

The Opportunities and Risks of Social Media in Science Communication

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In the space of a few years, the internet has radically altered our media consumption. The average internet usage in Germany increased from 17 minutes per week in 2000 to 111 minutes per week in 2014, making the internet the third most popular media type after television and radio. Every day the internet is used for twice as long as print media. Among 14–19 year olds, who use the internet for an average of 233 minutes per day, the internet is the medium of choice, well ahead of all other media.² Social media accounts for a significant proportion of internet use: 24% of 14–19 year olds spend over two hours a day on Twitter, Facebook, etc.; another 28% spend over an hour.³ Social media have also brought about major changes in our usage behavior – we are no longer merely recipients and consumers of information but have become active users and even creators.

Science communication has also changed as a result of these developments. According to a recent study,⁴ 45% of Germans use the internet as a source of information on scientific issues; among the under-30s, this figure is currently at 68%. Statistics from the USA and UK suggest that these percentages are likely to rise sharply in the coming years and that the internet is increasingly replacing classical media as a source of information.⁵

What are the implications of these changes for one of the main players in science communication, namely the scientists themselves? In the following pages, we will explore this and related questions, including how scientists' communication with the public has changed as a result of social media, and the opportunities and risks involved.

2 What Sort of Science Communication are We Talking About?

There are many views on what science communication is and what it is not, and many definitions have been at-

tempted. Thus it seems sensible to start by explaining the concept of science communication on which this article is based. We view the term as covering the communication of all academic disciplines – not only the natural sciences but also the arts, humanities and social sciences. It can apply both to communication within the scientific community and to external communication outside professional circles. Owing to the large number of participants, objectives and formats, we think it is inappropriate to over-specify the term. We have therefore adopted the broadly worded definition of Schäfer, Kristiansen and Bonfadelli, who define science communication as “all forms of communication focused on scientific knowledge or scientific work, both within and outside institutionalized science, including the production, content, use and effects of such communication”.⁶ In this article, however, we will focus exclusively on external communication. Specifically, we will consider the opportunities that social media offer to scientists themselves rather than to other science communicators such as press officers or science journalists.

3 “Classical” Science Communication

To understand what the rise of the internet and social media implies for science communication in the present and the future, let us first cast a glance backwards. In Germany, the move towards direct communication between science and the public was triggered by the PUSH (Public Understanding of Science and Humanities) memorandum signed by the major German scientific organizations in 1999. The aim was to open up the “ivory tower” through activities such as the “Long Night of the Sciences” and Children’s Universities and give the general public an opportunity to experience science and research first hand. The mass media with their unrivaled reach among broad sections of the population naturally played a fundamental part in this process. The tasks assigned to the various players were clearly defined: Communication and press office staff in scientific institutions were responsible for media communication, press releases and organizing events and exhibitions; scientists supplied the findings and took part in official events such

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²<http://www.ard-zdf-onlinestudie.de/?id=483>

³http://www.bitkom.org/files/documents/SozialeNetzwerke_2013.pdf

⁴Hacker/Köcher (eds.) (2015): *Die Synthetische Biologie in der öffentlichen Meinungsbildung*; http://www.leopoldina.org/uploads/tx_leopublication/2015_Synthetische_Biologie_DE.pdf

⁵It is of course important to remember that much of the material on the internet and in social media is derived from classical media.

⁶Mike S. Schäfer, Silje Kristiansen, Heinz Bonfadelli (2015): *Wissenschaftskommunikation im Wandel*, p.13. Herbert von Haller Verlag.

as the “long nights”; journalists translated scientific results into a language accessible to the general public and explained their significance; and the public obtained information about science from events and mass media.

4 The Emergence of Social Media: The System Changes

With increasing digitalization and the emergence of social media, this classical division of roles began to change fundamentally.⁷ One of the key factors in comparison with classical media is the low entry barrier to social media: everyone can get involved, everyone can write content, post, “like”, share and comment. Social media channels are usually easy to use and inexpensive. This means that, unlike classical media, any individual or company can generate multimedia content quickly and without assistance. The distinction between media creators and consumers is removed.

The democratic nature of social media enlarges the scope of action for science and science communication. Its multimedia nature enables scientific material to be presented interactively in a variety of ways⁸ – including videos, games and pictures – and hence to reach new target groups and interact with new audiences. The changed media habits of the younger generation also mean that this group is now difficult to reach through classical media. Furthermore, social media makes interactive and participative methods that were formerly confined to relatively small groups of people easier to apply.

Institutional science communicators (press spokespeople) and journalists naturally also use social media for their own ends, both for marketing purposes and research for their own purposes, both for marketing and to research stories. But while these professional groups once held the main responsibility for science communication, digital media now enables scientists to communicate and to enter into direct contact with the public themselves. In communication matters, scientists have thus become more independent of institutions, press offices and journalists.

5 Opportunities and Risks for Scientists

There is no longer any question whether scientists should communicate with the public – they must! Building trust, performing your democratic duty by justifying tax revenue spent on public research and the need to recruit a new generation of specialists are just some of the arguments that

demonstrate the need for science communication. However, these considerations apply more to the scientific system than to the individual scientist. As we shall show, there are also good reasons for individuals to talk about their research with the help of social media – provided that they also consider the risks.

Through social media, scientists can provide information about their research directly, without needing to convince a journalist or press officer of the importance of their news first.⁹ This enables them to forestall possible errors or misunderstandings in reports written by others, and to correct any such errors themselves through their own channels. Scientists with a wide communication range can sometimes exercise a direct influence on political and social debates; indeed, they may even be able to introduce issues of their own into this debate. Provided that it is conducted with professionalism, regular long-term communication enhances the visibility, reputation and credibility of researchers in the eyes of the public. This may in turn affect future financial support and career opportunities.¹⁰ For example, direct interaction with blog readers or Twitter followers can lead to interesting professional discussions and thus help improve one’s work. Last but not least, researchers may publicize their work via social media because they enjoy the variety that communication and dialogue bring to their daily routine

In spite of these benefits, there are concerns and obstacles to social media use. Blogs in particular are time-consuming to maintain:¹¹ authors must not only write posts, but also respond to readers’ comments. Taking a public stand on controversial issues may lay scientists open to attack, personally and as a scientist, from opponents of their views. This, too, is time-consuming and sometimes calls for a thick skin. In addition, scientists may receive criticism rather than support for their communication activities from colleagues, university management or even their own group leader or supervisor. This attitude may be based on anxiety about loss of control or fear that time spent blogging or tweeting is time that is not being spent on research. Because of the potential for opposition from those around them, scientists should not expect communication with the public to yield quick and easy benefits. It is a long and tedious process, but one that can certainly bring long-term gains.

6 What Does the Emergence of Social Media Mean for Science Communication?

Social media allows scientists to communicate their work directly with the public. This brings with it an increased

⁷Of course there were also other influences that changed the system of science communication. For example, the trend towards greater participation in society encourages the use of social media but also the use of other dialogue-focused formats.

⁸See also Neuberger (2014): *Social Media in der Wissenschaftsöffentlichkeit. Forschungsstand und Empfehlungen*; in Weingart/Schulz (eds.): *Wissen – Nachricht – Sensation*. Velsbrück Wissenschaft.

⁹For a brief overview of social media tools see <http://backreaction.blogspot.de/2015/06/social-media-for-scientists.html?m=1>

¹⁰For evidence that tweeting can enhance one’s scientific career, see e.g. Liang *et al.* (2014) *Building Buzz: (Scientists) Communicating Science in New Media; Journalism & Mass Communication Quarterly*; published online 12 September 2014.

¹¹Könneker (2012): *Wie viel Zeit das Bloggen kostet (Scilogs-Studie Teil 2)*; in: Scilogs: Gute Stube; <http://www.scilogs.de/gute-stube/zeit/>

responsibility when communicating about serious and socially relevant issues. With the emergence of blogs, Facebook and Twitter, journalists and science communicators have lost their gatekeeper function. They no longer control exclusively which topics are publicized and which are not. Instead, scientists hold the responsibility for choosing both “what” to communicate and how to communicate it. This responsibility now lies with the scientists themselves: They communicate the material they produce themselves. The neutral position of journalists as assessors and classifiers has disappeared.

This sounds more dramatic than it is at present because social media predominantly reaches a younger audience. Despite the fact that blogs and YouTube are attracting ever more users, television, radio and print still lead the way at present in terms of the information sources used by the population as a whole. It is true that scientific subjects are losing ground in the classical media and that the overall quality of reporting is declining, but it still has some advantages. Its linear nature ensures that people whose work or lifestyle does not bring them into contact with science are more likely to encounter these subjects there, even if only in passing, than via the selective and personalized form of media consumption that is the internet.

7 Conclusion

Social media is an established part of our media landscape. It is therefore no longer a question of whether science should communicate via these channels – it is essential that it does so. There are many ways of doing this, offering many opportunities and very real benefits. But expectations should not be raised unduly. Social media is an important tool for science communication and broadens the spectrum of channels and formats. However, it has not replaced the classical media (yet?). To ensure that scientific issues reach the largest and widest audience possible, a diversified spectrum of media must be used by a variety of players. The potential for cross-media linking is far from being fully exploited and provides plenty of scope for improvement.

For scientists themselves, social media unlocks fascinating new opportunities for direct communication with the public. Direct feedback and unfiltered discussion are time-consuming, but at the same time, they represent a real opportunity for everyone involved. With these new and varied opportunities come increased responsibility for individuals: the responsibility to be truthful and credible, both online and offline.