

Science and the Media: Securing the Future

Science and the Media Expert Group

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Science and the Media: Securing the Future

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Introduction from Fiona Fox, Chair

Surveys continue to show that the vast majority of the public get most of their information about science from the mass media. While the scientific community should exploit the mesmerizing array of new ways to get science directly to the public, it is clear that we ignore the mass media at our peril. Rightly or wrongly, some of the most important science debates of our times have been conducted on the front pages and in the headlines of the mainstream news. No-one could surely argue that the decisions we have made as individuals and as a society on issues like GM crops, human-animal hybrid embryos and climate change have not been hugely influenced by mass media. And it did not escape our attention that one of the biggest science stories of the year revolved around a scientist who was sacked, not for what he said in an academic lecture, but when what he said became headline news.

It is not just on the controversies where the media has played a critical role. Does anyone believe that the nation would have been so enthralled by the switch on of a huge particle accelerator in the mountains of Switzerland had it not been covered so extensively by the BBC or made the subject of double-page spreads in the Sun?

Scientists now almost take it for granted that every week the media will convey the news that they have discovered a new gene or species or state of matter or invented a new drug or spacecraft or engineered a new means to adapt to climate change. In his evidence to our group Jeremy Webb, Editor in Chief of New Scientist warned scientists against becoming complacent about the media's role in conveying the wonder of science:

"Science stories create a different kind of drama: they reveal how astonishingly ingenious nature can be and the ingenuity of scientists. Scientists so often turn received wisdom on its head and it's the realization that the world or universe doesn't work in the way you thought that makes for a dramatic story."¹

As well as bringing scientific controversy and wonder to mass audiences, the media can also hold science to account in a very public way. The media's classic role of 'speaking truth to power' should be as true for the scientific establishment as it is of the political elites; a constant theme in evidence from journalists was the unique role for the media in questioning and scrutinizing science. Far from threatening to undermine science, the media's role in holding it to account can make science better, more honest and more accountable, though the group found that, with a few honourable exceptions, this form of investigative journalism was by far the weakest area of science reporting today.

The group has addressed some of the problems facing journalism today. Of course there are still far too many examples of terrible science journalism, but I think it would be fair to say that in the course of our work we found more reason to champion specialist

¹ Jeremy Webb, Editor-in-Chief, New Scientist

Science and the Media: Securing the Future

science reporting in the UK than to despair. A survey of science journalists² conducted at last year's hugely successful World Conference of Science Journalists in London³ found a majority of science journalists feeling extremely positive about the future:

'The pride of the profession seems intact: two thirds expect the future to bring more interesting science and technology and 60% think that science writing is the most exciting field of journalism'

And when asked at the conference why more science reporters did not progress into editorial roles or move onto other terrains Fran Unsworth, Head of News Gathering at the BBC (and member of this working group) answered 'because they love their jobs.'⁴

From the scientific community's perspective we also found reasons to be cheerful. More scientists are engaging with the media than ever before, and research shows that for most their experiences are positive. Connected to this is the fact that more and more professional science press officers are now employed to help scientists to navigate the media and use it more effectively. Finally more funding agencies and scientific institutions are devising ways to incentivize and support scientists prepared to engage with the media.

In some ways, then, we have judged science in the media to be in rude health. However no-one on this working group felt there was nothing to fix. The broader landscape of journalism in crisis focused our minds on the new threats, as well as the new opportunities. We must ensure the largely positive situation we have now is secured for the future.

Exciting times

Adding to the reasons to be cheerful was the discovery of so many new and exciting innovations in all of the areas we examined. For example, no sooner had we heard from programme makers that they need more ways to access the amazing stories in science than we discovered an array of new initiatives in this area. The Wellcome Trust⁵ has led the field in pioneering such schemes, including speed-dating sessions for programme makers and scientists; Ideas Lab⁶ in Birmingham University has already delivered an exciting pilot project; and the BBC are in the early stages of setting up a new Academy and a Buddies Scheme as spin offs from their Year of Science. Many of our recommendations in all areas are simply calls for further resources and support for the range of such new activities. We feel that one of the things our report might usefully do

² The Sense of Crisis among Science Journalists, Martin. W. Bauer & Susan Howard, Published 5th November 2009

³ <http://www.wcsj2009.org/>

⁴ Fran Unsworth, Head of Newsgathering, BBC

⁵ The Wellcome Trust is the UK's largest non-governmental source of funds for biomedical research.

⁶ Ideas Lab is an innovative new project funded through the Higher Education Innovation Fund helping TV, radio and multimedia producers find and use the latest research, facilities and expertise in their programmes and web sites

Science and the Media: Securing the Future

is bring some of this very novel activity to people's attention. Similarly we have no doubt that for every activity we found there are many out there that we did not encounter, or did not have the space to include. We do not set out to make this a comprehensive list of all new initiatives, but we hope the Working Group on New Initiatives in Science Journalism we are recommending will include such a comprehensive search as part of its work.

Process

The working group had a total of six meetings between July and December 2009. At the first meeting we agreed that we would have to select some specific areas to focus on and accept that it would be impossible to deal with every aspect of this huge subject given our limited time and resource. We then brainstormed what these issues would be and came up with four themes:

- Science Training
- Science Programming in a Changing Landscape
- Science Journalism and its Future
- Openness and Transparency

These themes then became the focus of the following four meetings. At the final meeting in December we fine-tuned and agreed upon the recommendations that had emerged from previous meetings.

Consultation and evidence gathering

As readers may know, the UK's Science and Society Strategy has been in development since October 2007, with the Government running a large consultation between July and October 2008, the output of this can be found as Annex 5. Given how much consultation had already taken place and the short time-scale within which we were to work, we decided not to set up an official consultation process of our own. Having said that, key groups including the networks for science writers, such as ABSW⁷, and press officers, such as STEMPPRA⁸, were informed of the working groups at an early stage and we encouraged their input.

Instead of a formal consultation, individuals and organizations were consulted as and when we needed more input. These meetings were primarily conducted by myself along with Tom Wells⁹, the BIS civil servant assigned to this working group. At each subject-themed meeting we invited three or four external experts to make formal presentations to stimulate our thinking. Finally, a small number of group sessions were set up with science journalists in the UK and overseas, including sessions with Nature News reporters and science writers at New Scientist. We received two written submissions,

⁷ Association of British Science Writers

⁸ Science, Technology, Engineering and Medicines Public Relations Association

⁹ Policy Advisor in the Science and Society Team in the Department for Business, Innovation and Skills

Science and the Media: Securing the Future

one from the ABSW¹⁰ and the other from AlphaGalileo¹¹ (Annex 3, on our website)¹². A full list of group members, those consulted and the expert contributors to meetings can be found as Annex 2 of this report. It should be acknowledged that much of the thinking and many of the ideas in this report have come to us from leading experts outside the group and we owe them huge thanks for giving up their valuable time to share their thoughts and ideas with our group. The Chair also took advantage of an all expenses paid trip to open the Science Media Centre in Canada to tack on two days in NY and Washington to meet with key opinion formers in the USA. We are grateful for all their input.

Commissioned Research

We took advantage of a small amount of funding from BIS for new research to commission the highly respected Cardiff University School of Journalism to do a piece of research¹³ (Annex 1) on the current state of science reporting in news – probably the most hotly debated area of science in the media. We are extremely proud of this piece of research and want to offer huge thanks to Andy Williams¹⁴ for a fantastic piece of work and for his broader input to our group. We are publishing this research alongside the report and feel it is critical to read both the report and the research together to get the full picture.

Some words of warning

I would like to lay out briefly the thinking behind some of the key decisions we made at an early stage about how to approach some contentious issues:

1. We decided on day one that for us science journalism would be a catch-all term for journalists writing about physical sciences, medical science, health, engineering, environment and technology. We acknowledge that this potentially reductive measure is problematic because of the clear differences between these subgroups. For example, we heard from several science writers that while health reporting is thriving, hard science reporting is being squeezed. However, this group simply did not have the time or resources to break down the categories. We also believe that the principal challenges and opportunities presented by the radically changing landscape apply to all the above groups. Similarly we feel the solutions and recommendations we make will improve the quality of reporting of all aspects of science journalism. However, we acknowledge that at the stage of implementation the initiatives we propose may need to take into account differences between these categories. For instance, in the same way that the Science

¹⁰ Association of British Science Writers (ABSW) submission to the BIS Science and Media Expert group (submitted 09/11/2009)

¹¹ Internet press center for European science, medicine and technology. www.alphagalileo.org/

¹² <http://interactive.bis.gov.uk/scienceandsociety/site/science-and-the-media/>

¹³ Mapping the Field: Specialist science news journalism in the UK national media

¹⁴ Academic staff at Cardiff University's School of Journalism and RCUK Research Fellow in Risk, Health and Science Communication

Science and the Media: Securing the Future

Media Centre (SMC) has a dedicated engineering press officer, there may well be a need for any training packages developed to include specifics on the reporting of engineering, etc.

2. We also decided early on that we would focus our thinking primarily on the mass media which conveys science to the wider public, in preference to examining the more niche-oriented media offering science to those who are already paying attention. We felt that our role in informing the UK's Science and Society and Strategy compelled us to focus more on the science that reached people who are not automatically interested in science. This is not in any way to dismiss the growing number of exciting new media ventures as 'media for nerds'. We agree that a higher level of science reporting available on the web for those already interested in science is to be welcomed, but this was not the focus of our limited examination.

3. The group did not consider the role of regulation in upholding standards of science journalism. Although this is an important issue, it is also highly contentious and it seemed likely that a disproportionately large amount of the group's time would have been required to agree on future actions. We are grateful, however, to Ofcom and the Press Complaints Commission for providing summaries of their work in this area.

4. We initially made a decision to rule out the explosion of direct-to-the-public science communication by way of websites, blogging, tweeting etc and concentrate on science communicated through journalism in mainstream media settings. However, this clear division was challenged when we discovered that some direct-to-the-public science communication is taking the form of journalism, employing journalists and presenting itself as journalism. Similarly when science journalists and press officers start to blog or tweet, or the subject of scientists tweeting becomes a news story, the lines between mainstream and alternative media become blurred. So we have addressed some of the new more journalistic ventures even when they are taking place within the scientific community rather than a traditional media setting.

Science and the Media: Securing the Future

Conclusion

We hope you find the time to read the narrative of this report as well as the recommendations for new actions. While every report on any subject could have done more and could have approached things differently we are proud of the body of work we have produced and hope that it has the potential to both stimulate debate about the future of science reporting and galvanise government, the scientific community and the media into action that will pioneer and safeguard the kind of science journalism we all want to see.

Thanks

As the Chair of this group I want to thank everyone who has given up their time to engage with this process. The list of members of this group probably also stands as a list of the busiest people in the UK. If I tell you that Fran Unsworth, Head of Newsgathering at the BBC, had to send apologies to one meeting because she had to fly to Iran to negotiate with their government about rights for BBC journalists covering the election you will perhaps see why it feels like a privilege to have had such a level of engagement from group members.

A few people merit special thanks from me personally. They go to Tom Wells, the civil servant from BIS assigned to work with our expert group. He has worked harder than all the membership put together and while it may not carry his name, this report could not have happened without him. More thanks go to 'Team SMC', the five staff of the Science Media Centre who have encouraged me every step of the way and inspired many of the ideas you are about to read. Towards the end of the process these colleagues were left one man down when dealing with some of the biggest science stories of the year. Without their willingness to take on my workload as well as their own this report would not have been produced on time. And finally special thanks to Charlie Evans who bravely chose to spend his year out of his bio-chemistry degree at the SMC rather than in industry and became my unpaid assistant and to Jim Giles, a brilliant young investigative science journalist based in the US who had to spend some time back in the UK and became my sounding board and adviser.

Summary of Actions and Recommendations

Summary of the actions that organisations have already committed to as a result of meeting with Group Members, or in consultation with them:

Science Training

1.1. Expand science training at the BBC

The BBC College of Journalism will develop its **online science training content for all BBC journalists**. In December 2009, this will launch as a public site for all UK journalists to use. A number of organisations have committed to supporting the College as they develop content.

1.2. Create a new post of National Co-ordinator for Science Journalism Training

Subject to securing funding, the Royal Statistical Society will create and host a **National Coordinator for Science Journalism Training** to coordinate the scientific community's efforts deliver Training in the Basic principles of science reporting to news organisations and journalism students. Firm indications of an interest in developing and offering such training have already been shown by the Reuters Training arm, the Press Association, the Permanent Secretary of Government Communications and many undergraduate journalism degree courses.

1.3. Set up new training for science press officers

From 2010, and subject to securing funding, STEMPPRA will coordinate **regular training**, in line with their aims and objectives, **for Science Press Officers**, in liaison with Research Councils UK, the Chartered Institute of Public Relations and UniversitiesUK. RCUK will explore making the media training available to scientists more systematic and part of the professional development of researchers.

1.4. Roll out Introduction to the media seminars for scientists

Subject to securing funding the Science Media Centre, or a similar organisation, will roll out an **Introduction to the Media Course for scientists**. RCUK will explore standardising the media training offered to scientists and incorporating this into the professional development for researchers.

1.5. Set up a new Media Fellowships scheme to increase the number of scientists working in general news and programme making

Subject to securing funding, the British Science Association will explore creating a new **Media Fellowships Scheme** to increase the number of scientists choosing careers in general news reporting and programme making in the media

Science and the Media: Securing the Future

Science Programming in a Changing Landscape

2.1. **Set up a new high profile Science Lobby Group to advocate for more and better science programming**

A number of organisations have expressed an interest in taking part in creating a **Science Lobby Group** to engage decision makers in media organisation. Lord Drayson and officials will explore the most effective way of bringing such a group together.

2.2. **Set up a new Science Programming Centre modelled loosely on the Science Media Centre to facilitate links between science and programme makers**

The Wellcome Trust is exploring potential for a new **Science Programming Unit**, to facilitate the relationship between programme makers and Scientists. Subject to an ongoing evaluation this is intended to launch in 2010.

2.3. **Make lay summaries of research proposals searchable as resource for programme makers**

Research Councils UK will make **lay summaries of their research proposals searchable** and accessible on their new website, to launch towards the end of 2010.

2.4. **Work to involve the scientific community in the new BBC Buddies Scheme and New Academy**

In partnership with BIS, the BBC will pilot the Science Buddy Scheme throughout 2010. A number of group members have committed to being buddies.

Science Journalism and its Future

3.1. **Secure more access for journalists to peer reviewed literature**

The Association of British Science Writers will lead on securing **access for freelance science writers to peer reviewed literature**.

3.2. **Recognise and reward excellent science by getting science prizes included in major national media awards ceremonies such as the UK Press Gazette awards**

There is a clear need for a **science journalism prize** and recommend that either the Association of British Science Writers annual prizes are reconstituted or one of the major prizes is persuaded to have a science award. BIS Officials will discuss with key stakeholders to identify the best way to reconstitute a science journalism prize.

3.3 **Set up a new Working Group on the Future of Science Journalism to decide which new developments to champion and fund**

A **Working Group on the new initiatives in Science Journalism** should be established based on the model of the Royal Society Working Groups to take forward the scoping work of this group and inform decisions about which new ventures the scientific community should be supporting. BIS Officials will examine the benefits of establishing such a working group, and the key elements of its potential remit.

3.4. **Create a new 'Before the Headlines' service for Journalists modelled on the successful Behind the Headlines service for the public**

Subject to securing funding, NHS Choices and Bazian will explore creating a **"Before the Headlines"** service to dissect press releases for journalists, before they become news.

Science and the Media: Securing the Future

3.5 Set up new fellowships to allow science reporters time to pursue original and investigative stories

A small number of **one month fellowships** should be provided for science journalists which would allow them to take unpaid leave, releasing them from their regular job to pursue an investigation. This will require funding.

3.6 Start a new annual summer school for science investigative Reporting

Subject to securing funding, City University School of Journalism will run a two day **school on investigative science reporting** over the summer of 2010.

Recommendations for future action

- **Boost investigative reporting on science by ensuring a science strand in the new Bureau for Investigative reporting.**

Money should be found from scientific community to **fund the Bureau for Investigative Journalism to undertake science investigations**. The money would be totally unconditional in respect to the specific content; it would operate under the Bureau's strict rules of editorial independence and be earmarked for science.

- **Establish a new National Commission on the Future of Journalism** - to investigate new ways to secure the future of journalism at a time when the current business model of journalism is no longer working
- **Simplified and improved clinical trials registry**

The WHO and the Government should adopt a policy that the results of all clinical trials should be publicly available and that clinical trials should be searchable on a single portal. The Group welcomes the work of the Department of Health to create a UK Clinical Trial Gateway.

- **Reform Libel law** – it is a major barrier to scrutiny and discussion of science.
- **Scientific advice to government should be communicated to the media in a more open, transparent and independent way.**

The group endorses the Principles **that apply to the media set out in Lord Drayson's principles**, published December 2009.

- **Commercial confidentiality should only be used in exceptional cases.**

Where scientific evidence is submitted to Government bodies by industry, there should be a presumption of openness, with **commercial confidentiality only applied when a positive case** has been made for it.

- The science community should engage enthusiastically with the BBC's Science2010 year
- Programme makers who want to get more comfortable with science should look at how their entry level jobs might be better marketed at scientists

Science and the Media: Securing the Future

- All journalistic ventures should have their funding model and the degree to which they are editorially independent clearly labelled.
- There should be a public interest defence in cases of whistle blowing on scientific controversy.
- Animal research labs should be more open to the media, to facilitate the public debate of the benefits of using animals in medicine.

1.0 Training

There appears to be strong consensus among science journalists on one thing: many general news reporters and editors struggle to master some of the basic principles of science. The notion that the media is dominated by arts and humanities graduates is prevalent, and editors themselves concede that they value specialists because of gaps in their own understanding. Many science reporters also feel a double standard is applied when high-profile news presenters proudly admit to having no knowledge of science in a manner that would be very unlikely with subjects such as economics or politics.

No-one in our group felt that all science reporters must have a science background. Tim Radford¹⁵, the much-respected former science editor of the Guardian was previously their arts correspondent and Mark Henderson¹⁶, science editor of the Times has a history degree. But the group did feel the combination of journalistic skills with a science specialism allowed science reporters to better communicate concepts like risk, uncertainty and peer review, etc. A classic example of the disjuncture came with the issue of journalistic balance, a sacred concept in neutral, objective journalism but problematic for science. Tom Fielden¹⁷, science editor of the Today programme (himself a former general news reporter), explained how interviews on Today are often grounded in the UK's distinct form of adversarial politics where two sides are invited on to thrash out policy differences. However, applying this model of reporting to science stories like MMR and climate change has produced seriously misleading reporting.

Many felt that this pervasive lack of understanding among editors, other specialists and generalist reporters causes real problems for science. Science journalists reported daily battles with colleagues and editors. They claim that if left to their own devices colleagues would routinely run inaccurate stories, or trust dubious sources. Others complained of having to listen to non-science specialists conduct clumsy interviews with respected scientists simply because they did not fully understand their brief.

In this context the group decided to make the issue of training for non-science journalists one of our key themes. In some ways this was the most straightforward of all themes, and possibly the one where this report may have the most obvious impact. Due to some excellent research led by Alexandra Saxon¹⁸ (expert group member and Head of Communications at RCUK), we discovered early on that there is very little science journalism training available (see Annex 7). The good news is that there is a strong appetite for such training.

¹⁵ Freelance journalist, four-time Association of British Science Writers (ABSW) science writer of the year, worked for The Guardian for 32 years, becoming letters editor, arts editor, literary editor and science editor.

¹⁶ Science Editor – The Times

¹⁷ Science Correspondent – The Today Programme

¹⁸ Head of communications - RCUK

Science and the Media: Securing the Future

Summary of Findings

Alex's report¹⁹ set out to find out what special science training was available on the job and what was being offered by traditional training providers and university journalism courses. The summary of her findings makes grim reading:

- There is little evidence of explicit on-the-job training about science / science journalism within media organisations
- There are many undergraduate degrees in journalism but very few have explicit modules focused on science reporting
- There are more journalism courses for those wishing to go into sports journalism than science journalism
- Three universities run science journalism (or related) masters courses, eight run science communication masters and three run science communication undergraduate degrees
- Little evidence could be found of other credible training providers offering specialist courses in this area. Only the Chartered Institute of Public Relations had an applicable course in Technical and Science Writing, although it is pitched at a very basic level.

After these early, rather depressing, findings, we set out to discover whether this omission was by accident or design. We were heartened to find that while science is clearly not seen as a priority, there is a widespread and growing concern about science reporting amongst media organisations, and many agree the time is right for new initiatives in this area.

One of the things we discovered is that the traditionally strong network of accredited training providers like the NCTJ²⁰ is now under considerable pressure because of the financial crisis in journalism. They currently offer little in the way of science journalism training and this group felt that looking exclusively to them to provide the training of the future would be misguided. Instead we went directly to training-oriented media organisations and universities to test the appetite for collaboration: we found a hungry beast.

The training we are discussing in the main part of this section can be loosely summarised as 'Training in the basic principles of science reporting for non-science reporters'. It was clear that this training needed to be branded positively, about securing the next science "scoop" not a dreary monologue about accuracy.

¹⁹ "Science and the Media Expert Group: Science Journalism, Skills and Training", available on the Science and the Media website: <http://interactive.bis.gov.uk/scienceandsociety/site/science-and-the-media/>

²⁰ National Council for the Training of Journalists, <http://www.nctj.com/>

Science and the Media: Securing the Future

BBC

An early meeting with the BBC College of Journalism revealed that while the college has organised a number of ad hoc seminars on science reporting, it was nowhere near as comprehensive as other training programmes on issues like trust (after “Queengate”), and reporting conflict (mainly after rows over coverage in the Middle East). The College had run a series of seminars on communicating risk and understanding statistics that had been well received and expressed an interest in doing more in this area. The College of Journalism explained that it must be independent and could certainly not simply take on a training package developed by the scientific community, but they agreed to seek advice and expertise from the scientific community to develop more training on the basic principles of science reporting. The College agreed that this collaboration should become one of the recommendations of this report, see Action 1.1.

There are two other potentially exciting developments in this area. Many of the more systematic training programmes run by the College, some of which are compulsory for all staff, have emerged as a result of Impartiality Reviews conducted by the BBC Trust²¹. A visit to the BBC Trust as part of this working group revealed that science was one of the contenders for the next impartiality review and indeed, as this report was being finalised, the Trust announced that Science would be the subject of 2010’s review. These year-long comprehensive reviews almost always result in new training and other changes in BBC policy. Secondly, our meetings with the College of Journalism coincided with breaking news that the College will soon announce their training will be made available to all journalists in the UK – making our collaboration even more exciting.

It should also be noted that the appetite for more science training at the BBC was confirmed by reports of a number of ad hoc arrangements with individual sections of the BBC. For example the Science Media Centre (SMC) has worked with the BBC Health Team on training for generalist journalists and editors reporting medical stories, and the SMC has also been in discussions with the editor of the Today programme about running events for presenters and general reporters.

Reuters

Reuters have agreed to collaborate with the group on exploring a science training programme for target journalists, including some general reporters and editors. Anne Senior, Editorial Learning Manager at Reuters Europe, Middle East and Africa stated that the training would be very much in line with Reuters mission for responsible reporting and in particular emphasised an interest in including training on the reporting of risk, statistics and complex data.

²¹ <http://www.bbc.co.uk/bbctrust/index.shtml>

Science and the Media: Securing the Future

Universities

The decline in professional training for journalists has left many media organisations relying on university journalism courses for a trained workforce. As such, these courses became a key target of our attention and we believe there is an untapped opportunity to increase the understanding of science among the next generation of generalist, political, economics and foreign affairs reporters. While we found hundreds of journalism degrees²² only a tiny percentage offered any special modules in science reporting. That there are more journalism courses for those wishing to go into sports journalism than science journalism seemed shocking given the growing appetite for science stories in all sections of the media.

As we found at the BBC, there was no opposition to incorporating science journalism training into general degree courses (especially if this could be externally funded) and we already have a list of course organisers who are now keen to work with us.

While there are a number of science communication masters degrees there are only three science journalism masters courses. We were unable to meet all of them, but the group was very excited to get an insight in to the newest of these – the science journalism masters established this year at City University School of Journalism. Connie St Louis²³, the inspirational leader of this course, has been a close contact of this group and we very much hope that the success of this new course might spur other universities into action. Several of the students on this course do not have a science background, and do not want to become specialist science reporters. We view this as positive and hope that it could mean that future newsrooms will be populated by more generalist journalists with a strong understanding of science reporting.

Training for Journalists - What already exists

Perhaps because so few media organisations offer any science training we found several examples of the scientific community stepping in to provide training. Leading the field is the Royal Statistical Society (RSS)²⁴ who have been doing exemplary work in this area for some years. They run top quality in-house and external training on communicating risk and statistics for a large number of journalists, and host a major Award²⁵ to celebrate excellence in the use of statistics in journalism. One of the most innovative recent initiatives from the RSS was a summer placement of a statistician in the Times news room – the expert was not required to work as a journalist but was on hand to answer queries ranging from official figures on knife crime to government stats on immigration.

²² “Science and the Media Expert Group: Science Journalism, Skills and Training”, available on the Science and the Media website: <http://interactive.bis.gov.uk/scienceandsociety/site/science-and-the-media/>

²³ Director of the Science Journalism MA, City University

²⁴ The Royal Statistical Society (RSS) is the UK's only professional and learned society devoted to the interests of statistics and statisticians, www.rss.org.uk/

²⁵ Awards are made annually to those who question, analyse and investigate the issues that affect society through statistics.

Science and the Media: Securing the Future

The RSS admit that the only thing stopping them from rolling out more activity in this area is resources.

There was also some evidence of more ad-hoc initiatives with the SMC running very popular seminars for journalists on 'How to read a scientific paper' led by leading epidemiologist Professor Valerie Beral and 'How to report on risk' by Professor David Spiegelhalter. Press officers and scientists at the John Innes Centre in Norwich have run training for a local journalism course and Nigel Hawkes and David Lipsey from the newly established Straight Statistics²⁶ have been running workshops in news organisations. We have no doubt that there are many other such initiatives taking place around the country which could usefully be co-ordinated. An initial survey of training providers and university journalism schools suggested a significant appetite for such material within journalism schools.

Recommendation: *The Group believe that by providing resources, advice, and collaborations to those training journalists the scientific community could have a major impact on the future quality of science reporting. Of all the recommendations, this one offers an easy win in terms of meeting both the needs of the media and the goals of the scientific community and the government. We therefore recommend that this work be taken forward by establishing a new position of a National Co-ordinator for Science Journalism Training. This person would take forward the initial scoping work done by this working group by co-ordinating some of the existing initiatives and demands for training and create the training packages needed by each audience. This post could be housed within the Royal Statistical Society, the Science Media Centre or another suitable host but would operate on behalf of all stakeholders, see Action 1.2.*

Where would the training come from?

From our research it is clear that a “one size fits all” approach to training will not work. Some undergraduate courses would be happy to run lengthy modules making use of written materials and drawing on a pool of visiting lecturers, others wanted online training only, and media organisations themselves have very different needs. While the National Training Co-ordinator will ultimately have responsibility for identifying how the range of training courses could be developed, the group has already held a meeting with a range of potential content providers all of whom have expressed enthusiasm for being involved. These included the RSS, Straight Statistics²⁶, Bazian²⁷, and NHS Choices²⁸.

Helen Jamison, a member of the SMC Team, organised an initial meeting of potential providers who agreed that the training package should/could cover:

²⁶ A campaign established by journalists and statisticians to improve the understanding and use of statistics by government, politicians, companies, advertisers and the mass media www.straightstatistics.org

²⁷ Bazian provides high quality evidence-based consulting and analysis to support the rational assessment, configuration and commissioning of healthcare services. www.bazian.com

²⁸ NHS Choices is a comprehensive information service that helps to give personal control over ones healthcare. www.nhs.uk

Science and the Media: Securing the Future

- statistics and epidemiology
- perceptions of risk
- science publishing and peer review, how to access science
- main types of scientific study – random, controlled, double blind, case-control etc
- how to read/analyse a scientific research paper
- key issues in current scientific research and thinking
- ethics, science and society
- science in government
- putting scientific debate into a historical context

Training for Scientists

We were encouraged to find there is already lots of media training available for scientists. Research Councils, the Royal Society²⁹ and most scientific institutions now use experienced media trainers, who they call on regularly to train groups of scientists. However, the group was uncertain about the consistency and quality of the training on offer. For example while some research councils have a policy of pro-actively offering training to all of their funded scientists, others had a more ad-hoc, reactive approach. The group was not in favour of compelling scientists to engage with the media but we did feel that a requirement for all scientists to undergo some media training was not unreasonable – if only to teach them some basic facts about good communications skills.

Recommendation: *That Research Councils UK³⁰ take a lead in moving towards a more systematic approach to training-provision for all scientists. This recommendation was echoed by the Association of British Science Writers. As well as ensuring that there is provision for media training for its funded researchers it is also recommended that RCUK ensure that an understanding of the media is one of the skills specified in the Researcher Development Framework. This will mean that researchers will be expected to gain these skills as part of their professional development. RCUK have agreed to explore this recommendation, see Action 1.4.*

The group heard with interest about the ‘Introduction to the Media’ event pioneered by the Science Media Centre. These courses, which have been successfully piloted, are targeted at scientists working in topical areas who have never previously done any media work. Attended by up to 200 researchers, the event immerses scientists in the

²⁹ The Royal Society is the national academy of science of the UK and the Commonwealth, is at the cutting edge of scientific progress. www.royalsociety.org

³⁰ A strategic partnership of seven **UK Research Councils** championing science, engineering and technology. www.rcuk.ac.uk

Science and the Media: Securing the Future

culture of the media through a series of interactive sessions between scientists, news journalists and press officers. Feedback shows many scientists make a decision to start engaging with the media as a result of the course. However the SMC has to seek sponsorship for each event on an ad hoc basis.

Recommendation: *A more permanent long term funding arrangement should be found to ensure that the Introduction to the Media courses can continue.*

Training for Press Officers

This was not a major focus for the group but there was a strong feeling that any report looking at quality of science reporting should not ignore the crucial role of the science press officer in the overall equation. The scientific community has more high quality science press officers than at any time. And while some journalists dismiss all press officers as peddling self interested 'PR', we believe that at their best, science press officers share responsibility for much of the high quality science reporting in the UK. Indeed, as well as seeking headline news for their institutions, many science press officers spend a lot of time trying to prevent journalists from splashing sensationalised, misleading science on the front pages. Cancer Research UK (CRUK)³¹ for example have a small number of press officers who are dedicated to stopping inaccurate and irresponsible cancer stories from appearing in the media

However, as with journalists, not all science press officers are at their best all of the time and there is no doubt that too many inaccurate or misleading science stories can be traced back to poor press releases which either exaggerate research findings or neglect to highlight the contexts and caveats which are so often important to science stories.

The group learned that there was no routine training for press officers newly appointed the science beat or those for whom science press work is only small part of their wider brief. We approached STEMPRA³², the science press officers network, which has an excellent track record in encouraging best practise amongst science press officers and invited them to lead on running a new training scheme for science press officers.

Recommendation: *that training be made available to all new science press officers/press officers covering some science. STEMPRA have agreed to lead on this, see Action 1.3.*

Training for Government Press officers

Rick Borchelt³³, Head of Communications in the US administrations' equivalent of Defra challenged us to name a single science spin doctor or adviser in the West Wing. We failed, of course, and Rick explained that press officers with a specialism in science are a

³¹ Cancer Research UK News and Resources, a press office for the less "sexy stories" of cancer.
<http://info.cancerresearch.org>

³² Science, Technology, Engineering and Medicine Public Relations Association (STEMPRA).
www.stempra.org.uk

³³ Communications Director, Pew-funded Genetics and Public Policy Centre at The Johns Hopkins University

Science and the Media: Securing the Future

rare breed in government press offices. This sentiment was echoed by Matt Tee, the Permanent Secretary for Communications in the UK Government. He acknowledged that while press officers in science-based department like the Department of Health are well-versed in risk communication, many others are less so. It was agreed that the non-science press officers in government would benefit from the kind of basic training in the general principles of science reporting being developed for non-science journalists and he agreed to work with the new Training Co-ordinator to deliver such a training package.

Other ways to increase the scientific literacy in newsrooms

The group were interested in replicating the hugely successful Media Fellowships scheme which has been run by the British Science Association³⁴ for more than 20 years. Under this scheme scientists apply to take a break from the lab in order to work alongside a science journalist in a busy news room. Evaluations show the scheme successfully achieves its stated goal of enhancing scientists' understanding of media production, and participants routinely take this knowledge and expertise back into the lab to share with colleagues. This scheme does not encourage scientists to abandon their academic careers in favour of journalism.

Recommendation: *The group recommends the institution of a similar scheme with the explicit aim of offering scientists considering a career change the opportunity to experience life in a newsroom or a TV studio. The hope is that this scheme will encourage and facilitate people with a solid grasp of science to work in the media, and that editors and programme makers will be given the opportunity to see the benefits of having people with a science background as part of their teams. The British Science Association has agreed to take a lead on developing such a scheme, subject to adequate funding being made available, see Action 1.5.*

And finally

As with new initiatives in journalism, we found that the more innovative ideas for introducing journalists into the ways of science were to be found outside the UK. There were several fellowship schemes in the US, such as the nine month Knight Science Journalism Fellowships at MIT³⁵, as well as shorter initiatives in Europe and the US directly aimed at expanding journalists' experience of science³⁶. The group hopes that someone reading this report will see an opportunity to run a similar style initiative for non-science journalists in the UK.

³⁴ The British Science Association (formerly known as the BA) envisages a society in which people from all walks of life are able to access science, engage with it and feel a sense of ownership about its direction.

³⁵ Knight Science Journalism Fellowships at MIT <http://web.mit.edu/knight-science/>

³⁶ These schemes can be found in "Science and the Media Expert Group: Science Journalism, Skills and Training", available on the Science and the Media website: <http://interactive.bis.gov.uk/scienceandsociety/site/science-and-the-media/>

Science and the Media: Securing the Future

Committed Actions in Science Training

1.1 Work with BBC College of Journalism to develop science training package	
<p><i>Rationale:</i> Non-specialist journalists tend not to have the same background and contact list as a specialist to help them make quick judgements about the validity of a story. Equally, many sub editors and editors are unlikely to have much of a background in science reporting. Fostering greater science literacy across the whole of the BBC can only improve accuracy of content.</p>	
<i>Action</i>	<i>Who</i>
<p>Following meetings with members of the group, continue to add to the existing offer of online learning material on science reporting for its own journalists. And continue to offer face to face seminars and workshops and will incorporate video and audio content from these sessions in its online offer.</p> <p>This learning offer will continue to be under constant revision and the College welcomes contributions from the science community, including those involved in preparing this action plan.</p> <p>As of 14 December 2009, all online learning materials will also be available to all journalists, and members of the public, through the College's open website – science training material will be available to all journalists in the UK. The College will draw on non-BBC expertise and scientists to help the development of its science offer.</p>	<p>BBC College of Journalism</p>
<p>Assist the BBC College of Journalism to put together the above science training package, including subjects outlined in the report</p>	<p>SMC, RSS, Bazian, Straight Statistics, Royal Society, RCUK, Media Standards Trust</p>

Science and the Media: Securing the Future

1.2 Create a new post of National Coordinator for Science Journalism Training

Rationale: Many of the problems associated with science reporting, emanate from non-specialist journalists and editors. They will not have the same background and contact list as a specialist to help them make quick judgements about the validity of a story. Equally, many sub editors and editors are unlikely to have much of a background in science reporting. Fostering greater science literacy in the whole journalism community can only improve accuracy of content. Coordinating these efforts and providing content to organisations that want it would be useful and well received. This means providing training content, in a form that it will be used to: practising journalists, sub editors, editors, trainees and students. Any training material produced would have to be appropriate to the audience and pitched positively – giving people the tools to uncover the next big science story and cover it accurately.

There was initial enthusiasm from a number of training providers and national news outlets to work with such a Coordinator.

<i>Action</i>	<i>Who</i>
Fund position of National Coordinator for Science Journalism Training for one year. £75k would need to be found to cover this person and their work.	tbc
Subject to funding, host Coordinator to manage the creation of bespoke training/training material to provide to universities, journalists and news outlets. This individual will have to engage with the various bodies that coordinate, provide and certify journalism training, including the NUJ, BJTC, PTC, NCTJ, AJE.	Royal Statistical Society
Steer and support the Coordinator in their role, providing content as outlined in this report.	Science Media Centre, Bazian, Straight Statistics, Royal Society, Research Councils UK and the Media Standards Trust.
Following discussions with the Group Chair, explore working with Coordinator and partner organisations to develop basic training on science for all Government press officers.	Matt Tee, Permanent Secretary of Government Communications
Explore using training provided by Coordinator and partner organisations	Press Association
Explore using training provided by Coordinator and partner organisations	Reuters

Science and the Media: Securing the Future

1.3 New annual training course for Science Press Officers	
<p><i>Rationale:</i> Science press officers are an important, and often overlooked, link in the chain between science and news stories. Science press officers facilitate access to scientists and their labs for journalists, help scientists to navigate the news agenda, and engage with relevant journalists and media outlets. Our research has also highlighted the importance of press officers as a source of science news themselves, and the fact that the best science press officers are often as responsible for the high quality science reporting in the UK as the journalists are. There is no routine training as such for press officers newly appointed to the science beat or for those for whom science press work is only small part of their wider brief.</p>	
<i>Action</i>	<i>Who</i>
Coordinate regular training in line with the aims and objectives of the organisation as outlined in its constitution, and make it available to the widest group of press officers in liaison with RCUK, CIPR (the Chartered Institute of Public Relations) and UUK.	Stempra
Fund annual training for science press officers, £5k	tbc
1.4 Fund introduction to the media courses for scientists and promote media training	
<p><i>Rationale:</i> The growth in training and support for scientists available from research councils, learned societies and research institutions mean that new initiatives are not necessary. Research councils offer a considerable amount of media training at every stage of a research career from PhD student through to Professorial fellows. Bespoke training for groups of researchers working in particularly controversial or difficult subject areas is also offered. However, basic media training is not offered as a matter of course for all scientists at every level of their career, many scientists do not see the need for media training and are unsure about engaging with the media. Whilst not all scientists will want to engage with the media, more ubiquitous basic media training will help those scientists that do and allow those that don't to support and appreciate their colleagues for doing so.</p> <p>The Science Media Centre has successfully trialed an Introduction to the Media workshops as a first step for scientists. They specifically target scientists working at a level and in subject where they are likely to be approached by the media however, this cannot continue without more funding.</p>	
The Group endorses the wider work of the Science for All Expert Group in this area	
<i>Action</i>	<i>Who</i>
Fund Introduction to the media to be continued, either by the SMC or another organization. This would require £15k pa.	tbc
Run Introduction to the Media course three times per year from 2010	SMC or other
Promote this training within research organisations and the wider science community	The Group
Explore moving towards a more systematic approach to media training for scientists and embedding understanding of the media as one of the skills in the Researcher Development Framework	RCUK

Science and the Media: Securing the Future

1.5 New scheme for scientists to work in the media

Rationale: More people with science backgrounds working in programme making can only improve the science literacy of the community and access to (internal and external) expertise. BBC production teams, independents and news outlets, tend to offer only very short, unpaid work experience placements to people trying to break into the production business. However, such short placements are insufficient to demonstrate real potential so first contracts tend to be short. Longer placements would be hard to justify on an unpaid basis. Longer, paid, work experience would facilitate people from the science community getting into media roles.

The specific goals of the British Science Association's existing Media Fellowships scheme mean a scientist deciding to abandon academia to become a journalist would not be deemed a success, but this is exactly what the Group would like to achieve and so a new scheme is needed.

<i>Actions</i>	<i>Who</i>
Lead on developing a scheme, subject to funding being available.	British Science Association

2.0 Science Programming in a Changing Landscape

Given the crisis in the business model for journalism in the print media, in some ways it is surprising that more has not changed in the recent history of science programming and in broadcasting in general. For the BBC at least, this is in part due to their unique relationship with the public through the licence fee, but the challenges posed by falling advertising revenue and the internet are no less relevant to broadcast media in general.

The end of broadcast media?

In television, whilst the number of channels has blossomed in the digital age, the five terrestrial channels hold a significant audience share and an individual's daily viewing hours have stayed pretty constant. With a few notable exceptions in the multichannel world, including National Geographic and the Discovery Channel, the terrestrial five remain the major source of original science content on television.

Radio programmes covering science regularly command large audiences, some in the millions. The BBC dominates this arena with content provided by the excellent BBC Radio Science Unit.

68% of people have watched a science programme on TV in the last 12 months and 17% from radio.³⁷ No other medium comes close to television's dominance, although the internet is growing fast. Those heralding the death of broadcast science are clearly premature. That said, more channels and constant viewer hours is simple maths - the competition for viewers is only getting fiercer and first air viewing figures are in decline.

This is not necessarily cause for alarm. The addition of digital channels, with their capacity to repeat programmes, and the invention of on-demand content over the internet is bringing about a shift the way programme makers think about audiences. Single release viewing figures are increasingly supplemented by the "long tail" of viewers accessible through repeats and on-demand services.

Some of those consulted by the group, most notably Adam Wishart, felt this trend would lead to the commissioning landscape for science programmes to look much more like the book publishing sector, with higher risk programmes made and placed "out there" to develop their own audience. Whilst it is less clear where funding for this mechanism of programme making would come from, the trend to on-demand content is inexorable and creates much more capacity for new programmes to find a home and an audience.

Whilst "Prediction is very difficult, especially about the future" (Niels Bohr), one thing is clear. Whatever the medium and however they are commissioned, science programmes will continue to be a significant part of the public's engagement with science. With this in mind, and from the outset, the group concentrated on actions which will create an

³⁷ Public Attitudes to Science 2008, <http://www.rcuk.ac.uk/per/pas.htm>

Science and the Media: Securing the Future

environment in which accurate and engaging science programmes are made and reach the widest possible audience.

Creating an environment for broadcast science

This environment was felt to have two key elements; an accessible and engaging science community and a science literate programme making community which prioritises creating great science programmes.

The Wellcome Trust has an interest in broadcast from a public engagement angle because of the huge audiences involved. They now lead the science community's engagement with broadcast media, their activities encompassing: funding innovative ideas, helping scientists develop their communication skills, and networking with and influencing programme makers.

Funding Science Programmes

Of all their activities, Wellcome's highly successful Broadcast Development Awards for science programmes, where start up grants of up to £10,000 are provided for programme makers to develop ideas and create pilots, caused easily the most debate within the group. The BBC in particular has strict rules about where programmes can receive funding from – any third party funding for programmes must come from another broadcaster – but the independent production companies that provide programmes for Channel 4 and 5 can obtain funding from other organizations. However, this is governed by strict Ofcom regulations and the programme maker and broadcaster must retain complete editorial independence. Whilst few people were uncomfortable with the Wellcome Trust contributing to programmes, some asked where special interest involvement becomes inappropriate. Others felt that concerns about financial influences over impartiality were implausible, given Ofcom's rules, and could distract from the very real and beneficial contribution made to science television from organizations like the Wellcome Trust.

The Group were clear that programme funding should be absolutely transparent, with any interests declared in bold print. Whilst the group welcomes Wellcome's role in supporting science programming, and celebrates their recent output, there was no agreement on any wholesale expansion of the concept to include financial contributions from many more organisations. BBC Radio 4 recently axed Leading Edge from its schedule, citing budget constraints. In the USA, the National Science Foundation has pursued an aggressive policy of stepping in to fund production units when they faced the axe, such as PBS News Hour. There were calls from within the group for a similar approach from the science community in this country, but many disagreed. Support in kind such as advice, ideas, settings and information was more acceptable to the whole group, and also something wider parts of the science community would be able to offer.

Science and the Media: Securing the Future

Wellcome's Research

In this vein, the Wellcome Trust commissioned some research from Nick Ware, who gave evidence to the group, looking at how to support producers, commissioning editors and researchers to develop science programmes. This highlighted several challenges to the process of creating science programmes including:

- having the time to proactively find programme ideas rather than being inspired by news stories
- university press officers and researchers are under pressure to invest time in getting profile for their organisation, they are less keen to engage with ideas before they get off the ground
- when a programme is made, the makers move on afterwards - long-term relationships don't necessarily develop

These challenges can be overcome, to a certain extent, by the science and programme making communities having closer relationships and it was suggested that this could be facilitated. The Wellcome Trust is investigating the possibility of creating a Science Programming Unit, investigating its funding model and seeking stakeholder support. This could act as a source of information and ideas, nurture new talent and build relationships between representatives of both communities.

Pilot evaluation

A 2-year pilot project based at the University of Birmingham, Ideas Lab, has been bringing together programme makers and academics to act as a catalyst for new programming based on academic research. An evaluation of the pilot was commissioned by Wellcome and the National Coordinating Centre for Public Engagement, to capture the learning from the pilot and to provide insights into how the model could inform future similar projects. The evaluation found that the presence of an Ideas Lab-type intermediary had tangible benefits for both producers and academics.

The Wellcome Trust is currently exploring the demand for the proposed Unit, how it should work and what it should do. To be successful, the Unit would need sufficient scale and profile to attract enough engagement from the programme making community.

Recommendation: *The Group wholeheartedly support Wellcome Trust's efforts in this, which chime so well with the group's thinking, and calls on the scientific community to back the creation of any Science Programming Unit set up as a result of Wellcome's work.*

Recommendation: *that RCUK make lay summaries of research proposals they receive publicly available and searchable. These will be an important resource for programme makers searching for new ideas and talent. RCUK have agreed to explore building this into their new website, to launch towards the end of 2010.*

Science and the Media: Securing the Future

2010 is a year of special focus by the BBC on science output, with a range of flagship science content planned throughout the year. The activity created by Science2010 is also an opportunity for the different science teams within the BBC to connect with each other more, and share expertise, and to connect further with the science community itself. This is something the group can only champion. We were excited to hear about some of the plans for the year and some participated in the Science Connections Workshop hosted by the BBC in November (see Action 2.4).

Recommendation: *That the science community engage enthusiastically with the Year of Science to ensure science stays high the programming agenda in the future and supports and embraces the BBC Science Buddy Scheme. The science community should consider expanding the scheme beyond the BBC if it proves successful.*

This highlights something identified by the group – the science community does not always engage effectively with programme makers once programmes have been aired. The Arts Lobby, famously led by Melvyn Bragg’s team of “luvvies” has proved successful in campaigning for more arts programmes on TV, and protecting programmes they like. Whilst the group does not necessarily want more science on TV, it can foresee a need to monitor and maintain levels of science programming, and a role for equivalent science ‘luvvies’ to promote and protect best science on TV.

As part of its efforts to broaden the impact of science in the media, the Royal Society has been working with high profile figures such as Melvyn Bragg (who is chairing the Society’s 350th Anniversary Programme Board) and Bill Bryson (who is editing a book based on the Society’s history and is an ambassador for the Science: So What? So Everything campaign) as a conduit to bring science to new audiences. In parallel, it is working to create a dialogue between programme makers and the scientific community, through initiatives such as a successful recent seminar, at which BBC science producers and influential Fellows of the Royal Society watched clips from a range of BBC television outputs together and then discussed in detail the content, audience, production process and science. Both groups benefited from the experience. The Royal Society is therefore likely to be strongly supportive of efforts that use direct dialogue between programme makers and influential figures in the arts and media to influence the range and quality of science programming.

Recommendation: *That the science community create and unite behind a science lobby group to engage decision makers within media outlets with the need to protect great, high profile science programming.*

While the Group were keen to focus on quality and reach of science programmes, we did not want to lose sight of the quantity of science programmes on the main terrestrial channels. The group was interested in an influential initiative run by the International Broadcasting Trust where they published year on year figures for the number of hours of prime-time television programmes about the developing world. The figures were published each year and any dramatic declines highlighted alongside high profile calls for broadcasters to act. We recommend that the scientific community replicate this

Science and the Media: Securing the Future

successful model and begins to monitor hours of science programmes across all channels and notes where the programmes are appearing in the schedule. The results should then be widely publicised complete with comments from high profile scientific leaders with either praise for any increase or concern about any notable decline.

Recommendation: *That the science community should start to monitor hours of science programming on an annual basis. We recommend that this work be taken on by the proposed Science Lobby Group or Science Programming Unit.*

Recruitment

Another challenge highlighted by the group was the dominance of arts and humanities graduates in the programme making community. This has contributed to the perception that science is something to be kept in a box, rather than part of main stream programming. Getting more people with a science background into media, and getting the community more comfortable with science, will help overcome this squeamishness. The group looked at how this could be achieved, see Actions 1.4 and 1.5.

Recommendation: *More generally, the group recommends that programme makers who want to become more comfortable with science look at how their entry level jobs might be better marketed to scientists, and wholeheartedly support schemes getting scientists into media organisations, such as the British Science Association's Media Fellowships and the Royal Statistics Society's placements, and the science communication courses proving successful at providing science literate communicators to broadcasters.*

Conclusion

As John Lynch³⁸ said to the group, "Ultimately television is a mass medium, and that's its greatest value to science. The niche audience of science-lovers will always find their science. It's attracting the non science-lovers that is key." Great science programmes can influence attitudes to science and inspire future generations to embrace science.

In short, broadcast media have a unique capacity to reach huge audiences. Consequently, initiatives to promote science literacy within the broadcast community, and to enhance the science community's engagement with programme makers must be central to the plans of anyone hoping to communicate the wonder, opportunities, challenges and solutions science offers.

³⁸ John Lynch, Head of Science, BBC Vision Productions - Factual

Science and the Media: Securing the Future

Committed Actions in Science Programming

2.1 Create a Science Lobby Group	
<p><i>Rationale:</i> Complaints and praise matter to broadcasters and, historically, the science community could have been better at doing both when it comes to science programmes on TV. A mixture of science luminaries and celebrities could come together to make the voice of science on television louder using Melvyn Bragg’s group of arts champions as a model. Enlisting the arts community to champion science programming is not just a good way of bridging the traditional divide – it will be more effective. The lobby group will need significant buy-in from the science establishment, and leverage from Government. Its focuses should be quality and maintaining quantity, not wildly calling for more and more science programmes.</p>	
<i>Actions</i>	<i>Who</i>
Explore the best way to create a Science Lobby Group	Lord Drayson
2.2. Set up Science Programming Unit	
<p><i>Rationale:</i> The Wellcome Trust has done some research detailing a potential need for some kind of unit to fill the space between programme makers and scientists. This unit could perform some of the following functions:</p> <ul style="list-style-type: none"> • Brief programmers on upcoming science stories of programming interest, in person or mailing • Assist programmers with detail on specific scientific subjects • Mediate between researchers and programme makers, maintaining wide and up-to-date contacts • Help to train and nurture talent on both sides • Offer a time pressured fact checking service • Identify the right processes and mechanisms within broadcast organisations for scientists to engage with <p>Wellcome has been involved in evaluating a similar pilot scheme, Ideas Lab in the Birmingham area.</p>	
<i>Actions</i>	<i>Who</i>
Subject to the pilot evaluation of Ideas Lab, work towards setting up the science programming unit in 2010.	Wellcome Trust
Publicise the SPU with contacts in the programme making world once it’s set up	The Group

Science and the Media: Securing the Future

2.3 Make lay summaries available, searchable and media friendly	
<p><i>Rationale:</i> Finding new talent and new subjects is a constant task for science programmers. The research councils currently produce lay summaries of all their research projects but these are currently not searchable. They would make a useful resource for programme researchers so making them more accessible would be a quick win. In the future, posing audio or video files alongside these summaries would make them even more media friendly.</p>	
<i>Actions</i>	<i>Who</i>
<p>Make the research proposal lay summaries produced by researchers funded by research councils searchable and investigate potential to include video and audio files to make them more media friendly. This will be incorporated into the new RCUK website, to launch towards the end of 2010.</p>	<p>RCUK</p>
2.4 BBC Science 2010 and BBC Science Buddy Scheme	
<p><i>Rationale:</i> The Group is clear that science programmes should aim to be accurate and engaging, whilst reaching the widest possible audience. Across its platforms, from Radio 3 to BBC1, and from news to documentaries or childrens', the BBC covers science in a number of different styles, catering for different audiences; this is to be celebrated. The Group saw forging ever stronger links between scientists and programme makers as a priority and so welcomes the BBC Science Buddy Scheme.</p>	
<i>Actions</i>	<i>Who</i>
<p>Participate in the new BBC Science "Buddy Scheme" where programme makers and representatives of the science community contract to meet each other at least four times a year to share stories, ideas, information, advice and inspiration, enhancing each other's understanding of their respective worlds. In November 2009 BBC hosted a science connections workshop in at which the Buddy Scheme was launched.</p>	<p>Group members, including Fiona Fox, SMC and Kim Shillinglaw, BBC</p>
<p>Pilot the scheme throughout 2010, with buddies meeting throughout the year and feeding back what they learn, share and achieve.</p>	<p>BBC and BIS</p>
<p>Review the scheme at the end of the year with a view to continuing it longer term.</p>	<p>BBC and BIS</p>

3.0 Science Journalism and its Future

Within minutes of the first group meeting members were debating the media coverage of GM and MMR and it was clear that the option of revisiting familiar territory about what went wrong ten years ago is as tempting as ever. However, since then the Group has very deliberately avoided that temptation. At the end of that meeting we decided that we would instead spend our very limited time focusing on the future of science in the media and examine the impact of the radically changing media landscape on science journalism.

Thanks in part to events like the World Conference of Science Journalists in London in 2009, and to the huge popularity of Ben Goldacre's brand of media criticism, we feel that there is an unprecedented level of debate taking place at the moment about science and the media (indeed the Chair of this group was heavily involved in the RI debate between the science Minister Lord Drayson and Ben Goldacre which famously sold out in minutes after both parties tweeted the details).

So, perhaps unusually, in a report on the subject of science and the media observers will note that while we have produced some recommendations in this area, and carried out some new research, the quality of science reporting on offer today was not a major area of consideration for this working group.

The need for an evidence base – Cardiff Research

The group agreed early on that many of the claims and counter-claims repeated in the debates at the World Conference and between Drayson and Goldacre were in serious need of an evidence base. With great speed, we called on the small research budget available from BIS to commission some new academic research on science in the media to be published as part of this working group. With limited time and resource we agreed that this research would focus entirely on the trends in the employment and use of specialists in science news journalism – the area of some of the most disputed assertions.

This research, "Mapping the Field: Specialist science news journalism in the UK national media", (see Annex 1 for executive summary) is published as an integral part of this report and one should not be read without the other. As well as providing the evidence often missing from public debates, we are proud of the fact that this research and in particular the qualitative interviews with an influential group of science journalists and editors offers an invaluable insight into many of the issues raised in this debate. We believe this research should stand beside reports like 'Who's misunderstanding whom?'³⁹, published in 2000 as a useful piece of research on science in the media.

³⁹ Economic & Social Research Council: "Who's misunderstanding whom?" - Bridging the gulf of understanding between the public, the media and science. Ian Hargreaves and Galit Ferguson. Published in 2000.

Science and the Media: Securing the Future

The following themes emerged from our consultation meetings; the Cardiff research and a submission from the Association of British Science Writers (see Annex 3).

Science news reporting

One of the main themes to emerge from the Cardiff research was that reports of a major crisis in science news reporting in the UK are exaggerated. In many ways the study shows science news in rude health with a dramatic increase in the number of science reporters in news, an ever-expanding appetite for science stories within news rooms and compelling evidence of a marked increase in the status of science specialist reporters in the news room. A personal triumph for me was the striking evidence that the trend towards taking science stories away from the specialist reporters when they hit the headlines is simply not supported by any evidence. This matters because it reinforces the broader findings of the research that science reporting has come out of the ghetto and is treated by most editors as an important and integral element of the general spread of daily news. In the year of swine flu, Cop 15, floods and 'Nuttgate' few can now prove an old assertion that science is too often seen in its own ghetto as the 'and finally...' story

Yes but...

On the negative side, science reporters are not immune to all the pressures on journalists identified in previous research and most notably Nick Davies's important book, *Flat Earth News*⁴⁰. The research, the submission from the ABSW⁴¹ and evidence taken from a succession of specialist reporters all talked about the pressures of time and lack of resources. While some journalists took issue with Nick Davies' book, many acknowledged his description of 'churnalism' – a scenario in which a limited number of journalists are asked to fill ever more space in print, on the airwaves and on the web resulting in a pressure to 'churn' out several stories a day with little time to fact-check and do much 'original journalism'. However we found no evidence that science reporters are any more vulnerable to these trends than any other kind of journalism – though some would possibly argue that fact-checking and accuracy in this area are ever-more important.

No But...

While there are tremendous pressures on science reporters many would concede that this results from an ever-growing appetite for science in all sections of news. Despite the tendency to imagine a golden age of science reporting one of the striking parts of the Cardiff study is the section where an earlier generation of specialist science reporters including Tim Radford⁴² (Guardian), Tom Wilkie⁴³ (Independent) and Nigel

⁴⁰ Nick Davies: *Flat Earth News*, Publisher: Chatto & Windus (February 7th 2008)

⁴¹ Association of British Science Writers (ABSW) submission to the BIS Science and Media Expert group

⁴² Freelance journalist, worked for The Guardian for 32 years, becoming letters editor, arts editor, literary editor and science editor, four time winner of the Association of British Science Writers award for science writer of the year.

Science and the Media: Securing the Future

Hawkes⁴⁴ (The Times), all recollect an era where they struggled to interest their editors in their stories. The problem today is almost the exact opposite – Editors often want many science stories every day. However many journalists interviewed for the Cardiff research were quick to point out that being asked to write more for the web or fill ever-more space on the airwaves was a double edged sword –it adds to workload pressures but it also allows them more space to write the kind of stories that would not have made it into the media when there was less space to fill.

Lack of investigative and critical journalism

One concern that was raised repeatedly by commentators on science journalism including academics and even one journal editor was the domination of the news agenda by stories from the weekly science and medical journals. Curt Supplee⁴⁵, a former science reporter in the US claims that 60-70% of the weekly quota of science stories comes straight from the pages of four or five big journals including Science, Nature, the BMJ and the Lancet which he described as ‘a pretty dumb way to cover science from the public’s perspective’. Another commentator said that we need to ‘challenge the stranglehold of medical journals which are essentially setting the agenda of science with very little challenge’. Some linked this trend to the absence of any tradition of investigative journalism within science writing and others argued that science journalists tend to ‘go native’ and refrain from asking scientists the really tough questions. An editorial in Nature reflected the views of many commentators that science journalism needs to ‘scrutinise as well as regurgitate if it is to give science its trust’⁴⁶. There was some evidence that science journalists and editors are conscious of this charge. Simon Pearson⁴⁷, night editor of The Times, told the group that The Times are now more interested in breaking their own original stories than slavishly following what’s in the journals. The ABSW submission calls for ‘in-Situ newsroom fellowships’ to allow journalists to get round the pressures of “churnalism” by gaining the time and space to pursue an original investigative journalism. Our group support this recommendation and we are also keen to recommend ear-marked investment in a science strand for the new Bureau of Investigative Journalism at City University.

“Before the Headlines”

One of the most popular and successful initiatives around science in the media in recent years is *Behind the Headlines*, an award-winning service run by NHS Choices, which was set up and is provided in collaboration with Bazian Ltd, a company specialising in analysing, critiquing and communicating scientific research. This website identifies the

⁴³ Science editor of The Independent, particle physicist, and author of *British Science and Politics Since 1945* (published in 1991).

⁴⁴ Director of Straight Statistics, as a journalist he wrote about science, health, and international affairs, for The Observer and The Times.

⁴⁵ Award-winning science writer, and 24 years as a science writer and editor at the Washington Post.

⁴⁶ “Cheerleader or watchdog?” - Nature 459, 1033-1033 24th June 2009.

⁴⁷ Night editor of the times.

Science and the Media: Securing the Future

biggest medical stories of the day and offers the public and healthcare workers an in-depth insight into how the story was reported by the media, where it came from, the strengths and weaknesses of the scientific study etc. The service is especially valuable for highlighting the context, nuances and caveats of science stories that so often end up on the cutting room floor or perish at the hand of the sub-editor.

One straightforward recommendation is to improve the quality of reporting by extending *Behind the Headlines* to include a 'Before the Headlines' service. This recommendation won strong support from science journalists who said they would benefit from seeing such a clear and compelling analysis of a scientific study in advance of writing their stories and felt that it would help them convince editors to take a more balanced approach to some science stories.

Recommendation: *The Group recommends that NHS Choices expand the Behind the Headlines service to include a specific service for journalists, or others, called 'Before the Headlines' or similar. This could be achieved by extra funding for the Behind the Headlines/Bazian team who would work closely with the Science Media Centre, who could share embargoed journal papers and distribute the service to target media. NHS Choices have agreed to explore potential for this.*

Champion the specialists

This needs little explanation. The specialist science, health, environment and technology reporters in the national media are the greatest allies of accurate science reporting. While we are fully aware that science reporters face the same tensions between accuracy and an attention grabbing headline as other reporters, the overall trend is clear: if a science story is written by a science specialist it is more likely to be accurate and balanced than when it is not. We also believe that much of the evidence suggests that specialist science reporters care passionately about their craft and take criticism by scientists very seriously. These specialists, especially those that work on the tabloids, generally fight the good fight for accurate coverage within their newsroom. Of course they should be criticized when they fail to deliver good reporting – but we also believe that, as champions of good science reporting, in an often hostile environment the scientific community should support specialists.

There is much evidence that editors recognize the role of specialists and despite rumour and anecdote about the decline in specialist journalism the trend is in the opposite direction. The only specialist now left dedicated to the Today programme is the science reporter, Tom Feilden⁴⁸, in the past year the Daily Mail and the Sun have created additional jobs for environment specialists to add to their science and health team, David Derbyshire⁴⁹ and Ben Jackson⁵⁰, the Guardian has appointed their very own engineering correspondent, Alok Jha⁵¹ – the green technologies reporter, the Daily

⁴⁸ Science Correspondent, Today Programme

⁴⁹ Environment Reporter, Daily Mail

⁵⁰ Environment Editor, The Sun

⁵¹ Science Correspondent, The Guardian

Science and the Media: Securing the Future

Mirror has added a dedicated science reporter to the team despite having always relied on the health editor to cover science in the past, Mike Swain⁵², the Sunday times advertised in December 09 for a general news reporter with a science specialism to strengthen the scientific specialism in their newsroom and the Times and Guardian are in open battle over the number of environment specialists they now employ. The Times claimed victory in the advertising campaign they used to launch their new monthly science supplement, Eureka⁵³. Equally editors interviewed for the Cardiff study confirmed that specialists are increasingly looked to by news editors to advise on science stories and ensure that stories are accurate. One reporter told us that after an inaccurate story in one national newspaper the Editor wrote to all general news reporters insisting that in future they run all science stories past the science specialists before publication

The Future of Science Journalism

A combination of falling circulations and news audiences, new technology, recession and disappearing advertising has led to a crisis in the business model for journalism. While media owners and commentators furiously debate how to make journalism pay, the striking thing is that no-one can claim to have the solution to this crisis.

We believe that protecting and preserving the science journalism that has done so much to enhance the public's understanding of science should now exercise the best minds in Government and science. This need not mean saving any particular news medium but it should mean developing ways of preserving independent, truth-telling science reporting.

The group was influenced by leading commentators in the US where the crisis in science reporting is far more serious than in the UK. These academics are calling on government to intervene to save journalism in the same way that the State has intervened to provide public support for education, healthcare and scientific research. Professor Paul Starr from Princeton University said:

“Our new technologies do not retire our old responsibilities. If we take seriously the notion of newspapers as a fourth estate or a fourth branch of government, the end of the age of newspapers implies a change in our political system.”⁵⁴

Many science writers in the US have also pointed to the specific impact on science reporting of these trends, with the loss of experienced science specialist reporters at a time when they are most needed. Chris Mooney from Princeton University said:

“It's not secret that the newspaper industry is hemorrhaging staff writers and slashing coverage as its business model collapses. But less recognized is how this trend is killing

⁵² Science Editor, The Daily Mirror

⁵³ Monthly science supplement in the Times

⁵⁴ Professor Paul Starr, Professor of Sociology and Public Affairs, and Stuart Professor of Communications and Public Affairs, Princeton University; Co-editor, The American Prospect, quoted in a paper by Alan Rusbridger, Editor of the Guardian

Science and the Media: Securing the Future

off a breed of journalistic specialists that we need now more than ever, science writers who are uniquely trained for the most difficult stories with a complex technical component that are nevertheless critical to politics and society.”⁵⁵ As if to illustrate his point, the Group learned as the ink dried on the first draft of this report, that Andrew C. Revkin, one of the most influential and respected reporters on the environment, will take a buyout from The New York Times as part of the paper’s current round of budget cuts. Revkin was covering the Copenhagen Climate Change Summit immediately prior to his departure.

While our research shows that science journalism in the UK has been largely spared the ravages of the US, it also shows that after a period of rapid growth, there is now stagnation in the number of science journalists employed and there is little evidence of future expansion. Our research shows that over 60% of current specialists think that the number of science journalists in the UK will either remain stagnant or decline and half of the journalists surveyed believe that recent cuts in the US will be replicated here. And there are a very small number of worrying signs that the crisis in journalism is claiming its first casualties in science reporting in the UK – notably at the BBC where the number of science correspondents was recently reduced by from 8 to 6.

As Natasha Loder⁵⁶ said to the Group, “In the UK, I think we have a unique opportunity here. We can either boost the strength and status of science journalism inside the newsroom before it is too late, or we can let it wither in slow motion and watch the science journalists be cut. This is, though, to build on our strengths and watch the UK emerge as a world centre for excellence in science journalism.”

This report, therefore, comes out at a time of remarkable change and impending crisis. Many of the problems in science journalism stem from the wider crisis in journalism and will be resolved (or not) as part of wider solutions. We certainly do not set out to solve that crisis in this report though we do feel that the time has come for the scientific community to consider the potential impact of the crisis on their licence to practice. For some years now the scientific community have relied on science journalists to report their work to the public and policy makers. Simply assuming that this will continue in the old ways is no longer an option and we believe that those who care about the impact of science on society must now seize the initiative and look into ways of saving and supporting science journalism.

Not all bad...

Despite the air of gloom around the future of journalism in general, the group also found many reasons to be positive about the future of science journalism. The research commissioned for the group proved much of the anecdotal evidence we had collected about a growing appetite for science stories, a rise in the status and respect for the

⁵⁵ Chris Mooney, visiting associate in the Center for Collaborative History at Princeton University, contributing editor to Science Progress, senior correspondent for The American Prospect magazine, and the author of three books

⁵⁶ Natasha Loder, journalist and Chair of the Association of British Science Writers

Science and the Media: Securing the Future

specialist science reporters in the newsroom and a ‘coming of age’ of science journalism as the subject emerges from the ‘ghetto’ of marginal specialist pages and quirky ‘and finally...’ broadcast pieces.

The group also found that the crisis in journalism more generally both in the US and the UK was spawning a plethora of alternative models for science journalism which are incredibly innovative and exciting. These journalistic ventures, often funded by private means, are creating what Jeff Jarvis⁵⁷ calls a ‘new ecosystem for news’. While the myriad of new approaches has prompted a challenging debate about what constitutes journalism, many group members and outside experts described the current period as one of the most exciting of our times. Jim Giles, a freelance science journalist, told the group: ‘there is a crisis in the business model for journalism but not in journalism itself. In many ways this is a healthy and exciting time for journalism. New methods of producing journalism are emerging and some will change the way journalists interact with their audiences.’⁵⁸

What everyone agrees on is that the landscape is changing very quickly. Talking about the impact of blogging and social networking on journalism, the Editor in Chief of Reuters News questions the role of journalism:

‘The old means of control don’t work. The old categories don’t work. The old ways of working don’t work. We all need to come to terms with that. We now deal with the almost impossible question of who is a journalist. This means understanding what really adds value; what really can be exclusive and what really is insightful. It means truly exploiting expertise.’⁵⁹

Recommendation: *The group strongly recommends that government and the scientific community should examine some of these new initiatives, take a lead in some of the innovations and explore which approaches are likely to succeed and those most likely to deliver the quality science reporting we want to see (see Action 3.3).*

The new ‘ecosystem’

These new journalistic ventures fall into three broad categories which were all discussed. These include;

- Quasi-Journalistic ventures set up and run by the scientific community themselves
- New journalistic ventures emanating from inside journalism

⁵⁷ Author of *What Would Google Do?*, associate professor and director of the interactive journalism program at the City University of New York’s new Graduate School of Journalism, consulting editor and partner at Daylife, a news startup, writes a new media column for The Guardian and is host of its Media Talk USA podcast.

⁵⁸ Jim Giles, Freelance writer based in San Francisco

⁵⁹ David Schlesinger, Editor in Chief of Reuters News

Science and the Media: Securing the Future

- Developments in social networking and on the web which are both changing the way journalism is done and the way the public get their information

However, even attempting to define separate categories belies the fact that all the lines defining traditional journalism are now so blurred as to be almost impossible to draw. As Alan Rusbridger, Editor of the Guardian, said in a paper on the subject, 'Is any of this journalism? Does it matter? You could waste many doctoral theses arguing the point but it seems to me futile to deny that something interesting is going on here.'⁶⁰

While the group had no desire to delve too deeply into philosophical questions about what constitutes journalism, we were keen to examine how these developments could impact on the future of science reporting and which developments we should be seizing on to achieve our shared goals of improving science in the media.

One theme emerged repeatedly, that at a time when the internet has effectively removed all the barriers to publication, trust – a key issue in science reporting – becomes more of an issue than ever. Specialist science writers at Nature and New Scientist felt strongly that 'journalism' and its ability to question, edit, verify and add authority might be more important now than ever in a world full of noise. Others consulted cautioned against running up the white flag on behalf of conventional journalism any time soon.

Journalistic ventures set up by the scientific community, or are they?

An indication that we are in a period of transition is a new trend towards the scientific community themselves creating their own news media. Combining the obvious benefits of being able to by-pass the vagaries of traditional news values with the new opportunities offered by the web has allowed scientific institutions to embark on their own journalistic projects. These initiatives, most notably Futurity in the US, Cancer Research UK News and Resources, and Planet Earth On Line (Annex 4) quite deliberately look like journalism, sound like journalism and smell like journalism. All use professional journalists or science writers to write news stories and appear in Google News searches as news articles.

The appearance of these journalistic ventures has prompted furious debates in North America about what constitutes journalism. At the World Conference of Science Journalists in London in 2009 Jeff Nesbit⁶¹, director of communications at the National Science Foundation in the US, caused a stir by describing how he employed several of the science journalists sacked by CNN last year when they closed down their entire science unit and re-employed them to run a news site funded by NSF. One speaker from the floor (who happens to be the Chair of this group) described the project as PR not journalism and another delegate suggested that NSF should have given the funds to CNN to retain the journalists rather than setting them up on the NSF pay role. Jeff Nesbit, who has since given evidence to this group, responded to say that we need to do

⁶⁰ Alan Rusbridger, Editor of The Guardian

⁶¹ Director of the Office of Legislative and Public Affairs at the National Science Foundation (NSF)

Science and the Media: Securing the Future

both. And indeed the NSF is doing both – funding science coverage of traditional media as well as investing in alternatives.

Press officers perspective

Not surprisingly, evidence taken from science press officers differed from that of journalists who tended to be sceptical about these projects. For press officers, the main question was one of audiences. Rick Borchelt argues that if press officers can start publishing themselves and reach their audiences directly then that has to be a good thing. Natasha Martineau, Head of Research Communications at Imperial College London, says: “We will always be keen for journalists to cover our research, but we also leap at the opportunity to connect directly with our audiences by telling tell the story in our own words and pictures.”

However, science press officers spoke of their commitment to getting good, accurate information on their science and institution to targeted audience – and whether that is achieved through traditional journalism or new forms of journalism was not a major concern. Cancer Research UK’s news site is clearly seen as an opportunity to get stories into the public domain which are not deemed sexy enough for the news media (i.e. those which are neither about a cure nor a cause for cancer). The popularity of the site confirms they are achieving this goal. Press officers consulted for the report often referred to the changing nature of their role, and a press officer at Imperial College London now questions whether ‘press officer’ is the right job title for people who spend at least half their working lives engaging directly with their audiences by creating content for their own websites. CRUK press office now operates in a similar way to a news room with some staff reacting to breaking news and others identifying stories for the news site. As the media landscape changes, so do media relations activities.

However, journalists and academics consulted felt strongly that these institutional journalistic initiatives differ in important ways from conventional journalism. They could move towards adopting more traditional journalistic techniques and may achieve public information goals but the sites we looked at can not deliver independent journalism. This difference is reinforced by the editorial process involved with these sites – Futurity admits that the journalists employed are essentially re-writing university press releases, CRUK Press officers check stories on Cancer Research UK’s News & Resources before they are published, and Planet Earth Online is produced partly by NERC press office.

After lengthy discussions the working group concluded that these institutional attempts at journalism are actually better described as ‘communication ventures’ rather than ‘journalistic ventures’ and as such be welcomed and supported as exciting and innovative new attempts to get important science stories to a wider audience. While journalism at its best can deliver the kinds of stories scientists want to see on cancer, environmental change etc journalism has often failed to live up to its best and it makes perfect sense for science press officers to embrace new opportunities to offer the public access to good, accurate science stories. While it may be true that journalism at its best is better than lazy PR, PR at its best is often better than lazy journalism.

Science and the Media: Securing the Future

We believe that to dismiss the growing number of initiatives in this area as glorified PR would be wrong and that they should each be judged on their quality and ability to reach new audiences with high-quality accurate information. However, we did decide that these news sites should be labelled very clearly. All group members felt that readers should be able to see immediately and prominently the source of these stories and be made aware that they are a communications/PR initiative. If the labelling is clear these news sites can provide a valuable addition to journalism.

Recommendation: *that all journalistic ventures should have their funding model and the degree to which they are editorially independent clearly labelled.*

New models of Journalism?

Because the crisis of journalism is more acute in the US, the group was interested to look stateside for new thinking about creating alternative business models for journalism. We found many innovative and exciting examples of journalists themselves taking the initiative and creating journalism outside of traditional settings. These included Propublica and the Centre for Public Integrity, both investigative journalism projects funded by philanthropists; Minn Post (Annex 4) which provides daily news and analysis written by professional journalists and the Pearl Project⁶² where journalism students at Georgetown University in Washington ran their own two-year investigative reporting project on the circumstances of the death in Iraq of US journalist Daniel Pearl.

While many of the above tend to focus more on political and foreign affairs reporting there were also some specific initiatives in the science arena including Kaiser Daily Health News (Annex 4) funded by a Foundation, and Science Central (Annex 4), an aggregated site for breaking research news, both of which were both proving extremely successful.

Investigative Journalism

Easily one of the most exciting, successful and inspiring journalistic projects we found was Propublica (Annex 4) – a newsroom set up specifically to undertake investigative journalism. Funded by millions of pounds donated by philanthropists who believe in the power of investigative reporting ('he hates it when bad guys screw people over and likes it when they get found out'), Propublica employs Pulitzer prize-winning journalists to undertake investigations which are offered to existing news organizations and published on the web. Propublica only opened for business in 2008 but has already published 72 major stories with 40 partners and can already claim credit for a number of policy changes as result of their investigations.

While the group found very few examples of new models of journalism being pioneered in the UK, we were delighted to hear from Gavin MacFadyean⁶³, director of the Centre for Investigative Journalism at City University's highly respected school of journalism.

⁶² Website: <http://pearlproject.georgetown.edu/>

⁶³ Director for the Centre for Investigative Journalism

Science and the Media: Securing the Future

Gavin briefed the group on very recent developments in relation to securing funding from the Potter Foundation to set up a Bureau of Investigative Journalism which will operate in the UK in a similar way to Propublica. This Group is extremely supportive of this project and recommends that funding is sought from the scientific community for the Bureau and earmarked for science based investigations. Similarly the group was very excited to hear about how City University's new science journalism postgraduate students have offered to do additional research/investigations for hard pressed science reporters in news, in collaboration with the ABSW.

Recommendation: *money should be found from the scientific community to fund the Bureau of Investigative Journalism to undertake investigative science reporting. By science we mean science, health, medical, environment, technology and engineering. The money would be totally unconditional with respect to the specific content and it would operate under the Bureau's strict rules of editorial independence and be earmarked for science. The Group wanted to emphasize that the scientific community should fund investigative journalism recognizing that the subject of that investigation could well be themselves.*

New technologies transforming how we do journalism

We do not have the time or space in this report to look into the amazing transformation of journalism by the recent explosion in new technologies, social networking and the ever-changing nature of the web. However, it is crucial for the government and scientific community to get to grips with these developments and seize on their potential to impact on the way science stories are covered. The reporting of events like the July 7th bombings, street protests in Iran, the death of Ian Tomlinson on the G20 demonstration and the Trafigura super injunction have all been completely transformed because of mobile phone cameras, twitter, blogs and blackberries turning people into self-selecting sources for the media. In the MPs expenses saga, the Guardian enlisted readers to help trawl through thousands of simultaneously-released documents and the Times has a blog experiment called the Local where 'citizen reporters' are trained and given equipment to report from local meetings the Times staffers cannot cover. And at time of writing history was made as the US's leading news organization, the New York Times, published its first ever story from a website site called Spot.Us (Annex 4), a new site which invites the audience to decide which stories are covered by journalists and give an average donation of \$40 to help make the story happen.

Describing these trends as, 'the mutualisation of news', Alan Rusbridger⁶⁴ claims that we now have 'not us versus them but us and them'. Talking about how these developments challenge our concept of journalism Rusbridger says 'they twist, complement, subvert or replace conventional journalism. They may even be journalism – though to my knowledge they employ very few people who would answer to the title journalist. Some would say that many websites are in many respects more useful than journalism. Others would dispute that... is any of this journalism and does it matter?'

⁶⁴ Editor of The Guardian, in evidence given to this group

Science and the Media: Securing the Future

As early adopters of the web we feel the scientific community is well placed to capitalize on this mutualisation of news and the reporting of science would benefit from more scientists actively deciding to contribute their knowledge and expertise to conventional journalism. The communications departments of many universities and scientific institutions are already finding ever-more innovative ways to ride this wave with many press officers using Twitter, Facebook and new websites to provide extra material for journalists and members of the public alike. And while they may not be as famous as some of the examples listed above, the science community already has its own list of interesting innovations in this arena. 'Climateprediction.net' (Annex 4) saw climate scientists and the BBC recruiting ordinary members of the public to produce predictions of the earth's climate from their own computers, and Lab UK (Annex 4) is a BBC website where anyone can participate in groundbreaking scientific experiments online.

RealClimate.org is a highly popular and respected blog run by climate scientists which has now become a reliable source for science journalists as well as a wider audience. And science press officers at a number of science universities are now using a variety of multi-media tools and creating video clips, podcasts of their most exciting scientists for their websites and photo-blogging. CRUK is now producing broadcast-quality video and audio material that journalists can use.

Recommendation: *that a new working group is formed, led by the scientific community to keep a watching eye on all these new initiatives in journalism and ensure that the scientific community is both exploiting the new opportunities to the full and also providing backing and support to the emerging initiatives that are judged to be most promising.*

Funding for the media

Despite a sceptical reception, at the time of writing this report Rupert Murdoch is fine-tuning the details of his shock announcement that News International titles, including the Times, will move towards charging for online content within the next year. However, few in the media industry believe that the tide of free news online can be turned. The group felt that radical thinking was needed in relation to the future financing of journalism and that a tendency to dismiss radical options was becoming dangerously luxurious at a time where no solution to the current funding crisis is obvious.

The UK situation is different from that in the US not least because of the continuing strength of the BBC compared to PBS TV and National Public Radio in the US, and the much less developed tradition in the UK of Foundation and Charitable support. Nevertheless we believe that Government and the scientific community should consider ways of using public support to shore up the media. In recent years the government has invested millions in initiatives designed to promote public engagement with science including schemes like Sciencewise and the Beacons of Public Engagement. We believe that the huge influence of the media on public attitudes to science justifies the consideration of a substantial public effort in shoring up science journalism.

Science and the Media: Securing the Future

Options for possible subsidies to the media included the following:

Donations from philanthropists: In the UK several philanthropists fund science prizes or competitions – we hope that those ministers and scientists in contact with philanthropists could approach them with a view to investing money in new initiatives to support science journalism.

Funding from Foundation and Non-Profits: In the US, 75% of investigative reporting is funded by non profits and foundations. While there are far fewer foundations and trusts in the UK there are some and we note the donation of £2million to the new Bureau of Investigative Journalism from the Potter Foundation. We would urge the scientific community to investigate creating sources of funding for science journalism in the creative way that the Wellcome Trust has found to fund early development of science programming.

Partnerships/sponsorship: While journalists in the US shrink from state funding for journalism they have embraced funding from the scientific community and the National Science Foundation, the equivalent of the UK's research councils, has invested millions of dollars funding science coverage on PBS radio as well as science sections in the US's third-largest selling weekly news magazine. In the UK most journalists shrink from the idea of accepting funding from scientific bodies, but we think the more the crisis of journalism unfolds the more people will think the unthinkable and moulds will be broken with new and interesting partnerships emerging. If the only way for New Scientist to survive and flourish in the future is to investigate some form of funding from the scientific community then we think it is worth considering exploring all avenues. However, our group feels that robust agreements must be put in place to protect editorial independence and again the US has encouraging examples that we could adopt.

Using taxation to ease the burden: The government should investigate ways in which the financial pressures on the media can be reduced. Offering tax breaks and other incentives for new and emerging non-profit news organizations could encourage more of the exciting innovations we have seen in the US sprouting up in the UK.

Political leaders in the UK have remained largely silent on the crisis in mainstream journalism showing no sign that they have considered the broader impact on society. Similarly the scientific community who have for so long talked of the importance of the media in engaging the public with science show little sign of having put their best minds to addressing some of the challenges we currently face.

Recommendation: *the future of journalism deserves to command the same kind of attention given to wider societal debates about the future of the NHS and Education and as such we recommend that the Government should establish a National Commission on the Future of Journalism. This would mirror similar efforts elsewhere, whether in the US where the Federal Trade Commission has recently held hearings on the Future of News Media in the Internet Age, or the Etats Generaux de la Presse convened by President Sarkozy in France in 2008 which reported in January 2009. Part of the Commission's remit*

Science and the Media: Securing the Future

should be to examine future funding models for journalism and what interventions governments could make. Given the lead the science community has shown in exploiting new models of journalism and content provision, this Commission should include representatives from the science community.

Conclusion

In conclusion we hope that this report will prompt a renewed engagement with debates over the future of science journalism from government and the scientific community. This is a time of great threat and great opportunity – how things develop depends on whether we watch passively from the sidelines or start learning the rules, playing the game and determining the result!

Science and the Media: Securing the Future

Committed Actions in Science Journalism and its Future

3.1 Provide easier access to lesser known science literature for science journalists	
<p><i>Rationale:</i> Access to information about breaking science news is the lifeblood of science reporting. For freelance journalists, or small organizations, getting more than just the press release from big journals is expensive. Fuller access to peer reviewed literature would help diversify the science that is covered, allow and combat the diary case reporting that our research has highlighted as an issue.</p>	
<i>Actions</i>	<i>Who</i>
Explore options to with universities to get ATHENS access to journals for freelance science writers	ABSW
3.2 Create a Science Journalism Prize	
<p><i>Rationale:</i> Prestige matters in the news room. Winning a well respected Science Journalism prize strengthens the hand of good science reporting. Such a prize could only strengthen a culture of excellence in science journalism and encourage the kind of coverage the groups wants to see more of. This would also offer a useful foil to the more common pursuit of criticising bad coverage.</p>	
<i>Actions</i>	<i>Who</i>
Explore options for the creation of a science journalism prize	BIS
3.3 Set up new Working Group on the New Initiatives in Science Journalism	
<p><i>Rationale:</i> There is a blossoming array of schemes in the US and the UK which provide some, or all, of the functions of science journalism. The group recommends the institution of working group to keep a watching eye on all these new developments in journalism and ensure that the scientific community is both exploiting the new opportunities to the full and also providing backing and support to the emerging initiatives that are judged to be most promising.</p>	
<i>Actions</i>	<i>Who</i>
Explore options to create such a Working Group	BIS

Science and the Media: Securing the Future

3.4 Create “Before the headlines” Service	
<p><i>Rationale:</i> There are several excellent websites out there, such as Behind the Headlines and CRUK, which seek to dissect news stories about science and health. Whilst useful, these cannot change a story once it has been published. A service that dissects scientific studies and makes that synopsis available to journalists, before it becomes news, would serve that purpose. Science journalists said they would benefit from seeing such a clear and compelling analysis of a scientific study in advance of writing their stories and felt that it would help them convince editors to take a more balanced approach to some science stories.</p>	
<i>Actions</i>	<i>Who</i>
Explore creation of a “Before the Headlines” service for journalists, or similar	NHS Choices, SMC, Bazian Ltd
3.5 Create one month fellowships for science journalists	
<p><i>Rationale:</i> It is clear that the pressure of feeding a 24 hour news machine leaves little time for original investigative journalism. The group recommends that a small number of paid fellowships be provided for science journalists to take time off the daily news grind and investigate original science stories.</p>	
<i>Actions</i>	<i>Who</i>
Fund small number of Fellowships for science journalists	tbc
3.6 Run summer school on investigative science journalism	
<p><i>Rationale:</i> Journalism is increasingly time pressured and our research highlighted a distinct lack of investigative science reporting. The Centre of Investigative Journalism and City University School of Journalism run classes in investigative journalism to make sure the skills required are maintained. They also have a number of schemes to support investigative journalism in the UK, including the Bureau of Investigative Journalism and a scheme providing science journalism students to help journalists with investigations. Supporting a culture of investigative reporting in science journalism is to be welcomed.</p>	
<i>Actions</i>	<i>Who</i>
Run two day summer school on investigative journalism in 2010	City University School of Journalism
Provide funding of £500 per head to attend the school	tbc

4.0 Openness and Transparency

The expert group felt strongly about the need for more openness and transparency in the communication of science to the media. While more and more scientists now engage with the media and the culture has completely changed from the bad old days when many scientists remained in their ivory towers, we feel there is still some way to go before we achieve the kind of openness that is needed.

Many people consulted commented on the way our culture in general is forcing ever more openness in all walks of life. One former government communications chief told us, 'the past is a different country – in the age of Twitter and Facebook no-one can stand in the face of a public demanding ever more openness.' While this is an interesting insight it shows that for some openness is a necessary evil imposed on us by outside forces. Our group had a more positive vision of openness. We believe that science has nothing to fear and everything to gain from being more open – even about its disagreements and uncertainties.

One of the memorable comments we heard was that 'journalists get terribly excited by a glimpse of the ankle but not at all excited by the full striptease' and indeed scientific advisory committees who hold their meetings in public can testify that this has not led to a deluge of inaccurate or sensational reporting. More importantly, we believe that being open about scientific controversies can only lead to a better informed, more grown-up public debates on these issues. We recognize that moving towards increasing openness involves risks and neither the media nor the public will always react in the way scientists want them to. But we believe the benefits of more open engagement far outweigh these risks and that trusting more journalists to deal intelligently with uncertainty and scientific disagreements may actually enhance the media's understanding of the way science works.

Scientific advice to government

This group was working throughout the now infamous 'Nuttgate'⁶⁵. Following this, Lord Drayson committed to publish some guiding Principles for Scientific Advice to Government⁶⁶ by Christmas 2009. A number of the group were consulted in their preparation, and they will feed into the wider Government Office for Science consultation on their Guidelines on Scientific Analysis in Policy Making. The discussions around this incident revealed that many scientists and politicians still believe scientists appointed to scientific advisory committees to advise government should not speak to the media during their terms as advisers. This has now become the subject of intense debate, with journalists, press officers and scientists taking part in drawing up the Principles and contributing to the House of Commons S&T Select Committee inquiry.

⁶⁵ The request to step down and later dismissal of Professor David Nutt (October 29th) from the Advisory Council of the Misuse of Drugs (ACMD) after his public claims that ecstasy and LSD were less dangerous than alcohol.

⁶⁶ Guidelines on Scientific Analysis in Policy Making, published October 2005 (currently being updated)

Science and the Media: Securing the Future

This expert group's discussions on the issue focused exclusively on the media aspect and we felt it was extremely significant that it was not Prof Nutt's academic paper or lecture that prompted his initial reprimand, and subsequent dismissal, but the fact that these ended up in media headlines. As such we feel that the way independent scientific advisers engage with the media should be a central part of the current consultation.

We were keen to present the issue of independent scientific advisers speaking to the media in a positive light and were keen to note that the current advice for scientific advisers is well drafted but sadly widely ignored. For us, the existence of around 75 independent scientific advisory committees (SACs) examining the scientific evidence on issues like vaccines, nuclear waste, genetic testing and many of the most important science subjects of the day is an amazing opportunity to get great science into the media. For the evidence and advice of these groups to be passed quietly to Ministers (as it often is), or published by departmental press officers with priorities other than generating a good science story, seems a wasted opportunity to inform the media and the public about these issues. We feel that scientific advisory committees should endeavour where possible to brief specialist science reporters on their findings before they get embroiled in the political and policy process. Given that the government typically takes the advice of these committees we feel that it has nothing to fear from a more open approach. Indeed Government should welcome the additional opportunity to get high-quality science media coverage as a way of informing public discussion on these issues. In this regard we felt the Royal Commission on Environmental Pollution (RCEP) was a positive model. Despite the controversial and sensitive nature of many of their reports, the RCEP has always published its recommendations independently to the media and as Chair of the Commission Sir John Lawton⁶⁷ says, 'we've been doing this for years and the sky has never fallen in.'

Equally we felt that by appointing some of the best scientists in the country to advisory groups at times of emergencies (such as the foot and mouth outbreak or swine flu) and then asking them not to speak to the media robbed journalists and the public of access to the best science at the times when they most need it. The most striking recent example of this occurred during the swine flu epidemic where some of the UK's best anti-virals experts and vaccine scientists informed the media that they were restricted from speaking because they had been appointed to the scientific advisory committee. The result was that the public did not hear about an important public health issue from the best scientists, and the content-hungry 24-hour news machine filled the vacuum with people with far less expertise.

As well as robbing the media of important information, we also felt that secrecy often has the effect of encouraging the spread of unreliable stories. Reporters end up desperately scrabbling for a story so they use what little they have – an out of context remark from a panel member or an interview with less knowledgeable scientist and spin it for all its worth. When the Government Chief Scientific Advisor (GCSA) was asked

⁶⁷ Professor Sir John Hartley Lawton, CBE, FRS, British [ecologist](#), chair of the [Royal Commission on Environmental Pollution](#) and former head of [Natural Environment Research Council](#) (NERC).

Science and the Media: Securing the Future

in a room full of journalists whether he would confirm that was disagreement on the advisory council on swine flu over the use of anti-virals, he replied that of course there was disagreement – there were 30 scientists in the room! By being open about the disagreement John Beddington got a laugh rather than a damaging headline!

The group was particularly disturbed to discover that it is not unusual for scientists appointed to SACS to be asked to sign non-disclosure agreements and confidentiality clauses. While some committees do deal with commercially sensitive information, we learned that often NDAs do not specify which information the agreements apply to, thus appearing to cover all the work of the committees. We can see few justifiable reasons for this practice and recommend that NDAs be kept to a minimum and when imposed should specify which information they cover.

Recommendation: *We can see few justifiable reasons for the use of catch all NDAs so recommend that their use be kept to a minimum. When used, NDAs should specify which information they cover. Government SACs should act, and be allowed to act, with a presumption of openness and independence at all times.*

In summary this Group endorses the media aspects of the Principles of Scientific Advice to Government, set out by Lord Drayson in the wake of ‘Nuttgate’.⁶⁸ In particular we support the Principles about freedom of speech for academics and the right of SACs to use science press officers outside Government. Almost all these principles are already enshrined in existing Code of Practice for SAC, but have sometimes been ignored. We suggest that the current review considers making it a condition of operation that SACs adhere to the best practice and principles available.

Libel Law

The group was lobbied by the Association of British Science Writers (ABSW), Alan Rusbridger, Editor of the Guardian, David Leigh⁶⁹, investigations executive editor at the Guardian and many others to take a strong line on the UK’s libel laws in the wake of the Simon Singh case⁷⁰. Leigh, who gave evidence to the group described how support for libel reform in our report would ‘play into a lot of live action’ in this area, including the well organized and high-profile Singh campaign run by Sense about Science⁷¹ and the influential report published by English PEN⁷² and Index on Censorship⁷³.

We believe that the libel action being brought against Singh and those recently brought against Peter Wilmhurst⁷⁴ (ongoing) and Ben Goldacre⁷⁵ (libel withdrawn) go to the

⁶⁸ www.senseaboutscience.org.uk/scienceadvice

⁶⁹ Guardian's investigations executive editor

⁷⁰ Libel law courts, British Chiropractic Association vs Simon Singh after an article written by Simon Singh in the Guardian in 2008 about Chiropractic treatments and children.

⁷¹ <http://www.senseaboutscience.org.uk/>

⁷² English PEN is a registered charity (number 1125610), working to promote literature and human rights.

⁷³ Index on Censorship is Britain’s leading organization promoting freedom of expression

⁷⁴ Peter Wilmhurst, a consultant cardiologist at Shrewsbury Hospital, is being sued for libel by the US manufacturer NMT Medical Inc after talking at a US medical conference about his views on the efficacy of

Science and the Media: Securing the Future

heart of issues around scientists engaging with the media and we fear that these libel cases have considerable potential to discourage scientists from entering the media fray. While more and more scientists are prepared to engage with the media, few would argue that the traditional reticence amongst scientists has yet disappeared and never more so than when their science is headlines news. Reforming the libel laws is critical to ensuring that scientists feel safe talking to the media about the big stories of the day.

The Group is not suggesting that genuinely inaccurate or scurrilous reporting and the ruin of a person's reputation based on incorrect information should not come with consequences, and reforming the libel laws should not be seen as creating a licence for news organisations to say what they want. However, the group feels that the balance between news provider and the subject of the news is incorrectly struck at present. Unlike in any other area of law, the defendant is guilty until he or she can demonstrate their innocence in court by showing that the story is correct. The costs of defending an action are prohibitive to all but the largest media organisations and even a successful defence can leave costs of tens or hundreds of thousands of pounds. This has a profoundly inhibitive effect on reporting of scientific issues and of scientific discussion in the media.

We particularly back the calls for a public-interest defence in libel as we believe that hearing what scientists have to say on issues such as vaccines, climate change, and drug safety is clearly in the public interest.

We also discussed the chilling effect of the current libel laws on science reporting. Science journalists freely admit that stories they believe to be completely true have not appeared because of media lawyers' precautionary advice about what could be libelous. The Guardian's David Leigh admitted that in investigative reporting 'finding out stuff' is now only half the battle – getting round the risk of libel is now a major barrier to publishing. In shocking evidence, Gavin Macfadyean⁷⁶ from the newly established Bureau for Investigative Journalism claimed that despite being set up in the UK they would probably have to publish many of their investigations in the US because of the threat of libel laws. This group sees the reform of the libel laws as absolutely critical to creating the kind of environment where more original and investigative science reporting can flourish.

Recommendation: *The chilling effect of English Libel Laws, which has a reverse burden of proof on the defendant and involves extortionate costs of defence, is a severe disincentive to producing investigative science journalism and discussion of controversial science issues. The law should be reformed and costs of defense capped. The group*

a heart implant device called "Starflex". The US are able to sue for libel in the UK due to the UK's unusual system.

⁷⁵ Dr Matthias Rath, denouncer of conventional Aids medicines, attempted to sue Ben Goldacre and the Guardian under the Libel laws. Goldacre wrote an article in the Guardian expressing his opinions on Dr Rath's activities in South Africa trying to persuade HIV positive victims to take vitamins instead of antiretroviral drugs (ARVs). However, the case was dropped in September 2008.

⁷⁶ Director of the Centre for Investigative Journalism

Science and the Media: Securing the Future

endorses the 10 recommendations made by English PEN and Index on Censorship, in their report Free Speech Is Not for Sale.

Industry and Freedom of Information

Several issues were raised in our meetings on transparency in relation to industry science and the media, in particular questions about commercial confidentiality and the accessibility of scientists from industry. While many of the UK's best science graduates go into science-based companies including the food industry, chemical and engineering companies and the pharmaceutical sector, their voices are rarely heard in the media. The reason most often given for the difficulty of providing an industry scientist to the media is commercial confidentiality. While the group accepted there are real concerns about competition, intellectual property and share prices there was still a feeling that some companies hide behind these restrictions. While science press officers in these companies are often proactive we believe more could (and should) be done to liberate the best scientists from their corporate setting and make them more easily accessible to the science reporters.

The group felt there needs to be a clearer definition of commercial confidentiality in relation Freedom of Information requests about scientific information submitted to Government and public bodies by industry. We feel that merely asserting confidentiality as a reason for not putting information into the media is not acceptable – companies should explain what needs to be confidential and why. We also felt that there should be a presumption of disclosure in all cases unless there are clearly justifiable reasons not to do so. Health reporters also raised the issue of the need for more openness from regulators with one journalist raising the issue of the Medicines and Healthcare Products Regulatory Agency (MHRA)⁷⁷ who at present have a policy of not commenting on any discussions with drug companies

As has already been said – we believe the potential risks of adopting this approach are worth taking in order to gain more public confidence in, and understanding of, the science taking place in industry. Given how much science either takes place in industry or is funded by industry, allowing journalists the same opportunities to scrutinize and question industry science as publically funded science is important to overall levels of trust in science.

⁷⁷ www.mhra.gov.uk

Science and the Media: Securing the Future

Recommendation: *We need a framework in place to ensure openness and transparency of science information. This should include:*

- *public interest defence in cases of whistle blowing*
- *Commercial confidentiality needs to be clearly defined and not used to routinely obstruct transparency in cases where scientific evidence is submitted to Government bodies by industry. There should be a presumption of openness, with commercial confidentiality only applied when a positive case has been made for it.*
- *Furthermore, appeals against FOI⁷⁸ commercial confidentiality rulings in FOI should be dealt with more quickly, the Information Commissioner needs to be better funded to allow this.*

Clinical Trials

Because a number of journalists consulted had specific concerns around finding information about clinical trials conducted by companies, the group looked at this issue.

Studies by journal editors and medical researchers have identified numerous problems regarding the transparency of medical data. Drug companies have been found to have suppressed negative trials and adjusted trial protocols to achieve more favourable results. These problems led many medical journal editors to make public registration of clinical trials a precondition of publication. The policy, announced in 2004, has led to widespread use of clinical trial registries and has had a significant improvement in the transparency of clinical trials.

Registries remain incomplete, however. Companies have to register trials but they do not have to make the results public. Several studies have recently identified long delays in the publication of completed trials. This increases the chances that research will be duplicated and patients exposed to ineffective or even harmful treatments.

The WHO⁷⁹ is considering adopting the policy that the ‘findings of all clinical trials must be made publicly available’ and is currently consulting on the issue.

Recommendation: *This group recommends that the WHO adopt this policy and call on the Government to also support the WHO's proposal. Furthermore, the clinical trial register system should be simplified to make it easier to keep track of drug trials, allowing them to be properly scrutinised. All registries should be searchable on a single portal.*

⁷⁸ <http://www.freedomofinformation.co.uk/> Freedom of Information Act information

⁷⁹ The World Health Organisation (WHO) is the directing and coordinating authority for health within the United Nations system

Science and the Media: Securing the Future

Transparency on animal research

The group discussed the fact that one area where restrictions on openness remain even in academia is animal research. While there is little evidence that speaking in the media on animal research leads to scientists being targeted by extremists, these restrictive policies result from over a decade of pernicious and often violent action by animal rights extremists on a number of high profile institutions including the University of Oxford. However, the group notes that organizations like Understanding Animal Research (UAR)⁸⁰ and NETCU⁸¹, the police unit set up to deal with domestic extremism in England and Wales, have all produced figures recently demonstrating that the activities of animal rights extremists have dramatically declined in recent years as a result of new laws and police activity. Many extremists are serving jail terms and there have been no recorded violent attacks on UK scientist for over a decade. Many institutions still have extremely cumbersome and restrictive rules governing media work around animal research with one science university having a requirement that agreement from over 15 unit heads must be sought before allowing any journalist entering an animal facility. While science reporters have always been sensitive to security issues when covering animal research, many are frustrated by the continuing difficulties in getting access to animal researchers and labs despite their track record of balanced and considerate coverage.

It is important to acknowledge that there has been a dramatic increase in the number of scientists speaking to the media about animal research and organizations like UAR, and funding agencies like Wellcome⁸² and the MRC⁸³ have worked hard to change this defensive culture. In King's College London, Professor Roger Morris⁸⁴, Head of the School of Biomedical & Health Sciences, has spearheaded a process of change that he says has 'changed the default from refusing to allow a journalist into a lab unless there is a very special reason *to do so* to allowing science reporters into a lab unless there is a very special reason *not to*.' The fear of being targeted by animal rights extremists is real and unpleasant. But given the importance of animal research to many of the major scientific developments we believe companies, scientific institutions and universities should review their communications strategies and bring them in line with those for other controversial science stories.

⁸⁰ UAR aims to achieve understanding and acceptance of the need for humane animal research in the UK, by maintaining and building informed public support and a favourable policy climate for animal research.

⁸¹ National Extremism Tactical Coordination Unit (NETCU), is a national policing unit set up by the Association of Chief Press Officers (ACPO) to respond to the threat of domestic extremism in England and Wales.

⁸² The Wellcome Trust is an independent charity and the UK's largest non-governmental source of funds for biomedical research.

⁸³ The Medical Research Council (MRC) is a publicly-funded organisation dedicated to improving human health.

⁸⁴ Head of the School of Biomedical & Health Sciences, King's College London

Science and the Media: Securing the Future

Recommendation: *Whilst receiving threats because of one's work is a harrowing experience that none should face, the threat of extremist animal rights activists has receded significantly in recent years. Research labs should be more open to the media, to facilitate the public debate of the benefits of using animals in medicine.*

Conclusion

In short, this Group believes that the knowledge and information generated by scientific endeavour should be, where ever possible, available to the public and those who inform public debate. Whilst many may see complete transparency as a risk, science has more to gain by being open, than to lose by closing it's doors. There will always be circumstances in which confidentiality is needed, but shrouding science in secrecy often backfires. The benefits of increased openness in terms of public trust and a better understanding of the way science works are huge.

Science and the Media: Securing the Future

Conclusion

Science is at the heart of almost all the major challenges we face – how to tackle climate change, how to feed the growing population, how to treat incurable diseases that lay waste to so many lives. Public understanding of and attitude to science continues to be hugely influenced by the mass media. Yet that media is undergoing a massive period of change that poses new threats and challenges which this group believes are not being adequately addressed by the scientific community or government.

We believe that taken together these actions and recommendations will both deliver real changes to improve the quality of science in the media and also stimulate an important debate about the future of science journalism. The government and the scientific community together have had a major influence on the direction and priorities of scientific research in the UK - this group believes we have a similar opportunity now to influence the future of science journalism and secure the best quality science reporting for future generations.

Annex 1: Executive Summary of Mapping the Field: Specialist Science News Journalism in the UK National Media (full report online)

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 journalists; 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

Science and the Media: Securing the Future

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. 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.

Science and the Media: Securing the Future

Annex 2: List of individuals consulted

Name	Organisation
Sylvia Harvey	Professor of Broadcasting Policy, University of Lincoln
Nick Davies	Journalist and Author of Flat Earth News
Kevin Marsh	BBC College of Journalism
Ian Hargreaves	Head of Communications at Foreign Office and Former Editor of FT
Jim Giles	Freelance writer based in San Francisco
John Lynch	Head of Science, BBC
Nick Ware	Broadcast Consultant, Wellcome Trust
Clare Kingston	BBC Horizon
Steve Palmer	Senior Health Press Officer, Cancer Research UK
Henry Scowcroft	Cancer Research UK
Prof Martin Bauer	Head of Methodology Institute, LSE
Dr Phillip Campbell	Nature Editor-in-Chief
Ruth Francis	Head of Press, Nature Publishing Group
Geoff Brumfiel	Senior Reporter, Nature
Adam Rutherford	Editor, Nature podcasts
Kerri Smith	Podcast Editor, Nature
Natasha Gilbert	News Reporter, Nature
Richard Van Noorden	Assistant News Editor, Nature
Mark Peplow	Chief News Editor, Nature
Rachel Twinn	Nature Press Officer
Paul Nurse	President, Rockefeller University
Curtis Brainard	Science Editor of Columbia Journalism Review
Vincent Kiernan	Interim Dean for Masters of Professional Studies degree in journalism, Georgetown's School of Continuing Studies
Maggie Fox	Medical Editor Reuters
Rick Borchelt	Communications Director, Pew-funded Genetics and Public Policy Centre at The Johns Hopkins University
Carol Rogers	Former Head of the Office of Communications for the American Association for the Advancement of Science
Curt Suplee	Award-winning science writer
Jeff Nesbitt	Director of the Office of Legislative and Public Affairs at the National Science Foundation (NSF)
Rick Weiss	Veteran Washington Post science reporter, Now a CAP Senior Fellow
Alex Witze	<i>Nature</i> US science writer
Peter Calamai	Canadian SMC
Molly Stoichet	Federal Science Advisory Council
Penny Park	Science producer, Discovery Channel
Allison Sekuler	Neuroscience researcher, McMaster University

Science and the Media: Securing the Future

Tim Lougheed	Canadian Science Writers Association (CSWA) and Ottawa science freelance
Kathryn O'Hara	Professor of Journalism, Carleton University, and President of CSWA
Emily Chung	CBC's online science reporter
Fran O'Brian	BBC Trust
Nick Ware	Independent film maker
Kim Shillinglaw	Commissioning Editor for Science and Natural History, BBC
Steve Connor	Independent Science Correspondent, Science Editor
Jonathan Leake	Sunday Times Science and Environment Editor
Simon Pearson	Night Editor, Times
Adam Wishart	Freelance film maker and author
Richard Horton	Lancet Editor
Colin Macilwaine	Research Research
Christine McGourty	BBC science correspondent
Jeremy Webb	Editor-in-Chief, New Scientist
Sandrine Ceurstemont	Video Editor, New Scientist
Andy Coghlan	Reporter, New Scientist
David Y Cohen	Features Editor, New Scientist
Linda Geddes	Reporter, New Scientist
Dr Michael Le Page	Editor, New Scientist
Dr Roger Highfield	Editor, New Scientist
Sumit Paul-Choudhury	Online Editor, New Scientist
Rowan Hooper	News Editor and Online News Editor, New Scientist
Lucy Vernall	Project Director, Ideas Lab, Birmingham University
Deborah Cohen	Editor, BBC Radio Science
Rami Tzabar	Executive Producer, BBC Radio Science Unit
Roland Pease	Producer, BBC Radio Science
Paula McGrath	Producer, BBC Radio Science
Alexander Feachem	Producer, BBC Radio Science
Erika Wright	Producer, BBC Radio Science
Anna Buckley	Producer, BBC Radio Science
Geraldine Fitzgerald	Producer, BBC Radio Science
Stephen Whittle	Expert adviser to the Council of Europe on media issues
Katrina Nevin-Ridley	Head of Media Relations, The Wellcome Trust
Natasha Loder	Economist Journalist and Chair of ABSW
Barnaby Smith	Press Officer, Centre For Ecology And Hydrology
Natasha Martineau	Head of Communications Research, Imperial College London

Science and the Media: Securing the Future

Experts who have given evidence to the Group's meetings:

Name	Organisation	How involved
Jim Latham	BJTC	Training
Chris Wheal	Training, NUJ	Training
Nigel Hawkes	Straight Statistics, former Science Reporter at the Times	Training
Viv Muthu	Bazian	Training
Connie St Louis	Science Journalism Masters, City University	Training
Andy Garratt	Royal Statistical Society	Training
Andrew Williams	Cardiff Journalism School	Research
Adam Wishart	Freelance documentary Maker	Programming
Rachel Hillman	Broadcast Manager, Wellcome Trust	Programming
Nick Ware	Broadcast Consultant for Wellcome Trust	Programming
John Lynch	Head of Science, BBC	Programming
Gavin McFadyean	Centre for Investigative Journalism, City University	Journalism
Henry Scowcroft	Cancer Research UK	Journalism
Steve Palmer	Senior Press Officer, Cancer Research UK	Journalism
Jim Giles	Freelance writer based in San Francisco	Journalism and Transparency
Alan Rusbridger	Editor, The Guardian	Journalism
David Leigh	Investigative Journalist & Assistant Editor at the Guardian	Transparency

Annex 3: Written submissions to the Group (online)

3a from AlphaGalileo

3b from the Association of British Science Writers

Annex 4: New initiatives in science journalism (online)

Annex 5: Response to Public Consultation (online)

Annex 6: Schemes you should know about (online)

Annex 7: Science Journalism, Skills and Training Research (online)