

Comment

SCIENCE JOURNALISM AND DIGITAL STORYTELLING

Science journalism and fact checking

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ABSTRACT: At first glance it all seems so easy – scientists create new knowledge, and through their work they show which statements about the world are true and which are false. Science journalists pass these new discoveries on so that as many people as possible can learn about them and understand them. Prior to publication, it is the job of "fact checkers" to examine the journalists' texts to ensure that all the facts are correctly represented. In reality, however, the relationship between the actors is by far more complicated. Using my experience as fact checker of scientific texts for the news magazine "DER SPIEGEL", I would like to comment in this essay on where I see the main problems of fact checking in scientific journalism to be, and on the changes that have come about through the use of the Internet and the availability of smartphones and tablet computers.

1. Science and science journalism

The obvious objective of science journalism is to convey the results of scientific research to the general public. This includes presenting the results in such a way that they can be understood even by a non-scientist, and to classify them in such a way that their meaning in a scientific debate becomes evident to society and each individual. Science journalism also has a host of other functions – in a debate, for example, it conveys which research work a society supports on the basis of ethical, economic or other reasons and where it would like to draw boundaries; research conducted into embryonic stem cells and manned space travel are some of the well-known examples here. Apart from that, science journalism has a considerable influence on the public's image of the scientist's personality and of the essence of his work. To keep it simple, I would like to restrict this discussion to the problems of fact checking in science journalism in the area of conveyance of scientific knowledge; this is where these problems are most obvious.

The first obstacle a science journalist faces in his work is that of understanding. In most cases, the details of original scientific work are only really fully understood by researchers working in the same field. Luckily, a science journalist does not have to be able to follow every technical detail presented in a paper. If he would like to explain the subject matter to others, he would, however, at least have to have some notion of the problem the scientific work is addressing – and he would have to understand how the researcher is trying to solve the problem and what the result and its implications are.

In addition, a science journalist also needs to have a rough overview of the research area of the subject matter of a scientific publication, so as to be able to do justice to his filter function: he must be in a position to decide whether a particular research result deserves the attention of the general public. And this attention is limited; the science sections of newspapers and magazines usually only include a few pages and hardly any media consumer is willing to spend several hours dealing with research reports. This means that a science journalist has to be in a position to assess the relevance of a research result – not only within the corresponding field of science but also as to its significance for the general public. It is specifically with regard to the latter where several factors naturally play a role: the result of a medical research study can be of direct importance to many people because they suffer from the relevant illness; the result of a basic research study on the other hand may simply evoke amazement, and arouse interest for that reason alone (it is not without good reason that there are relatively frequent headlines about the origin of the universe).

Should the journalist decide to write an article, he ultimately has to be in a position to present and classify the research results in such a way that they can be understood by the public at large, and he has to do so without simplifying or distorting them too much. In the fight for the media public's attention, it is also important that an article not only presents the scientific facts correctly but also arouses curiosity and makes for an exciting read.

2. Fact checking: Plausibility and trust

In its basic form, fact checking is something that accompanies any journalistic work. This is not only because journalism – as the term in itself implies – has to inform the public and this only works if the facts are correct: Even a tabloid will make sure that Kate Middleton's name is spelt correctly so as not to discredit itself in the eyes of its readers. If errors regularly occur in a publication, its reputation suffers in the long run and thus potentially also its circulation; in some cases this can even result in claims which threaten the very existence of the publication. Fact checking is thus not merely a luxury but rather of essential significance for quality journalism. This is why large publishing houses such as DER SPIEGEL use the services of professional fact checkers.

In many cases, the fact checker's work may start even before the author has delivered his article. In a publishing house such as DER SPIEGEL there are numerous documentation journalists, each with their own specialised field. Here, these journalists also act as in-house experts who already assist during the creation of a text. Their background knowledge and the information gleaned from the author's research – for example during discussions with the scientists involved – often complement each other to create a more multifaceted and complete image.

Nevertheless, the actual fact checking only really starts after the article has been written. At DER SPIEGEL the text gushes out of the printer, the fact checker grabs the pile of papers, quickly takes out his pen and starts marking – word for word: correct, plausible, wrong...

Apart from the fact that this process requires a pedantic personality and – especially under time pressure – a high level of concentration, the question immediately arises: How does the fact checker actually know what is correct and what is wrong? After all, he would normally not have his own laboratory in which to duplicate the research results by way of an experiment and so verify their accuracy. Luckily, this is not his job; this takes place directly in the scientific communities – insofar as their mechanisms work. In the end, the fact checker only examines whether two statements correspond in terms of content: those in the article he has to examine and the relevant statements in the sources.

This clearly only makes sense if the sources are reliable. One of the most important duties of a fact checker is therefore to identify those sources where there is reason to assume that he can trust them. The reasons for such trust can vary considerably, but they are usually based on reputation and experience; publications in renowned magazines which form part of the peer-review process, such as "Science" or "nature", enjoy a tremendous trust advantage – even though these magazines are not immune to scientific fraud either. The fact checker could also consult a blog if he is familiar with the author and content and considers both to be reliable. The most important principle in all cases, however, is to retrace a news item right back to its original source. Even a press release by a university – generally not a bad source – can distort the content of a study (quite apart from typing errors and other banal sources of errors). For publications by news agencies, newspapers or magazines there is usually a considerable degree of simplification and interpretation; not only that, the danger of transmission errors is usually too great to use these as a basis for one's own deductions. Just like Wikipedia entries, such representations do help to gain a picture of the overall subject; however, for a fact checker they cannot serve as evidence. In addition, the search for the primary source not only helps to avoid "Chinese Whispers", but also to assess the credibility of a news item – caution is well advised if, for example, it becomes evident that an announcement is only based on a statement given by a scientist, but the associated study has not yet been published (and therefore has also not been subjected to the examination mechanisms of the academic community).

Luckily, reverting to primary sources is often quite easy in science journalism – we do not need WikiLeaks to find a preprint! In the Internet-era, scientists' original works are often just a few clicks away. Even with the paper in front of him, the fact checker is nevertheless faced with the same problem as the science journalist: He has to be able to classify and understand it – and he has to assess whether the result and further allegations regarding its importance are plausible.

"Plausibility" is naturally not a fixed criterion; here the fact finder's experience and assessment skills play a big role. A feeling of what is and what is not plausible is, however, indispensable – not least because this gives him an indication as to where to continue digging to look for additional sources. Ultimately, in the real world, fact finding has not been afforded a great deal of time. Here, one has to set priorities and have a notion as to where to spend time. To give an easy example: The fact that Mount Everest is the highest mountain in the world does not need to be checked three times – it is quite unlikely that an even higher mountain has been discovered in recent times (and if it had, one would certainly have heard about such a sensation in one of many news items); however, checking in a 20-year old lexicon is not enough to provide information on its height as it is quite possible that measurements have recently been carried out with deviating results (actually, different altitude data are currently making the rounds: 8848 and 8844 metres!).

The Mount Everest example leads us to another problem in fact checking. Even if, in the public's perception, scientists are the people "in the know", and even if scientific work seems to concentrate on facts, scientific work de facto usually merely provides indications: The new medicine could help to prevent being infected by HIV – but how many studies are still required in order to clarify this in more detail? Neutrinos may travel faster than light – but this may have only been a measurement or calculation error. Quite often, science does not deliver the clear statements that both the journalists and public would like to hear.

The more complex the subject is, the more obvious this becomes. The best known example here is climate change. Here there are no clearly defined laboratory values with a few basic measurement results. Here legions of scientists collect data which unavoidably remain incomplete; here, on the basis of various assumptions, they draw conclusions which will always merely represent certain probabilities; here, they do not only feel compelled to provide simplifications (such as the two-degree-objective) but are also subject to severe pressure based on the immense importance of this issue for politics, commerce and society; here, they disagree on numerous details. In a case like this, even a fact checker has no recourse to a publication that includes all the facts; in this instance, it is simply not enough to check if the science journalist has copied all the figures correctly. For such a complex subject, it is obvious that fact checkers not only check "facts" in the strictest sense of the word, but also interpretations. Even if fact checkers cannot define an editorial guideline (which is no more their job as is carrying out experiments), they somehow seem to collaborate as they have to assess which interpretations, which representations are still covered – and which are no longer covered – by facts. This often results in longer and sometimes heated discussions between the fact checker and the author.

3. Fact Checking and telling a story

I have just touched on the subject: Conflicts between the fact checker and the author are unavoidable. In addition to discussions as to which interpretations, simplifications and classifications are still tenable, there is a further classic area of conflict. It originates from the efforts of the science journalist to write an exciting story that is both understandable and interesting to those people who do not have a scientific background and/or a particular interest in science.

Especially in magazines such as DER SPIEGEL, where science articles are often several pages long and do not only relate to the transmission of dry facts, the authors use classic techniques of story-telling: They embed the scientific content in a story about people and try to give the text a clear message. Ideally, they love a protagonist who has a goal, who is confronted with opposition but overcomes this opposition and finally reaches his objective: Einstein – the genius of the century; Craig Venter – the man who repeatedly revolutionises genetic research; XY who has discovered a medicine to combat cancer; YZ who throws the very foundations of physics overboard.

Based on what has been said so far, it should be quite clear that this approach unavoidably leads to conflict between the fact checker and the author. Today, scientific research is virtually always carried out by work groups that often include several hundred members; to identify one genius among them who can be credited with the overall success no longer does justice to the historical facts in these cases. And, if a scientific work only provides the first indications or sheds more light on an additional detail of a generally known connection, a serious journalist cannot – even with the best intentions – report a sensation. This is where the diverse tasks and ideals of the fact checker and the author clash: While the author wants to report an important breakthrough, the fact checker would prefer to write that no specific details are known; while the author would like to announce a new scientific genius or at least give the whole credit to "German researchers", the fact checker would prefer to only talk of an "international

team of researchers". In these cases, the result is a matter of negotiation – and these negotiations ideally lead to a final text that comes close to the facts but is still exciting and understandable. This proves that fact checking can be more than an inflexible "correcting" of numbers and spelling, but rather that it is an integral part of the editorial work on a text which conveys complex information in an exciting and understandable way: a high-quality piece of journalism.

4. "Crowd checking" and multi-media content

To our knowledge, DER SPIEGEL has the largest fact-checking department in the world. For more than 50 years a team of currently 70 documentation journalists, each with a specialised field of expertise, ensures that the articles of this weekly magazine go to print as error-free as possible. Over the years, work processes that clearly regulate a lot of detail, helping to avoid careless mistakes, concurrence problems and the like, have been created. This includes a clearly defined text "flow" leading through the publishing company from the author via the departmental manager to the documentation and final edit. Hereby it is always clear what status the text has at what point in time and who can or is allowed to make any changes; this includes marking each individual word in the documentation which helps to prevent errors being "overlooked" and to recognise errors adjacent to each other.

Electronic data processing and the Internet have made the work of a fast checker much easier. Instead of looking for evidence by paging through endless files full of little notes, most information can now be verified by a quick search in databases or on the Internet.

As is so often the case, this also has a downside: All the information on the Internet – and today that is a lot when it comes to science journalism – is not only available to the fact checker but to everybody who has a computer with an Internet connection. For a magazine like DER SPIEGEL with a weekly readership of over six million, it cannot be avoided that "the masses" start checking the facts for themselves – the so-called "crowd checking". The hunt for plagiarised theses by prominent persons has recently made this quite a popular pastime in Germany. Therefore, the general availability of information via the Internet puts increased pressure on the fact checker not to make any mistakes; he can now no longer really rely on irregularities going unnoticed.

Problems of a completely different nature arise through publications on the Internet and issues for iOS and Android devices. SPIEGEL ONLINE, the most successful German news site, has a completely independent editorial staff. Every day, the editors of SPIEGEL ONLINE publish a large number of articles on the Internet; in peak times, the home page changes virtually every minute. To verify all of SPIEGEL ONLINE's texts to the same extent as texts for the printed products of DER SPIEGEL publishing house would not be possible – even with an enormous fact-checking team. In many cases checking the key data (spelling of a name, figures, and geographical information) has to suffice here, and the processes are not as stringent as those of DER SPIEGEL magazine – which allows a more flexible manner of work but also provides loopholes for errors to creep into the process. Nevertheless, in contrast to print products it is still possible to correct texts even after publication, should "crowd checking" kick in. This often happens at SPIEGEL ONLINE – with a reference that previous versions of the text contained errors.

For their part, the issues on iOS and Android devices are enriched with multi-media content – slide shows, animated and inter-active graphics, and videos. Animated explanatory graphics are particularly popular in science. Naturally, these "expansions" to the printed magazine should also not contain any errors. The organisational and practical problems that arise are, however, anything but solved. The processes of the print product, which have been in place for decades, do not apply to animated graphics and videos and even if errors are evident, it is often not easy to remove them. Reporters for example usually bring their video material directly from their research trip. By the time blatant errors become evident with regard to statements by the interview partner or the reporter on location in front of the camera, the reporters are already back home – and the only thing left for them do is to live with the error or to do without the material altogether. Particularly in this area there is still a lot that has to be done over the next few years to guarantee journalistic work of a high quality on the Internet and transcending media boundaries.

Author

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