Session 6a Sciences in the public eye (1)

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Science education, in particular compulsory schooling (up to 16 years of age in the UK), and a range of popular media, including television, newspapers, radio and emerging forms of web-based communication (e.g. blogs, podcasts), are important sources for informing citizens, including scientists, about recent developments in science. These various forms of communication, which citizens are increasingly able to contribute to, or produce themselves ('pro-am' (Leadbetter and Miller, 2004) blogs being the most obvious example of this form of use-generated content), provide a partial, but nevertheless often powerful view of what it means to *do* science and to *be* a practising scientist. In particular, research has consistently shown that extended news media reporting of high-profile episodes of newly published science—information that would not previously have been in the public domain—can have profound and long-lasting impacts in terms of how scientists non-scientists view different areas of science. The mere mention of Dolly the sheep, 'life on Mars?', thalidomide, Chernobyl, BSE and variant CJD, MMR, the human genome sequence, and 'cold fusion' among many others, should be sufficient to illustrate the point. But these types of high-profile front page science stories, and the attendant public debate that they generate (and report), tend to be rare events, and hardly representative of the vast amount of scientific work that is currently being undertaken. How then to some issues become subject to extended public debate in this information saturated era while others remain largely overlooked?

Think again about Dolly for a moment, at first glance a seemingly unremarkable Finn Dorset sheep; formally recorded at the Roslin Institute near Edinburgh (who were working in collaboration with the biotechnology firm PPL Therapautics at the time) as experimental subject 6LL3. It is now over ten years since she was announced to the world following a front page 'exclusive' in the *Observer* newspaper (McKie, 1997). The coverage that followed in a range of mainly news and current affairs media was extensive, often leading the (global) news agenda in the weeks following the initial announcement. But why focus on this cloning experiment and not others? And what influence might this have? For example, do you remember Morag and Megan who were announced to the public by the same research institute in 1996, or Polly the sheep who followed Dolly later in 1997? As scientific experiments all three were significant in their own right, and yet only one was subject to extended public exposure.

Activity 1

Look at the following question and answer session that was produced in 2002 for the Open University/BBC co-production of *Dramatic Science* 'Exploring the morals and ethics of cloning – learning to love the grey': http://www.open2.net/sciencetechnologynature/worldaroundus/dramaticscience_media_cloning_p.html.

What does this short article say about why Dolly the sheep became subject to extended public exposure?

Once, you've considered the discussion of media reporting, you may also find it useful to read the other articles accessible through the links on this page to: psychological, religious and biological perspectives, respectively. Taken together

these articles illustrate some of the scientific, social and ethical issues that made Dolly global news.

Activity 1 illustrates that a number of factors converged to create a climate where a range of stakeholders, including the slightly shocked and no doubt exhausted scientists at the Roslin Institute and PPL Therapeutics, for Dolly soon became a global news event, and politicians such as Bill Clinton, all made statements about (human reproductive) cloning. Whilst such a convergence is not unprecedented, it is unusual when it comes to routine science reporting. In part then, Dolly, became an issue for (global) public debate initially because she was a successful ground-breaking example of scientific endeavour (Wilmut *et al*., 1997), but also because she represented the prospect of human reproductive cloning and this was seen at the time to raise profound social and ethical issues.

But who (if anyone) selects what becomes subject to public debate in this way; why are some scientific issues subject to extended public discussion when others are largely overlooked; and what sources of scientific information are valid, credible and reliable? These appear at first to be deceptively simple questions. The identification of comprehensive answers that might apply across the range of sciences and their attendant social and ethical issues have kept scholars of science employed for many years, however. Focusing on the role of news *media*—the plural is deliberate—this short session commentary therefore seeks to introduce some of these issues, providing preliminary thoughts rather than comprehensive answers, with the aim of stimulating further reflection on the part of the reader in terms of how scientific issues can become subject to debate in the public sphere.

Making science newsworthy

Media professionals, by which I mean journalists (specialists or otherwise, working for local, regional and national media outlets), but also editors, sub-editors, photographers, public relations professionals (including media relations teams working for scientific institutions and academic journals), etc., 'make' science news, whether that be for mainstream news outlets, such as newspapers, television and radio (Allan, 2009; 2002), or for institutional websites (Trench, 2009). By this I mean that media professionals *select* which items are sufficiently newsworthy to report, based on the news value(s) of the story and then *construct* how that news will be *represented*; choosing the headline, use of experts, (moving) images, expert commentary, links to other web-based materials, and so on. As I've argued elsewhere:

> 'In practice, decisions about news values are likely to be based on a combination of media professionals' experience and intuition, and on what they judge will be of interest to the audience, relative to what else is leading the news agenda that day. As general rules, stories with a 'human interest' angle are valued, as are those with controversy, division and secrecy; and short term issues are favoured over longer term ones (Miller, 1999). Of course, the reporting of major scientific advances may also generate news value (ibid.) and even less major ones if it is a 'slow news' day (Holliman, 2000). Moreover, large-scale natural disasters, such as hurricanes, earthquakes and tsunami, or human-induced equivalents, e.g. oil-tanker spills, are all likely to have news value(s) (Allan, 2002).
>
> News values are crucial to the production of a newspaper story because they are likely to define whether an issue is [promoted to a newsroom, then]

reported, as well as which desk covers it, the amount of coverage an issue receives, and what the detailed content might be.'

(Holliman, 2007, p. 277-8)

Three issues are worthy of brief discussion here:

1. News values have the effect of both reflecting and reconstructing what it is to do science, also implicitly illustrating what science is not (by not selecting what is considered to be 'unscientific', or by challenging the credibility of certain issues that seek to be represented as scientific—see Allgaier and Holliman, 2006 for discussion), and what (un)successful science looks like.
2. The consideration of news values in relation to a given scientific issue is not confined to those working in newsrooms; scientists and scientific institutions are now well aware of the instrumental benefits of strategically managing how scientific information is communicated; where, when, how, which media, and so on. As Peters has argued:

   'Besides the intrinsic motivation to share knowledge not only with their fellows but also with a broader public there is much evidence that scientists (and their employers) increasingly acknowledge the instrumental value of publicity.'

   (Peters, 1995, p. 32)

   This is not to say that those working for scientific institutions have complete control over how science is represented in the public sphere; rather that they retain a privileged position, which they actively maintain, often by employing specialist media professionals.
3. Processes of mediation such as these are dependent on the particular constraints and motivations of those involved, also on the requirements of the medium for communication, and how they are applied in different contexts. In other words, what we choose (and these are almost always active, if sometimes limited, choices) to communicate in a popular newspaper article will be different to that of an elite equivalent, or from a patent application, and different still to the lab notes that were sourced to produce the associated academic paper.

It follows that those who are concerned about the 'harder perennial' that is *accuracy* in relation to scientific information should also consider how such information is repeatedly *translated* through various processes of mediation. Inaccuracy, partiality, spin, however, you define these issues, they are down to human interventions in their many and varied forms.

What sources of scientific information are valid, credible and reliable?

The previous section argued that media professionals must learn skills in defining news values. At least as significant to this skill is the need to be able to navigate the wealth of information that is currently available in relation to science, some of which is reactively *received*, some of which is proactively *gathered*. Media professionals do this by filtering this wealth of information, in part by first identifying *reliable* and *credible* sources, often relying on the regular (read weekly) delivery of source material from high-profile peer reviewed academic journals (Wilkie, 1996).

Activity 2

AlphaGalileo: www.alphagalileo.org; **EurekaAlert!:** www.eurekalert.org

These two websites represent the two foremost online news centres/hubs, connecting research institutions, government agencies, journals, news media,

journalists, individual researchers, and the public. They also provide a service to media professionals, hosting (previously) embargoed press releases from a range of scientific institutions and organizations.

Visit these two sites and access some of the press releases that have been archived therein. Perhaps you can locate issues relevant to the scientific discipline that you're currently working in.

Note the structure and format of the press releases. Can you locate one or more of the newspaper articles that these press releases generated? How (dis)similar are the press releases when compared to the articles?

These forms of heavily mediated promotional materials allow the suppliers—e.g., scientists and scientific institutions and academic journals—to have some influence over which issues generate media coverage (therefore also which do not) and how they are reported. And this situation works for newsroom professionals who receive a regular supply of reliable and credible source material that is likely to assist them in fulfilling the 24/7 breaking news agenda as well as regular features. The potential downside, however, is that media professionals become reliant on a select number of high-profile news sources, who provide heavily mediated information, therefore overlooking other sources of news and alternative accounts (Nelkin, 1995). As one UK-based science journalist has noted:

> 'America has armies of science writers working at universities, competent people who have confidence in the subject and they basically write science stories, they don't write press releases, they write their own version of the story, with all the facts and figures and everything in there, so we just re-write it a lot of the time … It's fantastic, but I do feel I'm being slightly hyped sometimes by the press releases, you know, they're so nicely done, the presentation is so good you just think, well that's an easy story to write about and therefore we're being slightly led by the nose I think, and there's a danger in that.'
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> (Interview with science journalist, 19 January 1999, quoted in Holliman, 2000).

Activity 3

Now read the following newspaper articles.

The first was written by David Whitehouse, a former science journalist:

'Science reporting's dark secret,' *The Independent: Media Weekly*, (2007, July 23), available at: http://www.independent.co.uk/news/media/science-reportings-dark-secret-458300.html.

The second was written by the eminent biologist Professor Steven Rose:

'Stop pandering to the experts', Guardian (2004, April 1) http://education.guardian.co.uk/higher/research/story/0,,1183020,00.html.

As you read these two articles, consider whether you feel that science needs a more critical press as Rose suggests, one less reliant on the types of promotional material discussed by Whitehouse.

Final thoughts

This session commentary has briefly examined how certain scientific issues become subject to extended public debate while vast areas of scientific endeavour remain largely untouched. In so doing, it has focused on news media accounts as one important source of publicly accessible science. It has considered judgements of news value, noting that values, whether news or otherwise, are not always consistently applied, whilst illustrating the reliance on a number of reliable and credible sources for science news. Of course, it is worth noting that there are alternative routes to communicating science and/or generating science news events, the most obvious—some would say also the most controversial—is direct action (e.g., see Booth, 2006), but other strategies, e.g. open letters and the like, can also have the occasional day in the spotlight.

As a final thought it is worth considering the changing nature of audiencehood. Audiences for sciences—again, deliberate plurals—are now potentially global, whilst being unevenly distributed in terms of access to networked technologies. They are certainly international, influencing, in part, editorial decisions over which stories might be covered. In part, these changes have been driven by emerging forms of science communication that facilitate more dynamic, interactive and participatory forms of exchange. Given that traditional forms of science communication still exist, and in some cases continue to thrive, this results in a landscape for science communication that is more complex and extended, but only sometimes participatory; audiences who choose to communicate can now be *viewers*, *viewsers* and *users* (see Bennett, 2009). Those considering how to communicate science(s) with publics should be aware that this diversity in audiences and media forms requires much more of them than just accuracy of information.

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Wilmut, I., Schnieke, A., McWhir, J., Kind, A. and Campbell K. (1997). Viable offspring derived from fetal and adult mammalian cells. *Nature*, **385**, pp. 810-813.

Further reading

Bauer, M. and Bucchi, M. (eds.) (2007). *Journalism, science and society: Science communication between news and public relations*. (London: Routledge).

This collection includes contributions from media professionals, both in science reporting and in science public relations, and from media analysts. Some journalists tell of their difficulties in telling certain kinds of science stories; they and several of the academic contributors reflect on the source dependence of science reporting and on the historical shift in the balance between journalism and public relations.

Holliman, R. (2005). Communicating science in the 'digital age': opportunities for dialogue, engagement and deliberation. Produced for the BBC Radio 4 *Material World*/Open University *Science in context* collaboration; available online at: http://www.open2.net/materialworld/communicate_science.html.

This short article was produced as part of a collaboration between the BBC Radio 4 science programme *Material World* and the Open University's *Science in context* course team. The article briefly considers the current context for science communication from three perspectives: the role of new technologies; the influence of de-regulation; and the legacy of high-profile science-based issues.

Nelkin, D. (1995). *Selling science: How the press covers science and technology*. (New York: W.H. Freeman). (Second revised edition.)

First published over twenty years ago, this generative text remains one of the most perceptive discussions, from a critical sociological perspective, of journalistic practices and media roles in the public communication of science and science-based social controversies.