

Af Asger Væring Larsen, avla@bib.sdu.dk,  
foto: Jeppe Lomholt Akselbo, ja@bib.sdu.dk

# A reform of science

Open Science concerns both the individual scientist, science in general and the access to knowledge all over the world. And the reform of science concerns libraries.

Meet Jon Tennant – the only Englishman who doesn't drink tea.



## Discovering Open Science

“Like virtually all good stories from England, it all started in a pub.” Jon Tennant, accidental Open Science expert, currently staying as a fellow at the University Library of Southern Denmark, had a conversation with a good friend and fellow palaeontologist in a London pub.

Jon presented him with the idea to try to publish some of the results from his master's studies in a journal. The friend responded: “Ok, cool. Well, just make sure to publish in an Open Access journal”. Jon was baffled and said: “What the hell is that?”. Jon's friend sighed and sat Jon down to tell him everything: “Think about all the times you have tried to access research papers and you never could”, he told me. I thought that was just normal, but the more I thought about it, the more it dawned on me just how privileged I was”, Jon says.

But even though his university was a rich institution there were many journal articles he couldn't access. “Imagine what that's like if you're not at a university”. The conversation in the pub sparked Jon's sense of injustice. On a brisk Monday morning in Odense he concludes: “Basically, most scientific research remains inaccessible to most people on this planet”.

If you don't know who Jon Tennant is or what Open Science means, then keep reading and the following might make it clearer. But if you are looking for straight answers about the definition of Open Science, you are not going to get them from Jon.

My first question was a classic: *What is Open Science?* And the answer is still eluding me. Perhaps the question is wrong?

“Open Science means different things to different people”, Jon explains. “To some it's about reproducibility. To others it's about developing Open Source software and hardware to serve those who can't afford to buy it and to others still, it's about providing access to research outputs for the betterment of society. To more wealthy countries, often Open Science is about catalysing innovation and research development”. Wikipedia will tell you that Open Science consists of Open Access, Open Data, Open Peer Review, Open Source and other “open” elements. And Citizen Science lest we forget. So “nobody knows exactly what it is, but everybody sort-of-knows-ish”, Jon suggests.

Jon boils it down to “a reform of science”. Something that Jon and others have been working on for years now is to try and steer the debate away from

being purely about research outputs – open articles and open data, to a more holistic but also more ideological approach: It is not just about outputs, it is also about acknowledging that every person on the planet has the fundamental human right to access and reuse the knowledge created by science.

### Who is Jon Tennant?

Jon Tennant is a palaeontologist from the University of Manchester and Imperial College in London, where he completed his Ph.D. and won the prestigious Janet Watson award for research excellence. Now he has just completed a 4 year stay in Berlin, where he has been working on the Open Science MOOC (Massive Open Online Course) and before that, ScienceOpen – a platform for sharing research outputs and linking them together.

He has come to Odense to be a fellow at the library in the hope to be able to teach about Open Science and raise awareness among researchers and other stakeholders. “I hope to get a better understanding of how things work here ... leave a spark here in Odense, to ignite something cool here in Denmark and take that with me to where ever I go next. Maybe help initiate collaborations with other parts of the world, like Paris and Berlin where strong communities already exist. The approach to Open Science is different in all countries, but Denmark could become a hot-spot in Open Science, because you are small enough and with punch enough. I mean: You’ve got good people, and enough of them to make real change. And big change takes longer the bigger you are. 8 universities that are all well connected, well-resourced, and with good people at them is much easier than say 200 research institutions.”

*“How can the research libraries best support Open Science”, I asked.*

“Provide in-house training, education, and support for Open Science skills and knowledge. Collectively start funding open scholarly infrastructure at the national level, you know, instead

of funneling money continuously into private companies. They have all the money, so they have all the power. And it is time they started investing both wisely. Oh yea, and support the Open Science MOOC”, Jon smirks.

### Open Science activism?

Though he continues to do research in “dinosaur stuff”, which he affectionately calls it, Jon concentrates on promoting Open Science through



talks and presentations at conferences, but also through projects like the Open Science MOOC. But to the question: “Are you an activist?” he responds: “I hate that word”.

But he elaborates that in some ways you can call him an activist – just without all the negative social connotations: the recklessness and views based purely on ideology instead of pragmatism. “But do I stand up for what I believe in? Yea. Every god damned day. Do I push for actions? Yes sometimes.” Jon’s primary goal seems to be to show the options researchers have and leave the decision to act to themselves. The researchers should act to promote their own interests while at the same time support the interests of the society which pays for the work they do. But fighting huge corporate companies

like the publishers of research papers, does require some form of activism. Jon points to the dysfunctional publishing system, that politicians, publishers, funders, research institutions and researchers themselves have been sponsoring for many, many years.

“It is not only holding societies back because of lack of access, they are also not helping in developing new more efficient ways of communicating re-

search. They are sustaining the existing gap between research and the public. Open Science, including Citizen science, could be a way to close that gap.”, Jon says. But the current system seems conservative because it has gained buy-in from the research community, funders and institutions over a long time. It continues to require awareness raising, though more and more researchers know about the problem of supporting to a system run by the big publishers.

Jon ramps it up a notch: “Our world is currently facing massive problems, and we need science to be working in overdrive to help society. It is no longer acceptable to be apathetic towards these problems.”

These days almost two thirds of European research funders have Open-

Access policies, most of which have mandatory requirements, a new study reveals. Open Access has also become more and more visible at universities over the years, but is it a success, one could ask? And so, I did.

“Twenty years of relentless Open Access campaigning has resulted in about 25% OA to research papers, with annual rates increasing in 2018 to somewhere between 50-60%. Depending on how you look at it, that’s either a resounding success or a catastrophic failure”, Jon claims. “The same goes with the amount of money we spend on it, literally billions of euros each year, and the impact it has had on the market place. But a lot of good things have been happening, but nobody really knows where it is all going”, Jon says – the last few words in a whisper. “That’s probably what makes Open Science so fascinating and frustrating at the same time – the developments are happening in an unpredictable direction and nobody can see where exactly we are headed”.

The reason for this – according to Jon – is that nobody defined exactly what the goals were. “There is no governing structure or even plan to steer things”, Jon explains, “and that makes it very difficult to know if things are going the right way. There just was this growing notion that the current system didn’t work, but it was hard to establish what to put in its place”.

## The Future

Is Open Science advancing, I wanted to know? “That’s very difficult to say. Things are changing so rapidly, that no one can say where it will end. The way we communicate research has repercussions to the way research is practiced. But if we move to a more open way of communicating research, many of the current problems of e.g. p-hacking (statistic manipulation, red.) and hiding the data should be solved”, Jon predicts.

One of the things that should be supported more with funding in the future, according to Jon is Citizen Science. “The fact that a couple of days ago, the president of the United States became

the second most powerful person in the world, supplanted by a 15-year old girl, shows us that something interesting is happening in our society”, Jon says.

But researchers should be more responsible in the way they manage the output of their research and how they communicate their knowledge. This is where Jon sees a change coming within the next few years – there is a growing awareness among researchers, that they should start giving back to the communities that are funding their work. Not just the results of their work but invite the public in and participate in the research.

## Challenges of Science

The biggest challenges in science and research these days, according to Jon are:

### 1. Research evaluation.

“It controls everything and is misaligned with the ideals of science in many ways”, Jon says. Another problem is:

### 2. Public accountability.

“The spending of public funds that ends up in big corporate companies with huge profits or wasted in redundant research. That must change. It’s a misappropriation of public funding”.

The 3. problem is concerned with global co-operation. According to Jon, Plan S has had an impact on the share of Open Access publications, but at the same time, Europe has not been listening enough to e.g. Latin America.

“There is a sort of a neo-colonial attitude towards research. There has been a development in Latin America over the last 20 years that surpasses that of Europe. In this part of the world, they have invested public funds in non-commercial, community-led infrastructure – often Open Source, such as SciELO and Redalyc. They have developed a counterpart to Plan S. Plan S will see research funders continue to funnel billions of Euros of taxpayer money into big corporations – in Latin American they have started developing an Open Source infrastructure, called AmeliCA, that is going to cover

publication outputs across Latin America in a more sustainable, responsible manner. Why are we not learning from them? No-one can claim to have the answer to everything, but we can certainly be better at co-operating finding better solutions.”

But new things are being developed in terms of communication platforms, which can lead to more Open Science, and this new development is not coming from publishers like Elsevier but from not-for-profit organizations and projects – and they need funding because they are up against big corporations who are just publishing “papers”. “It’s 2019 and we are still reading pdf’s with hyperlinks in them” – Jon is not impressed.

“The problem is that the development of new systems is under-funded, because they are operating in a dysfunctional market”, Jon says. “If you look around the rest of the world, we are using technology in such beautiful ways. I mean, we’ve put a fucking rover on Mars – and yet we can’t move beyond a linked pdf as the primary vehicle for communicating science. I find it bonkers. If you look to the Open Source community. They are doing this stuff right. The Journal of Open Source Software is basically a journal that runs on GitHub. It does absolutely everything, because they understand how technology works. For three orders of magnitude less cost than the average pdf. Imagine a future platform that combines the moderation and collaborative editing of Wikipedia with the version control system of GitHub, combined with the “peer review” system of Stack Exchange. What would something like that look like?”

“There is no end to the possibilities...”, I remarked, with a puny reference to “Cable Guy”. He didn’t hear me and continued: “The people in power have to realise that they have a responsibility and they have to step back and stop wasting so much money on a dysfunctional, shitty, archaic system, and invest just a little bit into something better.”

## New developments

So, with one eye on the development of Open Science and the other on his personal career, Jon has plenty of ideas for the future, but no concrete plans. He prefers not to think too much about it, but chooses to engage full time in what he is doing right now and see what turns up.

“In six months, I’ll be unemployed – and I can’t wait”, Jon says with a big smile. He is considering different options, maybe Peru, maybe Italy... He has kept himself busy the last many years, so it’s hard to keep track of all his projects. One way is to follow his blog and tweets, where he shares his thoughts and experiences. On that note, I asked him about the use of Social Media in science and research. Is it something to recommend for scholarly communication?

This is a question, libraries get from researchers now and again, and what is the answer?

“It’s not for everyone – it can be a double-edged sword, but it’s certainly a way of expanding networks and reaching people that we would never have been able to reach just a few years ago. But at the same time, it’s just this... monstrosity. Twitter in particular. It’s just so aggressive sometimes, right? A constant bombardment of information. It’s not the same as the real world. Sometimes we have to step back and realize that. We shouldn’t take everything we see online as a reflection of reality”, Jon responds.

“But used responsibly, you know in the way we are when talking to people in real life. It’s like: when you are talking to people online, talk to them as if they were right in front of you. People seem to have forgotten that some times. Social media have removed the

**The Fellowship of SDUB.**  
The University Library of Southern Denmark has established a fellowship programme which offers leading researchers within the field of one of the library’s areas of service a two-month stipend. In return the researcher will contribute with his or her knowledge and in collaboration with the library help develop our services.

repercussions of bad behaviour. But use it strategically – not saying: “Look at me, look at me. I’m on Twitter. Look how cool I am”.

According to Jon, it can be very effective in making a researcher more visible and invite to collaboration. “It has taken me places, I didn’t even dream of – like here”, Jon grins.

**Social Media for research communication**

Speaking of Social Media, I am reminded of Jon’s Twitter handle: @protohedgehog. When asked about the story behind that username, he goes “Oh, fuck.” Jon’s explanation makes total sense to me, though. I guess we have all tried it: When prompted for a username, it’s quite impossible to think of something cool, and the most improbable thing pops into your head.

So that happened to Jon too, who remembered a lecture about prehistoric mammals, after which his girlfriend at the time came up with the term. Apparently, hedgehogs are endemic to

Europe. Who knew. The same chaotic naming-of-things happened to Jon’s blog. It’s called “Green tea and velociraptors” – from a stay in hazy Amsterdam and his personal website is called “Fossils and shit”, because that was basically what he thought he would write about.

Jon seems as the type of person who thrives in ever changing environments. The “reform of science” doesn’t follow a nicely laid out plan but evolves on its own. From below. The only thing it needs to grow and blossom, is that we redirect our attention to it, and start spending the public funding entrusted in us responsibly.

With a little support, new ways of communicating research and engagement of the public in research will spread, changing the culture of research along the way to become healthier. There is plenty of work to be done, and I am certain that Jon will not be unemployed for a second.

*Many thanks to Lotte Thing Rasmussen for help with the interview and article.*

<b>Jon Tennant</b>		<b>References:</b> Fosci, Mattia, Emma Richens, og Rob Johnson. Insights into European Research Funder Policies and Practices”. Zenodo, 30. September 2019 <a href="https://doi.org/10.5281/zenodo.3401278">https://doi.org/10.5281/zenodo.3401278</a> .
<b>2019- :</b>	Research Fellow at University of Southern Denmark	
<b>2019- :</b>	Research Fellow at Center for Research and Interdisciplinarity	Jonathan Tennant, og Björn Brems. “RELX referral to EU competition authority”. Zenodo, 26. October 2018. <a href="https://doi.org/10.5281/zenodo.2565052">https://doi.org/10.5281/zenodo.2565052</a> .
<b>2017- :</b>	Founder of Open Science MOOC	
<b>2017- :</b>	Founder of PaleorXiv	“Journal of Open Source Software”. <a href="https://joss.theoj.org">https://joss.theoj.org</a> .
<b>2016-2017:</b>	Communications Director, ScienceOpen	
<b>2012-2016:</b>	PhD at Imperial College London	Piwowar, Heather, Jason Priem, Vincent Larivière, Juan Pablo Alperin, Lisa Matthias, Bree Norlander, Ashley Farley, Jevin West, og Stefanie Haustein. “The State of OA: A Large-Scale Analysis of the Prevalence and Impact of Open Access Articles”. PeerJ 6 (13. februar 2018), <a href="https://doi.org/10.7717/peerj.4375">https://doi.org/10.7717/peerj.4375</a> .
<b>2010-2011:</b>	MSc Imperial College London	
<b>2006-2010:</b>	MEarthSci (hons.), University of Manchester	