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SCIENCE JOURNALISM AND DIGITAL STORYTELLING

Telling science stories in an evolving digital media ecosystem: from communication to conversation and confrontation

Richard Holliman

ABSTRACT: The globalised digital media ecosystem can be characterised as both dynamic and disruptive. Developments in digital technologies relate closely to emerging social practices. In turn these are influencing, and are influenced by, the political economy of professional media and user-generated content, and the introduction of political and institutional governance and policies. Together this wider context provides opportunities and challenges for science communication practitioners and researchers.
The globalised digital media ecosystem allows for, but does not guarantee, that a wider range of range of contributors can participate in storytelling about the sciences. At the same time, new tools are emerging that facilitate novel ways of representing digital data. As a result, researchers are reconceptualising ideas about the relationship between practices of production, content and consumption. In this paper I briefly explore whether storytelling about the sciences is becoming more distributed and participatory, shifting from communication to conversation and confrontation.

Introduction: from scarcity to abundance

"Print is dead. Long live the digital!" It is easy to be sucked in by such a simplistic analysis and embrace the hyperbole that often surrounds developments mediated through the Internet and the World Wide Web.[1] And yet significant changes are afoot with interesting implications for digital storytelling for the sciences[2] as science communication researchers explore a:

> *"…21st century media environment which is to an unprecedented degree networked, globalized and participatory."*[3]

Those companies producing news for print distribution and online circulation—we used to call them newspapers—are adapting their strategic and operational practices to meet the demands of what is a dynamic and disruptive context for news production, representation and consumption. Within this wider context it is clear that media industries are being affected in profound ways, and as McNair[3] notes to an unprecedented degree, by the increasingly globalised patterns of consumers of, and contributors to, news. In part, media industries have driven these changes through innovations in how media professionals — including editors and journalists, but also increasingly web developers, graphic designers and those with skills in 'data mining'[4] — produce, represent and offer readers opportunities to interact with news. News outlets have also responded to wider developments in the digitally-mediated public sphere, in particular to the small number of digital tools, technologies and platforms that emerge, become fashionable, and then retain users and sustain popularity. Think social media and social networking involving international audiences, for example, and how they shift ideas about communication to a more participatory context where conversation, interaction, participation and user-generated contributions can flourish.

But not everything is changing. Many of the norms, forms and conventions that shape and frame the practices of media professionals are staying largely the same. New forms are being introduced while

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established forms are retained. In effect, emerging digital commodities have not replaced existing print media products, at least not yet. And despite some revisions to formats, size and the introduction of colour, print media products are largely the same.[5] Forms of digital news are therefore complementing their print cousins for the time being. How long this can be sustained in what is a steadily declining print newspaper marketplace, however, remains to be seen. It follows that where once the media marketplace could be described as one of 'scarcity', involving a relatively small number of print and broadcast media outlets producing news mainly for a national, regional or local audiences, we have moved to a globalised, digitally-mediated public sphere that can be characterised by the 'abundance' of platforms, media, tools, technologies and genres, allied with certain opportunities for at least some readers to become contributors.[6] This enmeshing of the 'social' and the 'technological' through digital media, tools, technologies and assembled networked communities provides interesting opportunities for science communication researchers to explore how the sciences continue to be communicated, but are also sometimes discussed and shared with opportunities for collaboration, contributions and also confrontation.[7]

Changes in how readers choose to consume news have also influenced the political economy of media, particularly in the commercial sector, and these processes are ongoing. Commercial media industries are actively seeking out and experimenting with new forms and services in an attempt to generate sustainable revenue streams from novel digital forms. Crucially, if they are seen to work, other news providers will follow suit. In some instances these subscription services deliver what is, essentially, the same content that is freely available over the web, but delivered more efficiently to the individual reader. Think of an electronic edition of a 'newspaper' delivered to the e-reader of your choice anywhere in the world as long as you are within range of a suitable network connection. In other cases, digital forms afford new functionality requiring different types of expertise in the newsroom, e.g. introducing professional moderators to check online forums, working to codes of conduct developed to ensure compliance with legislation. In this sense, it is somewhat ironic that social media discussions about important socio-scientific issues, such as climate science, can often be characterised as both ideologically-driven, but also confrontational.[7,8] In effect, "social" media has the potential to be intensely "anti-social".

At the same time newsrooms are striving for greater efficiencies and more strategic approaches to the deployment of staff and resources. At a basic level, media professionals are increasingly being required to multi-task, and to develop additional skills and competencies, e.g. in sourcing, filtering, analysing and responding to digital data, but also in producing additional forms, such as blogs, podcasts and tweets. In other developments news outlets have experimented with greater levels of planned content, allowing greater numbers of editorial staff to be deployed strategically to cover breaking news, but only when it is required.[9] Of course, the need to cut costs can also impact on the organisation of the newsroom in terms of the number of specialist science journalists as opposed to general reporters, and the use of casual staff in the form of freelancers.[10]

These changes can also have significant implications for how stories are sourced with concerns being raised about the levels of investigative journalism[11] and an over-reliance on the use of information subsidies, the latter being a perennial concern for science reporting.[12] However, there are more digitally-influenced and distributed approaches to the selection of stories for representation in the digitally-mediated public sphere. These are evidenced by user contributions: in the form of images of natural phenomena to produce online galleries (e.g. meteor showers); through contributions from readers via social media, including the routine tracking of social media by journalists as a source of news to sometimes complement and occasionally challenge wire services; debates in online forums[7]; and in newsroom staff monitoring and tracking data about stories in real time to give priority to stories that interest readers; and making assessments related to search engine optimisation of headlines and stand firsts. They are also illustrated by a recent and ongoing experiment where *The Guardian* is publishing parts of its newslist online, inviting readers to make suggestions through social media platforms that are monitored by journalists covering these stories.[13] It follows that science stories and storytelling can increasingly be influenced by contributions from beyond the newsroom.[14] However, it is also important to note that these changes do not equate to the democratisation of news; far from it. Professional news organisations still retain a very privileged place in framing and shaping the news agenda.

Information literacy for the sciences: re-skilling producers and audiences

At the same time as changes are taking place in the news media marketplace, the ways that scientific knowledge is produced, distributed, shared, archived and retrieved is also changing as digital forms become ever more ubiquitous.[1,15] These digital forms can also afford audiences and users greater opportunities on occasion to respond, participate and contribute to the sciences, e.g. through data collection and analysis as part of citizen science initiatives, and via online debates and consultations about scientific developments. What then of the skills and competencies that are required by scientists and citizens (and journalists for that matter) to make sense of this deluge of scientific data, information and knowledge?[16]

Let us assume we can agree that access to reliable and credible scientific knowledge, allied with the skills and competencies to assess, analyse and respond to it, powers all forms of scholarship in the sciences, be that learning, teaching or research. Furthermore, let us also assume that we can agree that these skills and competencies are also significant for citizens, user communities and other stakeholders who wish to engage with scientists and aspects of scientific knowledge. If we can agree on these two premises then it follows that to lack access to knowledge, and the skills to source and use it, is to lack access to learning and to be disenfranchised from debates in the public sphere. This has important implications for those keen to promote ideas about public engagement with the sciences. Of course, this also has significance for related arguments about social justice and democracy in relation to the sciences.

The increasing popularity of digital tools has important implications for digital storytelling in the sciences as we move into an era where ideas about open scholarship[17] and the social relevance of scientific research gain prominence. As science communication teachers, trainers and researchers we can contribute to the development of a coherent strategy for supporting scientists and citizens in how they engage in digital spaces by developing curricula and training that support information literacy skills as core competencies.[18] We need to move beyond simply training scientists and citizens to produce digital assets to think in more detail about the strategies for engaging via digital media, tools and technologies.[16,19,20] These strategies and the skills and competencies we associate with them need to be linked to flexible and adaptable approaches to teaching and training, not least because of the fast pace of change in this area. Indeed, the proliferation of digital forms of knowledge requires new skills (and continued re-skilling) in sourcing, managing and responding to flows of scientific information; in other words, there is a need to develop systematic approaches to teaching information literacy for scientists and other citizens. As science communication teachers, trainers and researchers we need to facilitate strategies where scientists and citizens can engage with the development of digital stories about the sciences, how they are represented in the digitally-mediated public sphere, and how audiences consume and respond to them.

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Notes and references

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