and Media Ltd (*Independent* and the *Independent on Sunday*), Times Newspapers Ltd (*The Times*

and the *Sunday Times*, *TLS*, *THES*, *TES*) and Associated Newspapers Ltd (the *Daily Mail*, the *Mail on Sunday*, the *Evening Standard*, the *Ireland on Sunday*, and *Metro*).

Collecting comparable, documented information about employment is difficult, so two qualifications should be attached to these figures. While they generally refer to national newspapers, among some groups these figures also include a small number of non-national newspapers or weekly specialist newspapers. The emergence of online news operations within these groups also complicates analysis.

Secondly, within each newspaper group, figures for total employees are available throughout this period, but more detailed breakdowns into different types of employees are not always listed in company reports, or are listed on some years but not others. This makes it impossible for the average figures for editorial employees to always include all newspaper groups. What is included is an average of the figures available for each year (a more detailed explanation of what is included and excluded can be found in the endnotes).

Nevertheless, these figures do offer us the most detailed year-on-year breakdown on newspaper employment currently available, and suggest a number of key trends. Taken overall, total average numbers of employees and editorial employees in the companies listed above have been relatively stable across the 1990-2004 period, with a gradual increase in employee numbers recorded during the latter part of this period, coinciding partly with the development of on-line services by most newspapers.

Endnotes:

¹ The full extent of the overlap between the interviewees and the survey respondents could not be determined because those who completed the online survey were given the option of doing so anonymously. We do know for sure, however, that 18 of those who filled out the survey were also interviewees.

² It should be noted that when asked whether their workload people in any profession are unlikely to say that it has decreased. For this reason we supplemented our survey data on this topic with in-depth qualitative discussions during the interviews.

³ Whether this necessarily results in “better” journalism is, of course, up for debate (see 1.2 on the pitfalls of science specialism).

⁴ The Science and the Media Expert Group was set up by the department for Business, Innovation and Skills as part of its Science in Society consultation. Its stated mission is to increase “opportunities for contact and partnership working between the media and scientists in order to create a better understanding about each others’ work and produce better products”. More information about the group can be found here:

<http://interactive.bis.gov.uk/scienceandsociety/site/science-and-the-media/>

⁵ These overall figures mask some big differences between the human resource practices of different newspapers. For instance the *Guardian* and the *Financial Times* hired extensively in the 1990s. Other news groups, such as Express Newspapers Ltd, fared considerably worse and cut lots of staff in this period.

⁶ Our graphical presentations in this section show comparative figures for the numbers of journalists explicitly named as science, health, or environment news specialists at national newspapers and broadcast organisations in the UK. Our figures are based on data gathered using our online survey and detailed interviews with specialists past and present. For the purposes of being able to present reliable comparative figures we have chosen to exclude journalists who are not primarily news-oriented (such as feature writers), as well as a number of specialist reporters who cover areas on the margins of the science news beat (such as rural affairs, technology, energy industry, biotech industry, nature, and ocean specialists). More extensive qualitative detail on differences in staffing on the science news beat at each news outlet is included in Appendix 2.

⁷ Recent high-profile hoaxes, such as those surrounding the research of Korean stem cell scientist Hwang Wu-Suk, have highlighted that peer-review is no guarantee of rigorous science (Haran et al 2008). US court documents made public over the last decade have also shown that many peer-reviewed medical studies, supposedly written by independent academics, are actually ghost-written by agents of the pharmaceutical industry, a practice which has further undermined confidence in the academic peer-review system (Sismondo 2007).

⁸ We made a decision to name neither the news outlets which are directly criticised or praised by the journalists we spoke to during our interviews. Most of the journalists who spoke critically about specific news organisations, or specific aspects of science journalism, did so on the condition of anonymity; to name outlets would make it easier to identify these sources, and we would rather err on the side of caution in this respect than put anyone in a difficult situation with current or potential future employers.

⁹ It should be noted that we interviewed far more science specialists than we did news editors. This study largely reflects science journalists’ self-perceptions. We are sure that if we had interviewed similar numbers of news editors a different picture would have emerged. The editorial perspective on this power struggle we gained from some senior managers confirms this. Craig Oliver the deputy head of the BBC’s multimedia newsroom, for example, told us that editors tend to place themselves in the position of the general reader, whereas specialists are sometimes too caught up in the detail and specificity of a science story to see what would and would not be appealing to the audience. He told us that journalists’ frustration at news editors’ decisions are sometimes justified, but that they are often misguided:

I think that sometimes it’s easy to caricature an editor as saying, “Oh I just want this because I’ve seen it in [news outlet X]”, or something. I think that sometimes that is very simplistic and rather unfair, [...] and that sometimes it’s right. [...] Sometimes it is right that bad editors will behave in that way, but a good editor will have the ability to say to a specialist, “Look, I know it’s not new to you but it is new to me, and the reality is we don’t live in a world where just because something has been reported somewhere once it’s automatically understood by the vast general population.” Often stories require repetition before people actually grab hold of them and get them.

¹⁰ There is, of course, a qualitative difference between a press release and a story published on a news wire. One is produced by a press officer who aims to gain favourable coverage for their organisation, and the other is written by an independent journalist. But a number of science specialists told us that “the wires” should not be seen as entirely

reliable sources of news, and that information contained in agency copy should still be thoroughly checked. Agency journalists, we were told, are sometimes inexperienced and are also under extreme workload-related pressure, so are not immune from the temptation of producing “churnalism”. As one national newspaper science journalist told us, “the agencies, I personally tend to be a little bit wary of because I know that agencies are staffed by very keen 18-year-olds who are on about £10,000 a year, so I check it out really”

¹¹ It is interesting that these companies have already pledged financial backing for Eureka. We were told on two separate occasions that advertisers from the energy and automotive industries are particularly drawn to environment news coverage online. The *Guardian*'s George Monbiot has argued against his own newspaper taking advertising money from companies selling environmentally damaging products, for example certain cars, and all flights (Monbiot 2009).

¹² Because of different accounting practices between the national newspaper companies, it has not always been possible to include an average number of editorial employees for every firm in these calculations.

¹³ Between 1985 and 2004 there are no editorial staff figures for Associated Newspapers Ltd included in the average.

¹⁴ Between 1986 and 1995 there are no editorial staff figures for Express Newspapers Ltd included in the average.

¹⁵ Between the years of 1985 and 1990 there are no figures for Guardian Newspapers Ltd included in calculations for any of the average figures.

¹⁶ As well as not including numbers for Guardian Newspapers Ltd this figure could not include a breakdown number of editorial staff for Express Newspapers, The Financial Times Ltd, or Associated Newspapers.

¹⁷ As well as not including numbers for Guardian Newspapers Ltd this figure could not include a breakdown number of editorial staff for Express Newspapers, The Financial Times Ltd, or Associated Newspapers.

¹⁸ This average figure does not include Guardian Newspapers Ltd this figure could not include a breakdown number of editorial staff for Express Newspapers, The Financial Times Ltd, Associated Newspapers, or News Group Newspapers.

¹⁹ In addition to this year not including figures for Guardian Newspapers Ltd, there are no figures included for the Newspaper Publishing Ltd, which published the *Independent*, as although the company came into existence during this year it did not start printing the newspaper until 1987.

²⁰ This average figure does not include Guardian Newspapers Ltd this figure could not include a breakdown number of editorial staff for Express Newspapers, The Financial Times Ltd, Associated Newspapers, News Group Newspapers, or Times Newspapers.

²¹ This year does not include data for Guardian Newspapers Ltd or Newspaper Publishing Ltd (the *Independent* was not set up until 1986).

²² Only the Telegraph Group and Express News Ltd provide information on numbers of editorial staff for this year. Other companies which provide separate staff figure breakdowns give one figure for editorial and production staff, making it impossible to compare with later figures which do not include production staff.