

Vol. 8, Issue 2, October 2018

Journal of Unsolved Questions



About Patients and Doctors
Interview with Dr. Wimmer

Communicating Science
How Can We Best Use Social Media



Research or Mere Self-Expression?
Some Thoughts About Science on Social Media

Sensationalizing Science in Media

SCIENCE IN MEDIA

Table of Contents

Preface

Editorial Note	I
----------------	---

Opinions

Some Thoughts About Science on Social Media	1
Sensationalizing Science in Media	3
Communicating Science	5

Interviews

About Patients and Doctors	7
----------------------------	---

Views on Life, the Universe, and Everything

Questions of the Week	9
-----------------------	---

Preface

Editorial Note

Dear Reader,

Quite recently, I met PhD students from humanities who frequently post images and news about their research on social media platforms. As a chemist, I was astounded by the idea that anyone could possibly be interested in any pictures of my synthetic or analytic setup in the lab, let alone about myself – even if I was allowed to show anything before publication in a conventional paper or patent.

Apparently, communication of scientific and research topics in social media, tabloids etc is a thing of our time. But what pictures does science draw of itself on social media platforms like Twitter and Instagram? Read more about it in our essay on page 1.

With the ability to gather and publish information very quickly also the possibility of losing facts along the way, even the addition of false facts to attract more attention is likely to happen. Our editor Mariia makes us aware of how fake news and sensationalism in science have changed over time on page 3.

Indeed, science constantly must work on its public image to gain public trust. Could social media platforms be

of help here? Dr. Eileen Parkes has some advices in her comment on page 5.

Communication is not only a subject of publishing and tweeting. Of course, it happens between trained professionals and laymen too. Very often scientists struggle to talk about their subjects in easily understandable terms. Dr Johannes Wimmer is giving us some insights into patient communication and self-diagnosis via “Dr. Google” in his interview on page 7.

The pressure to be active on platforms like Twitter and Facebook did leave its mark on our work, too. We got inspired to conduct a little poll for one of our Questions of the Week. Be part of it and participate on Facebook (<https://survey.app.do/the-spaghetti-turn>) and on our website (<http://junq.info/?p=3550>).

However, it doesn’t matter whether you use social media or conventional media. Stay curious and dig through the JUnQ to find the hidden treasures!

— Tatjana Daenzer

Opinions

Some Thoughts About Science on Social Media – Research or Mere Self-Expression?

Tatjana Daenzer

Media have always been influencing the development of a society and every age has its own shaping media: stone engravings, print media, radio, television and social platforms. They inform, entertain, influence and polarize.¹ With social media as the latest form of information exchange and personal self-expression the question arises which role scientists play on those platforms.

When scientists want to make their research results (and open questions!) available to others, their media of choice are usually papers or books depending on the project. On platforms like ResearchGate or LinkedIn they spread the word inside the scientific community – as emotionless and objective as most scientists are seen by the public. American studies even showed, that scientists are apprehended as “amoral” and absolutely need to “discuss, teach, and share information, to convey trustworthy intentions”.^{2,3}

To make science more attractive, a lot of effort is being put into shiny images with catchy phrases posted on social media nowadays. A quick Google search about “Science on Instagram” reveals results like “The 10 best Science Instagram Accounts that you should follow”. Most pages refer to colourful and publicly appealing topics like “The Mars Curiosity Rover”⁴ or “The San Diego Zoo”.⁵ On Twitter you can see selfies of happy people holding animals or insects, going hiking in the woods, posing with an excavation site in the background or chemists in lab coats and goggles in front of their fume hoods. These are nice topics and images and certainly address the broad laic public. But critics utter that the content shown is far away from the actual work done in the research faculties and agencies worldwide – not to mention the physical and emotional challenges most researchers are facing.

The first impression is that researchers use blogs and posts to expand their network, to train their communication skills and to express themselves rather than their actual experiments or results.⁶ Critics even went so far as to disapprove of female scientists on Instagram openly in the highly re-

spected journal *Science*. In Meghan Wright’s opinion, posting selfies just to oppose the stereotypical nerdy image consumes a significant amount of women’s valuable time. Seeing it as a way “to correct for the long held and deeply structured forms of discrimination and exclusion that female scientists face” by demonstrating “that they’re interested in clothes and makeup, that they’re physically active, and that they are attractive romantic partners” disturbs her.⁷

The *Science* article led to an opposing uproar in the scientific media community and even to the revival of the campaign #ScientistsWhoSelfie. This did not only take a stand against gender stereotypes in science, but also revealed why researchers use social media at all: “to address several other concerns in academia, including engaging with the public about science, increasing science literacy, promoting trust, exploring career options, networking internationally, influencing policy, [...] connect diverse groups, enable rapid information exchange, and mobilize like-minded communities”.⁸



Fig 1: Dr. Paige Jarreau’s challenge tweeted on Twitter¹¹.

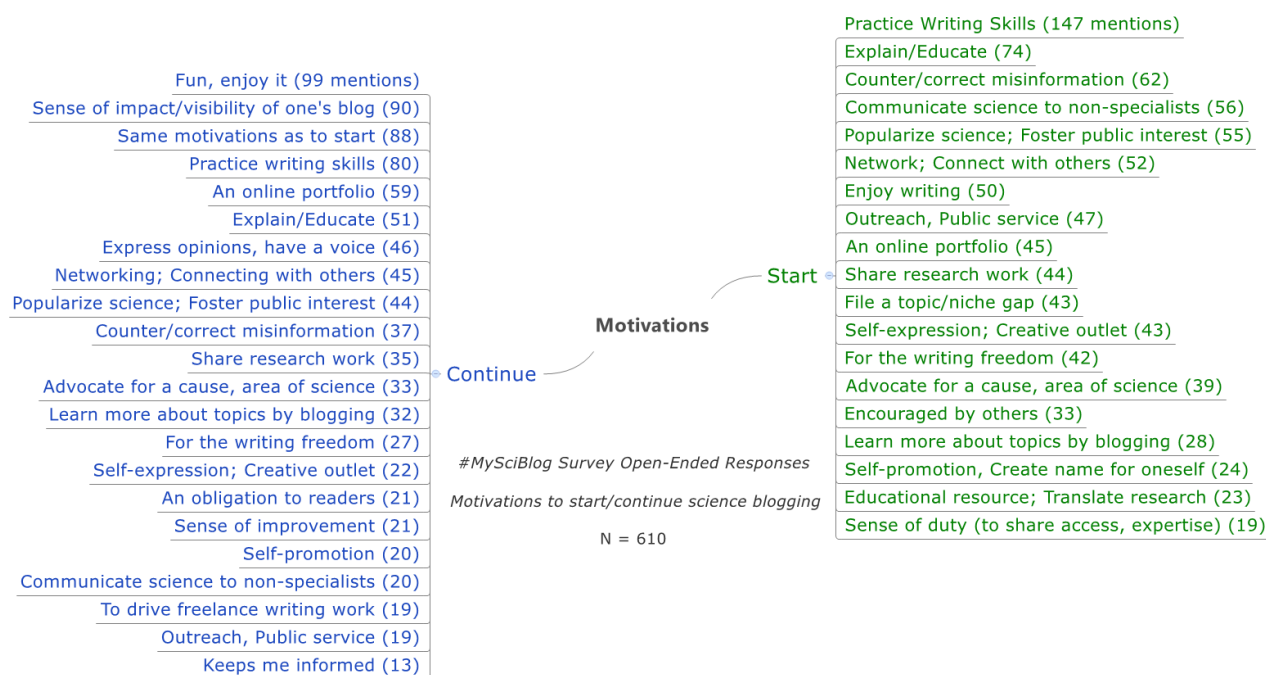


Fig 2: The motivations of science bloggers when starting and continuing their blogs.¹²

Besides selfies and career networking, some researchers use social media and networks for fundraising, to carry out surveys or even to launch challenges like Dr. Paige Jarreau (Fig 1). She is a Science Communication Specialist at the College of Science at Louisiana State University and investigates the motivations of scientists to blog about science and how they can improve their image.^{9,10}

In her #MySciBlog survey from 2014 she asked scientists about their motivations to start and continue a blog about science. The results are listed in Fig 2. While educational means and outreach are still quite important reasons to start a science blog, self-focused reasons seem to dominate after a while. A closer look at the very top mentions shows a clear shift towards self-focused motivations like improving one's own skills, fun, visibility.

Taking and posting a selfie of exited scientists is certainly a little bit narcissistic or self-promoting but it may as well show how human science can be and how it affects all our lives. There is no doubt that science and media have always been somehow intertwined. Development and communication are inevitably connected to scientific endeavour and in turn may have an effect on science itself. It is only natural that science is mediated in the latest media of the time – and in our “smart” age that simply is social media. There are clearly no substitutes for conventional objective publications and as always, it is up to us scientists, that information shared on these public platforms is handled responsibly and discretely.

PS: The editorial board got inspired by the thought of having polls on social media. Until Dec 20, 2018 JUnQ carries

out a little survey about “The Spaghetti Turn”. You can find the form online at junq.info (<http://junq.info/?p=3550>) or on Facebook (<https://survey.app.do/the-spaghetti-turn>). Spread the news! The more people participate, the more significant the statistics are. The results will be published on Spaghetti Day, Jan 4th 2019 on our website as a Question of the Week.

Read more:

- [1] A. Briggs, P. Burke, (2009): Social History of the Media: From Gutenberg to the Internet, 3rd ed, Malden: Polity Press.
- [2] B. T. Rutjens, S. J. Heine, PLoS ONE, 2016, 11.
- [3] S. T. Fiske, C. Dupree, PNAS, 2014, 111, 13593-13597.
- [4] https://www.instagram.com/marscuriosity/?utm_source=ig_embed&utm_campaign=embed_loading_state_control.
- [5] https://www.instagram.com/p/BOqJSYNhoAq/?utm_source=ig_embed&utm_campaign=embed_loading_state_control.
- [6] <http://www.fromthelabbench.com/from-the-lab-bench-science-blog/2018/3/25/why-we-scientists-do-instagram>.
- [7] M. Wright, Science, 2018, 359, 1294-1295.
- [8] S. Z. Yammine, C. Liu, P. B. Jarreau, I. R. Coe, Science, 2018, 360, 162-163.
- [9] <http://www.fromthelabbench.com/about/>, <https://experiment.com/projects/something-is-wrong-on-the-internet-what-does-the-science-blogger-do>.
- [10] <https://experiment.com/projects/to-selfie-or-not-to-selfie-how-can-scientists-foster-public-trust-on-instagram>.
- [11] <https://twitter.com/FromTheLabBench/status/895286171718348800>.
- [12] Jarreau, P. B. #MySciBlog Survey Responses to Motivations to Blog about Science, 2015 <https://doi.org/10.6084/m9.figshare.1345746.v2> CC BY 4.0.

Sensationalizing Science in Media

Mariia Filianina

Gradually and steadily science pushes the frontiers of our knowledge. And every once in a while, media will break about an amazing scientific discovery with a promise of a longer happier life for us all. Unfortunately, these announcements are just sensationalized versions of a much more conservative or specialized research study. Quite often reporters blow single publications out of proportion, wrap them in their own assumptions that the research might not actually support, and put a speculative headline on top of preliminary results. This is how science is sensationalized in mass media.

Sensationalism in journalism has been a popular topic of heated discussions for centuries. In fact, it brought the news to a new audience when it became aimed at the lower class, who had less of a need to accurately understand politics, the economy or, in particular, science, to occupy them in other matters. Through sensationalism, the audience was further educated and encouraged to take more interest in the news.¹

Now, in the era of “fake news”, “fake science”—or more specifically, sensationalized reporting on science has become a problem. The problem is the general misinformation and ignorance or in a worse case widespread panic or excitement that sensationalized headlines create.

As an example, we look back at the turn of the 20th century, when people didn’t know or understand the dangers of radioactive radiation. To them, thanks to sensationalizing tabloids, radioactivity was a new, exotic phenomenon that some of the world’s leading scientists were hard at work studying. It all turned into catastrophe when, out of this ignorance, some companies started selling radioactive products like soap, toothpaste, and—perhaps most famously—the energy drink called Radithor.²

More recently, with the announcements of fundamentally important experiments being carried out using the Large Hadron Collider (LHC), appeared suspects from making incredible (and completely non-credible) claims, such as: “Scientists at Large Hadron Collider hope to make contact with parallel universe in days”³ or that poking at the Universe may wind up destroying it by creating a black hole that swallows us.⁴ While the first one is just bad science reporting, the latter is a common fear that might have been averted had the media reports been more mitigated and accurate.

In general, it seems to be a rather difficult task to communicate science accurately to the public.⁵ This “miscommunication” arises from the different styles of science and journalism.⁶ Reporters are expected to write news objec-

tively and provide readers with a fair and accurate coverage of essential information. Yet, they rely on the excitement in many of their news stories in order to capture reader interest.



Radithor bottle.⁷

John Bohannon, a science journalist, had an interesting approach to draw attention to this dilemma. He wanted to show the absurdity of sensationalism which he explains in his article: “I Fooled Millions Into Thinking Chocolate Helps Weight Loss”.⁸ The idea was to “demonstrate just how easy it is to turn bad science into the big headlines behind diet fads”.⁸ Essentially it was a prank on the public. For that even a clinical trial was set up and Bohannon says “it was, in fact, a fairly typical study for the field of diet research. Which is to say: It was terrible science”.⁸ The trial did not have enough participants to have a real result. “Here’s a dirty little science secret: If you measure a large number of things about a small number of people, you are almost guaranteed to get a ‘statistically significant’ result”,⁸ but this topic we leave to the next issue of JUnQ. Even though the results were meaningless, he was able to publish them. But this was only the first step in the corrupted system. Following a press release, most reporters did not get in touch with Bohannon for any sort of verification, nor did they use other sources to validate the results of the work. A few journalists who did contact him asked very superficial questions that did not scrutinize the credibility of his article.

John Bohannon finally revealed that the work was a hoax and stated in an interview, “Well, my goal was to show that scientists who do a bad job and get their work published

can end up making headlines because it is us, journalists like you and me, who are failing”,⁹ and the publication was retracted.¹⁰

We do not want to discuss here who is to blame, especially given that there is no real consensus on who is at fault for the problem. But it is important to raise awareness in people that now as maximum clicks and citations become the ultimate goal of so many websites, we should become hyper-aware of dubious science claims hidden under loud and colourful headlines.

Read more:

- [1] Stephens, M. (2007), A History of News, Oxford University Press.
- [2] <https://en.wikipedia.org/wiki/Radithor>.
- [3] <https://www.express.co.uk/news/world/565315/Scientists-at-Large-Hadron-Collider-hope-to-make-contact-with-PARALLEL-UNIVERSE-in-days>.
- [4] <https://www.livescience.com/32204-will-the-large-hadron-collider-destroy-earth.html>.
- [5] Peters, H.P., Proceedings of the National Academy of Sciences of the USA 110, 14102 (2013).
- [6] Fineberg H.V., Rowe S., Journal of the National Cancer Institute 90 3 (1998).
- [7] [https://de.wikipedia.org/wiki/Radithor#/media/File:Radithor_bottle_\(25799475341\).jpg](https://de.wikipedia.org/wiki/Radithor#/media/File:Radithor_bottle_(25799475341).jpg).
- [8] Bohannon, J. (2015) <http://io9.com/i-fooled-millions-into-thinking-chocolate-helps-weight-1707251800>.
- [9] Siegel, R (host), (2015), [Radio Broadcast episode], Kenya Young (executive producer), National Public Radio.
- [10] OFFICE, Editorial, International Archives of Medicine, [S.l.], v. 8, june 2015. ISSN 1755-7682. <https://imed.pub/ojs/index.php/iam/article/view/1087>.

Communicating Science – how can we best use social media?

Dr. Eileen Parkes

Dr. Eileen Parkes¹ is a trained medical oncologist, who undertook a clinical research fellowship in a Stratified Medicine Group. There she studied the STING (stimulator of interferon genes) immune pathway activation in breast tumours. Now in a clinical postdoctoral position at Queen's University Belfast, she continues to balance her lab-based and clinical-based research. Considering the engagement of scientists with the broader public as well as policy makers as a vital part of academic research, she has written blog posts on how to communicate scientific results to the public.

¹e.parkes@qub.ac.uk



Science feels increasingly under attack. There are signs of marked decline in public trust in science¹ reflected by swingeing cuts in medical and climate change research proposed under the current US administration. “Once-in-a-lifetime” natural disasters keep occurring, yet those affected see no reason to accept climate change.² Faced with devastating illness, patients opt to pursue unfounded treatments, dismissing the scientific evidence presented.³ No wonder scientists feel vulnerable, retreating and reinforcing defences. How can we change the narrative, restore public support and funding for much-needed research.

Will engagement via social media change minds? Social media networks demonstrate homophily—we group with those who are like minded, who share our views.⁴ Algorithms used on Facebook and Twitter protect our personal echo-chambers. Rather than reflecting reality, instead we are permitted to create a virtual reality where all voices chime in agreement and share our views, a comfortable throne from which we reign unchallenged. The shared language we use to identify members of our club runs the risk of alienating others, maintaining exclusivity at the cost of engagement.

The first step in using social media to build trust in science is to break out of our bubbles. We can't expect to build trust if we choose to preach only to the converted. We need to engage those who have different views, follow and share views we may not agree with, without shutting down the argument. And social media doesn't make it easy to do this. Using programmes like FlipFeed [§] or Pop Your Bubble [‡] let us walk in someone else's shoes and challenge us to refresh our networks. Seeing through someone else's eyes can open our own to new ways of communicating and connecting.

As a medical researcher for instance, engage with patient groups on Twitter. Often vocal, those Twitter chats are open

and honest about their experiences with medical care. Remaining in our research rabbit hole means we risk losing sight of what matters to patients. While there must be space for blue-sky thinking and basic research, all we do should be compatible with the goal of improving patients' lives in the here and now as well as the future. Science communication is a dialogue—engaging with others outside science on social media, listening to their concerns, being attuned to their needs, will focus research on the relevant questions.

Trust is a two-way street – listing our credentials is not a sufficient invitation to trust us, nor does it give us licence to have the last word. We earn trust by being open and transparent about uncertainties. Too often we want to be seen as the expert. Like all of life, science comes with uncertainties, and acknowledging that will paradoxically make us more trustworthy, not less.⁵ Being willing to admit we don't have all the answers can make us feel vulnerable, but that vulnerability is exactly what permits us to connect with those outside our usual sphere.

Reporting pre-clinical discoveries for example must be done in a way that discusses the prospective exciting impact of these findings without falling into the trap of hype, claiming potentially life-changing findings that in reality will take many years to be translated to the clinical setting. Irresponsible reporting resulting in inflated and unrealistic hope is inexcusable. When these hopes are dashed, trust is lost.

Some senior scientists view engagement via social media as an optional extra, time that should be spent on “proper” research, without recognising the responsibility of all scientists to be able to communicate our findings clearly. However, recognising social media engagement as a valued scientific activity is key. The most common response from senior scientists I experience is criticism of the time spent engaging on social media, an inability to see the value of

this approach. Engagement with social media works for scientists too – with highly tweeted articles more likely to be cited.⁶ Our reliance on impact factor metrics and prestige-driven science risks overlooking the important role of social media in promoting science in the public sphere.

Putting ourselves out there, honestly and openly, on social media may be scary. It might be messy, we might make mistakes – those mess and mistakes are what make us human, and human beings crave connection with others just as imperfect as themselves. Coming off our pedestals, embracing social media, will enable us to engage and build trust with those to whom our research matters most.

Read more:

- [1] Gauchat G, *Am Sociol Rev.* 2012;77(2):167-187. <http://dx.doi.org/10.1177/0003122412438225>
- [2] Milman O, *The Guardian.* 2017.
- [3] Johnson S, Park H, Gross C, Yu J, *JAMA Oncol.* July 2018. <http://dx.doi.org/10.1001/jamaoncol.2018.2487>.
- [4] Brady WJ, Wills JA, Jost JT, Tucker JA, Van Bavel JJ, *Proc Natl Acad Sci.* June 2017. <http://www.pnas.org/content/early/2017/06/20/1618923114>.
- [5] Yarborough M, <https://www.nature.com/news/openness-in-science-is-key-to-keeping-public-trust-1.16371>.
- [6] Eysenbach G, *J Med Internet Res.* 13(4):e123. <http://dx.doi.org/10.2196/jmir.2012>.
- [§] <https://flipfeed.media.mit.edu/> Flip Feed is a Browser extension that allows Twitter users to replace their own feed by that of another real twitter user, with a tedens to have opposing political views.
- [‡] <https://www.kindsnacks.com/foundation/popyourbubble> A social media experiment under the name of Pop Your Bubble connected Facebook users with opposing political views.

Interviews

About Patients and Doctors Interview with Dr. J. Wimmer

Dr. med. Johannes Wimmer is a known TV and video physician in German media. He works as a physician in a German hospital and lectures at medical and political conferences about improved communication with patients. Before, he was a Head of Digital Patient Communication at the CVderm of the University Medical Centre Hamburg-Eppendorf. He mastered his study of medicine at the Philipps University of Marburg and the University of Luebeck. His elective period led him to China and the USA. He is a founder of the counseling agency MedServation and developed the video portal Dr. Johannes.¹

¹<http://www.doktor-johannes.de>



JUnQ: Please give us a short history of the idea for your initiative in the (online) media.

Dr. Wimmer: Patients often already seek answers before they go to see a doctor, as well as after leaving the doctor's office. My vision is to provide everyone with substantial and valid medical information at any point at any time without any access barriers.

JUnQ: The struggle between scientists and non-scientists, be it research, industry or services, is always an issue of understanding each other. Usually the scientists unintentionally use technical vocabulary that they are not aware of. Are there any seminars in universities on communication with patients that medical students must attend? If not: do you see any point in teaching and testing communication skills or in developing a relation between doctor and patient?

Dr. Wimmer: In America, the Federation of State Medical Boards (FSMB) and the National Board of Medical Examiners (NBME) sponsor the United States Medical Licensing Examination, which is a three-step examination for medical licensure in the United States. It practically assesses the communication between a doctor and 12 different patients, as well as the ability to apply knowledge concepts and principles. Straightforward terms are compulsory, otherwise the license can be rejected/revoked.

In Germany, this type of procedure only exists on a test basis. The main problem is the use of technical medical terms that are common amongst doctors, but exclude most normal patients from the conversation. This is a major obstacle for motivating patients and getting them on board to find a suitable solution and engaging them into the healing process.

JUnQ: How reliable is Dr. Google? How can serious websites be distinguished from fraud? Are there any licenses or quality seals?

Dr. Wimmer: The problem is that Google itself does not provide any content. If this were to be the case then it would most probably be quite reliable. Google only refers to pages which seem to be the most relevant, in terms of having the most advertisement value and not regarding the actual quality of the information. Therefore, it can be quite difficult for patients to navigate themselves through the masses of information available. There are several licenses, or seals, which unfortunately do not really underline intelligibility. These seals are usually provided to websites with medically correct content, which is mostly too complex for patients to comprehend. It is basically a no-win situation. Either patients stumble upon forums with easily comprehensible information, where they cannot be sure about the credibility or validity of the information; or they come across medical

sites that use a more scientific approach in the explanation of different medical issues. But this is mostly meant for people with some understanding in the field, rather than normal patients.

JUnQ: Have there been cases of self-claimed web doctors who illegally/illegitimately advise patients?

Dr. Wimmer: Usually, people are so convinced that they know best, that even those without medical backgrounds, or those who are working in a more esoteric field, believe they know the correct answer to a health issue and claim this online. This can often falsely convince those who do not have enough knowledge to question the information provided.

JUnQ: A lot of patients seek the internet instead of a doctor for medical advice. Is this caused by anxiety and discomfort of the patients toward the physician? Do you think the way GPs and specialists explain problems and symptoms is clear? Are they trained not to panic people?

Dr. Wimmer: There are two main reasons: Firstly, patients are embarrassed to seek a doctor's help with certain medical conditions, which they perceive as embarrassing. Many people are also worried about "wasting other people's time" due to symptoms that may not be as acute. The second main reason is a feeling of denial, or rather anxiety: people get so worried about what they might have, for example cancer or some other serious illness, that they will avoid the doctor entirely.

JUnQ: How often do you take care of patients who think to already know everything about their condition?

Dr. Wimmer: Not very often. As long as doctors can make it clear that they are aware of the patient and not just the disease, and that they are there to guide and not only to treat, most patients are very susceptible. Determining possible treatment options the patient needs and wants is the ultimate goal for both sides.

JUnQ: Is the gathering of information on their own disease favourable? On one hand it means that the patients get to know their situation better, on the other hand, much information is anxiogenic.

Dr. Wimmer: False information can have anxiogenic effects. But truly understanding a situation, or diagnosis, can be a big step towards curing any anxiety about the illness or treatment at hand. Incorrect information, or information not fitting to your needs is always scary. For example, if you are terminally ill with a very serious form of cancer then you are already in a state of panic or anxiety. Proper information can help to relieve this feeling of helplessness - what is happening, what the treatment will be and where you are headed.

JUnQ: What is the feedback from your fellow physicians on your work?

Dr. Wimmer: In the beginning, there were fellow physicians who strongly opposed the idea, but now doctors truly understand the potential of proper information that is provided before the actual doctor's appointment and also after leaving the doctor's office. Doctors can only provide information at very brief intervals during the patient journey - even with an illness that is treated over a long period of time, we only see the patient every few months for 15 minutes and can therefore never provide the amount and appropriateness of information that the patient really wants and needs. This is now fully understood by many doctors who see the great potential in patient education.

JUnQ: Apart from your work: what must be done to make medicine better understandable?

Dr. Wimmer: We need more medical education from the very beginning, in nurseries and schools in general. In the media, we need to distance ourselves from the misleading medical headlines, such as the next new cancer cure and even referring to celebrities with certain illnesses. We need to stop talking about what we cannot do and start discussing and figuring out what we can do - excluding possible treatment limitations and extending the quality of life. It is not solely about facts and medical terms, but also about the motivational aspects.

JUnQ: Thank you, Dr. Wimmer, for the interview.

— Tatjana Daenzer

Views on Life, the Universe, and Everything

Questions of the Week

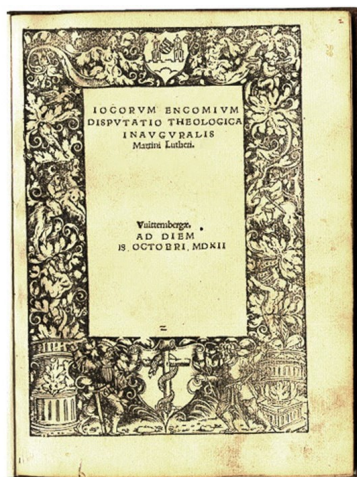
The Journal of Unsolved Questions presents a “Question of the Week” on its homepage every week. Set up and formulated by the members of the editorial board, or guest writers, the main purpose of the “Question of the Week” consists in intriguing the reader by presenting topics of ongoing research. “Questions of the Week” published so far cover a wide variety of scientific fields, but share the feature to be of certain interest to several disciplines. In the following, we present selected “Questions of the Week” from the last six months.

“Dr.” Martin Luther plagiarized in his dissertation LutherPlag checks

Dr. Antje Käßmann

Theology professor Kim Lee-jung of Luther University in Giheung-gu, Yongin, South Korea, reports that he found the doctoral thesis of Martin Luther. The title: *Iocorum Encomium* (In Praise of Jokes). This discovery is in itself an epochal event. The sensation beyond that: up to 80 percent of the work is plagiarized.

Martin Luther’s is one of the best-researched lives in German history. So far it has been assumed that the reformer never submitted a dissertation, since he never mentioned such an endeavor in his writings, his letters or his diaries.



According to the trilingual press release of South Korean Luther University (see below), theology professor Kim has discovered and examined the dissertation of Martin Luther. The amazing thing is that Martin Luther apparently plagiarized massively in his dissertation. Whole passages are believed to come from a text by his humanist colleague, the Dutch theologian Erasmus of Rotterdam, says Kim. On his spectacular find and on the content of Luther’s dissertation professor Kim will publish an article in the American Journal of Protestant Theology. In his article he will also address the question: How could such an upright man

as Martin Luther do such a thing?

The Korean professor of theology has noticed that countless monuments in Germany refer to the reformer as “Dr. Martin Luther”, whereas in America the academic title is completely absent in his naming. As a reason for this, Kim suspects a cultural preference that arose in Germany during Luther’s lifetime.



“A doctor’s degree seems to be very important to Germans,” he supposes. Even Martin Luther, perhaps the most German of all Germans, may not have resisted this temptation. His example was later followed, among others, by Doktor Faustus, Doktor Allwissend, Dr. h. c. Erich Honecker, Dr. Karl-Theodor zu Guttenberg. The news has attracted a lot of attention worldwide. Internet activists have set up LutherPlag and run the text through the plagiarism software. Already, it has been said, up to 80 percent of the text consists of plagiarism.



Meanwhile, at Martin Luther University in Halle-Wittenberg, there are unofficial debates going on whether or not to strip Luther of his academic title. This university is the successor of the University of Wittenberg, where Luther submitted his doctoral thesis on 19 October 1512. What would the divestiture mean? Should the title at the dozens of Luther statues in Germany be removed and all the publications on “Dr. Martin Luther” have an erratum attached?

Professor Kim Lee-jung had no idea what consequences his discovery would have. In a telephone conversation with JUnQ, he said: “It is about time, however, that thinking about Martin Luther enters into a postheroic and postmonumental, even into a postdoctoral phase. That’s what I stand for as a scientist, I can do no other.”

Press Release:

Dr. Martin Luther plagiarized massively in his doctoral dissertation.

Luther University, Giheung-gu, Yongin, 17 Sanggal-dong, Giheung-gu, Yongin-si, Gyeonggi-do, South Korea, 2018-04-01, 00:11:07Z

Luther University, Giheung-gu, Yongin, South Korea, announces that Professor Kim Lee-jung recently discovered an unknown text of the German reformer Martin Luther (1483-1546): his doctoral thesis. This text, dated 19 October 1512, bears the title *Iocorum Encomium* (In Praise of Jokes) and contains 8,236 words on 52 pages. It has hitherto been assumed that Martin Luther had received the honors and the title “Doctor”, which was actually the “*licentia docendi*” (permission to teach), without presenting a formal dissertation. In Luther’s time this had been a common academic practice. It was only about two hundred years later that it became customary to write an official dissertation. The text, which has now surfaced, has been identified as Luther’s dissertation. The booklet is remarkable for more than one reason: doctoral theses were much shorter in the past and in his dissertation Luther defends jokes and jests. As Professor Kim moreover found, large parts of Luther’s text originally came from writings by others, mainly from a work by the Dutch theologian Erasmus of Rotterdam, which Luther must have known in his time in Erfurt and Wittenberg.

Professor Kim will soon publish the history of his discovery and the content of Luther’s dissertation in the *American Journal of Protestant Theology*.

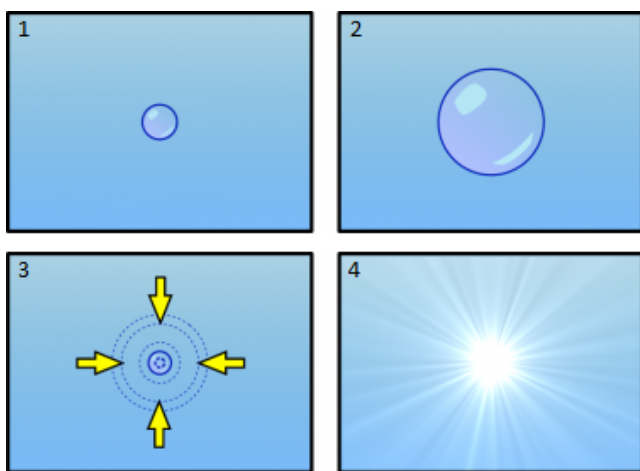
This contribution was published as a joke on April 1, 2018 on <http://junq.info/?p=3442>.

What is the Cause of Sonoluminescence?

Tatjana Dänzer

Sonoluminescence is a fascinating, mysterious physical phenomenon, that combines the principles of light and sound.

In the year 1934 H. Frenzel and H. Schultes discovered a luminous effect by ultrasonication of water.¹ The defining moment that leads to sonoluminescence is the emergence of a cavitation in the liquid (Fig. 1). The high frequency ultrasound leads to the formation of bubbles, that are filled with gas and expand and collapse rapidly like a shock wave. Shortly after the collapse, the energy is released in the form of sound and a short lightning, which is barely observable with the bare eye, and reaches temperatures up to 10,000 K.^{2,3}



Schematic illustration of the formation of sonoluminescence: Growth of a gas bubble in a liquid, collapse or implosion of the bubble and emission of light.⁴

In the 1990s, the causes and impacts that lead to sonoluminescence have been intensively investigated but the real

cause of this phenomenon remains unresolved even nearly 85 years after its discovery.^{5,6} There are different quantum mechanical approaches, but they are highly controversial.^{7,8} Sonoluminescence is not only a physical phenomenon, it does indeed show capability for an academic application, at least in chemistry: in 1991 Grinstaff et al. were able to generate nearly pure amorphous iron by ultrasonication of an iron pentacarbonyl solution in decane. Compared to crystalline iron this compound shows enhanced catalytic activity when used in the Fischer-Tropsch process.³

Sonoluminescence also occurs in wildlife: by snapping their claws, pistol shrimp create a sharp stream of water that does not only kill prey but generates a cavitation bubble and thus a short lightning. Scientists call this special phenomenon “shrimpluminescence”.⁹

Read more:

- [1] H. Frenzel, H. Schultes, Z. Phys. Chem. 1934, 27, 421–424.
- [2] B. P. Barber, S. J. Putterman, Nature, 1991, 352, 318–320.
- [3] K. Suslick, S.-B. Choe, A. A. Cichowias, M. Grinstaff, Nature, 1991, 353, 414–416.
- [4] „Creative Commons“ from Dake CC BY-SA 3.0. <https://commons.wikimedia.org/wiki/File:Sonoluminescence.png#/media/File:Sonoluminescence.png> (last access 09/16/2018)
- [5] B. P. Barber, C.-C. Wu, R. Löfstedt, P. H. Roberts, S. J. Putterman, Phys. Rev. Lett. 1994, 72, 1380–1383.
- [6] R. Hiller, K. Weninger, S. J. Puttermann, Science, 1994, 266, 248–250.
- [7] C. Eberlein, Phys. Rev. Lett. 1996, 76, 3842–3845.
- [8] R. P. Taleyrkhan, C. D. West, J. S. Cho, R. T. Lahey Jr., R. I. Nigmatulin, R. C. Block, Science, 2002, 295, 1868–1873.
- [9] D. Lohse, B. Schmitz, M. Versluis, Nature, 2001, 413, 477–478.

How does a candle burn in zero gravity?

Kai Litzius

We are all familiar with the appearance of a candle flame. Warm, bright yellow, and formed like a teardrop it nestles up the wick just to reach far out into the empty above it. This behavior can be easily explained by the rise – the convection – of the less dense air that is heated by the combustion around the wick. While colder, more dense air floats inward, the buoyancy of the warm air lets it move upward and away from the combustion zone. However, this process requires buoyancy, which only exists in an environment with gravity. But what would then happen to a flame in zero gravity?

In so-called microgravity, that is an environment with very little gravity like it is present in the Earth's orbit, there is no convection since there is no definition of a classical “up and down”. The flame therefore looks significantly different and forms a light blue, spherical shape instead of the familiar teardrops. To understand this behavior, one has to consider the chemistry of the combustion as well as the physics of the gas exchange.

In case of the “normal” candle flame, the bright yellow color stems from soot particles that originate in the (non-perfect) combustion. They rise with the hot air and glow yellow in the upper region on the flame. The lower blue-ish region on the other hand is fed by the stream of fresh oxygen-rich air from below. In case of the flame in microgravity, there is no preference for up and down and therefore it assumes a spherical shape. Due to the lack of convection, the combustion is fed only by (slow) diffusion of the oxygen into and the fuel out of the central combustion zone. This means that the zero-gravity flame burns much slower and does not produce equally distributed soot particles. Thus it is blue, spherical, and produces much more CO and formaldehyde than CO₂, soot, and water.

This behavior, and how to extinguish a flame in microgravity, is under investigation aboard on the International Space Station (ISS) in the so-called Flame Extinguishment Experiment (FLEX). It is carried out on small heptane bubbles that are ignited in a controlled atmosphere. The experiment found that such small flame bubbles are not just exotic to look at, but also can pose a threat to space exploration since they can be much more difficult to extinguish. In this way, research on small bubbly flames can thus help making space exploration a bit safer.

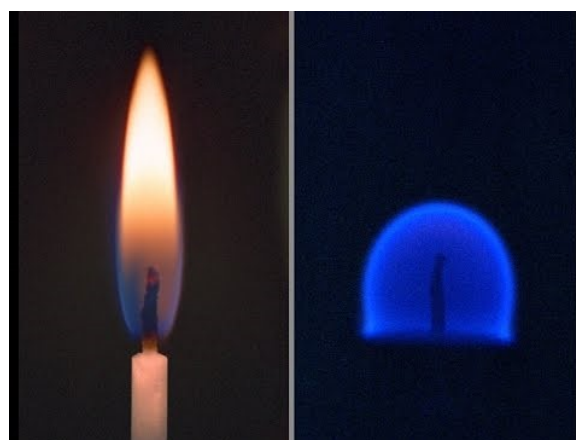


Figure 1. A candle on Earth (left) and in microgravity (right): The different combustion patterns are clearly visible.^{3, NASA}

Read more:

- [1] www.nasa.gov/mission_pages/station/research/experiments/666.html (las access 07/17/2018)
- [2] medium.com/@philipbouchard/why-is-a-candle-flame-in-zero-gravity-so-different-than-one-on-earth-1775194cf21a (las access 07/17/2018)
- [3] <https://www.youtube.com/watch?v=DmrOzeXWxdw> (las access 07/17/2018)

Publishing Details

Main Editorial Board

Tatjana Daenzer, Johannes Gutenberg-University, Mainz, Germany
Mariia Filianina, Johannes Gutenberg-University, Mainz, Germany
Eva Jaumann, Johann Wolfgang Goethe-University, Frankfurt am Main, Germany
Alexander Kronenberg, Johannes Gutenberg-University, Mainz, Germany
Kai Litzius, Johannes Gutenberg-University, Mainz, Germany
Adrien Thurotte, Johannes Gutenberg-University, Mainz, Germany

Senior Editor

Thomas D. Kuehne, University of Paderborn, Paderborn, Germany

Contributing Authors

Communicating science – how can we best use social media?:
Dr. Eileen Parkes; Queen's University Belfast;
[https://pure.qub.ac.uk/portal/en/persons/eileen-parkes\(ce4faa0b-d93b-4c16-805c-4cdfd5e400e4\).html](https://pure.qub.ac.uk/portal/en/persons/eileen-parkes(ce4faa0b-d93b-4c16-805c-4cdfd5e400e4).html)

Interview with Dr. J. Wimmer – About Patients and Doctors:
Interview by Tatjana Daenzer; Johannes Gutenberg University Mainz;

Sensationlizing Science:
Mariia Filianina; Johannes Gutenberg University Mainz;

Some Thoughts About Science on Social Media:
Tatjana Daenzer; Johannes Gutenberg University Mainz;

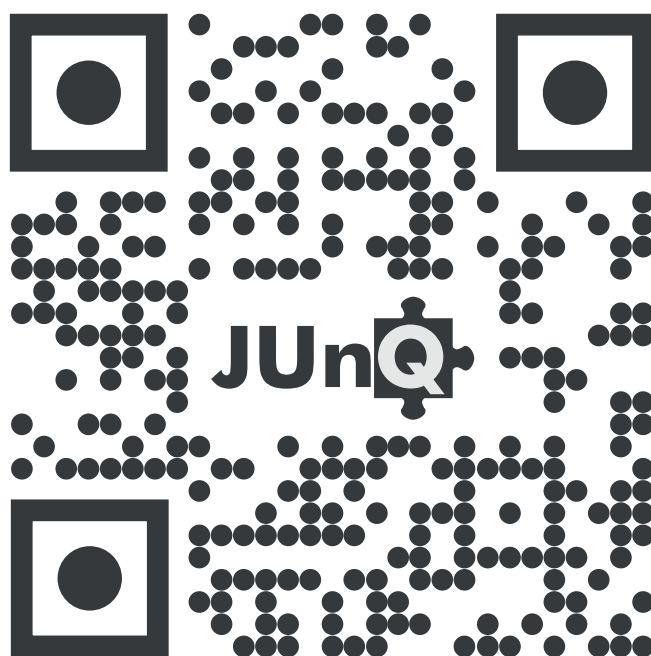
Cover design:
Kai Litzius & Eva Jaumann
Ressources from: <https://pixabay.com/de/sozial-social-media-kommunikation-3064515/>

Contact Information

<http://junq.info>
JunQ@uni-mainz.de
twitter: JUnQJournal
Facebook: JUnQ Journal

Verleger und Herausgeber: Tatjana Daenzer, Duesbergweg 10–14, 55128 Mainz, Germany
Druckerei: <http://wir-machen-druck.de>
Verantwortliche Redakteure: Tatjana Daenzer

Rechtsform: JUnQ ist ein unentgeltliches, wissenschaftliches und spendenfinanziertes Projekt, das Nullresultate als wichtige Beiträge zum Erkenntnisgewinn etablieren möchte.



www.junq.info

junq@uni-mainz.de