Science AMA Series: I'm John Hammersley, mathematics PhD and co-founder of Overleaf, here to discuss my transition from academia to industry, to becoming a company founder, Ask Me Anything!

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Abstract

Hi, my name is John Hammersley and I am the co-founder of Overleaf, a collaborative writing and publishing system that makes the whole process of producing academic papers quicker for authors and publishers. In a previous life I worked on the first passenger trials for Heathrow's Driverless Car and I have a PhD in Mathematics. I am here today to discuss successful career transitions and my shift from academia to industry, and then to an academic industry. But, I also open the floor for any other relevant questions. There will also be some live tweeting from @Overleaf and questions using the #askjohnoverleaf hashtag. I'll be back at 1 pm EST (10 am PST, 6 pm UTC) to answer your questions, ask me anything! UPDATE: Phew - that's it for now! About 20 questions answered I think, more to come later once I've had a break! Thanks for all the great questions and comments, and especially all the kind words about Overleaf. Here's to exciting times ahead in 2016 :) UPDATE 2: I've started answering some of the many questions I didn't have time to during the hour AMA slot; my apologies if it takes me a while to get to yours, I am juggling work with a 12-week old baby daughter at the moment! Thanks again to everyone for the great questions and comments :)

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JOHN_HAMMERSLEY R/SCIENCE

Hi, my name is John Hammersley and I am the co-founder of Overleaf, a collaborative writing and publishing system that makes the whole process of producing academic papers quicker for authors and publishers. In a previous life I worked on the first passenger trials for Heathrow's Driverless Car and I have a PhD in Mathematics. I am here today to discuss successful career transitions and my shift from academia to industry, and then to an academic industry.
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Dr.Hammersley,

I finished my PhD about a year ago and was fairly sick of the academic environment, but I did not really want to leave as I still loved research and teaching. The whole grant proposal farming became too much.

When I decided to leave for the industry I was told by a few mentors/professors that once I leave academia, it is almost impossible to get back in. I now work for an engineering consulting firm where we do very little research, but I would like to get back into academia at some point.

Any advice?

gyoenastaader

I would have to agree with your mentors/professors on this – from what I've seen, it's very hard to get back in to academia once you've left, unless you're planning to start again with a PhD in a different field.

Why is it so hard? Not only will you be less up to date on your former research (except in the two cases mentioned below), you'll be competing with all those who completed their PhD whilst you were in industry.

What would help? In order to get back in, I think you'd either have to (1) do it pretty quickly, within a year or so of leaving (in which case you'll still be pretty up to date and the competition for places won't have expanded too much), or (2) be working for a company that lets you (and encourages you) to publish papers on the research you're doing for them.

Doing (1) is very hard unless you were specifically going on a short break to begin with (i.e. taking time out to go travelling), as it takes time to get a job and work in it long enough to realize you want to move

back.

Doing (2) depends very much on the company you go to - when I left academia to work on driverless cars, we were still writing research papers with collaborators at universities (and indeed some of my colleagues were working for the company as part of their PhD), and so all the time there I felt like there was the opportunity to move back into academia if I wanted to.

So if you want to move back into academia I'd suggest finding a company that has close ties with a nearby university and which encourages the publication of papers – if it works out, that should provide you with an opportunity to make the move back in (if you still want to at that point!).

I hope that helps, and good luck, whatever you choose!

What would you say are the biggest cultural differences between the academic world and the corporate?

I think a lot of academics think we'd never make it in industry (because we are used to the soft disorganization of the university). On the other hand, we also sometimes see corporate culture driven by a lot of nonsensical thinking, or 'trend of the month" behavior.

And I suspect we are wrong on both sides. Would love to hear what you think .

doctorink

t's hard to generalize, as I expect there is a great variation depending on what industry and what academic fields you compare. But for me, I found there to be a lot more day-to-day pressure in industry than I experienced in academia, and more of a focus on the end goal than on the journey.

I think this is largely driven by the different reward structure – in industry you are more driven by client / customer requirements, and the fact that unless you deliver what they're expecting, you won't get paid! Whereas in academia there is more leeway (at least in mathematics) to explore and shift focus - provided you can still write it up into a paper at the end of course ;)

As someone working on a PhD at the moment, but who is considering leaving academia to move into industry; what are the biggest factors that caused you to make the move?

1976dave

It's hard to remember the exact point at which I decided to leave, and there were certainly a number of factors that influenced it. But the number one reason was that:

I felt like I wasn't contributing anything useful; like my work wasn't really making a difference.

There were so many papers appearing on the arXiv[1] each day, I struggled to see how I was really contributing anything, and I felt a long way away from being able to really make a difference in my field. When I look back now, it's because I now realize that I hadn't given it long enough – I wanted to be able to see my work having an impact immediately but I was still learning a lot at the time.

But that was one thing that attracted me to working in an industry at the cutting edge (which turned out to be driverless cars) – not only would I still be doing research, but I'd be able to see the real world benefits almost immediately. That was a big driver for me (no pun intended!), and really motivated me to look to industry rather than to continue in academia.

I don't regret my decision to leave, but having seen the developments in the field my research was in since I left, I do realize now that there were a whole lot of opportunities to contribute if I'd stayed – so perhaps I was lured a bit by the grass being greener on the other side. I've also been fortunate to have stayed very connected with science both whilst in industry and now a startup founder, which I've definitely valued.

My advice if you are thinking of leaving but want to stay connected to research is to find a company who'll allow (and encourage) you to write papers as part of your job. It may also keep the door open if you want to go back (although that's very hard to do, see one of my other answers!).

[1] http://arxiv.org/

Hey Dr. Hammersley! First, thank you so much for starting Overleaf; I use it often in academia. So my question, what is your favorite little-known feature of Overleaf?

OldManAndale

Thanks for using it! :) There are two things that come to mind that I find invaluable:

First, there's a neat trick to work with mulitple monitors -- if you open up the same project in two difference browser windows, you can minimize the editor pane in one, and the preview pane in the other, and hey presto you can edit on one screen and have the preview refresh on the other.

Second, one of our community 'TeXperts' put together this excellent list of all the keyboard shortcuts on Overleaf: https://www.overleaf.com/articles/overleaf-keyboard-shortcuts/qykqfvmxdnjf

It saves a lot of time knowing about things like ctrl-g for 'find again'! :) Hope they help!

Overleaf is a great idea.

Two questions:

- How can I trust that Overleaf doesn't snoop on my manuscript?
- How can I trust that Overleaf doesn't get hacked and my manuscript ends op on the internets?
- How can I convince people that have never used LateX to use Overleaf? Or, can I write a manuscript without using LateX in Overleaf without getting confused and scared of all the markup?

I find the last one to be quite a hurdle for people unfamiliar with LateX.

ciaoshescu

Thanks for asking this – it was the question I'd reached when I needed to take a break at the end of the AMA slot, but I wanted to reply now seeing as I was already thinking about it.

The only time we've accessed user projects is in relation to a support request or technical issue. For example, we get a lot of questions along the lines of "How can I insert / format X in my paper?", to which we'll normally reply by asking the user if they mind sharing the project with our support team so they can see the context of the question (which makes it much quicker to solve, which is good all round!).

Early on we also put together a (hopefully) concise and readable set of terms of use[1] which sets this out in more detail.

We also take security very seriously – both for the data as stored and when it is in transit (again there are details in [1]). We follow security best practices, including security training for developers and operators, third-party security audits, automatic security vulnerability and network scanning, a clear responsible disclosure policy, and a thorough code review process.

On your third question, we've been developing a Rich Text mode [2] to make it much easier for users new to LaTeX to feel comfortable using Overleaf – it is particularly useful for collaborations where one person knows LaTeX well but the other prefers to work in a more Word-like environment.

I hope that helps answer your questions, and if you have any feature suggestions re the Rich Text mode we'd love to hear them (you can get in touch via https://www.overleaf.com/contact)

[1] https://www.overleaf.com/legal

[2] https://www.overleaf.com/blog/81

Hello! I am a physics grad student and am wondering if you have any advice for making the transition to industry easier. Particularly, what skills are most helpful to learn and what are some ways to 'sell' your graduate school experience.

dl12654

Great question!

It depends on what type of industry / position you're looking to go into, but I found a couple of things really helped:

1) Taking an active role in a society unrelated to your studies. For me, I set up events for our university darts team (and then went on to found and captain the graduate society darts team when doing my PhD). This type of thing is great for showing that you can talk to people, manage / lead, and that you feel strongly enough about something to take an active role in it.

2) If you've won any awards or been given any special recognition for something outside of your studies, those make great short-stories you can tell at an interview. For example, in my final year at university I entered a competition run by the European Space Agency to propose an experiment that could be conducted onboard the International Space Station - I didn't win, but was placed in the top ten (out of about a hundred), and was invited to the ESA's facilities in both Leiden (Netherlands) and Cologne (Germany) during the different phases of the competition. Stories like this will help them remember you much more than a few extra percentage points on your finals (unless those points make a difference to what class of degree you get).

Hope that helps, and good luck!

Dr. Hammersley,

Having published many papers and being an editor, I have started to think that electronic publishing may not be a completely positive development for academics. Certainly it is here to stay, as electronic publishing has vastly increased the volume of papers (both good and bad), it has changed the expectations of how often an academic should publish. Whereas when paper documents had to be shuttled around between the author, publisher, and reviewers, there was increase inertia to publication that limited the number of publications one could produce, so that perhaps one or two publications a year was acceptable, now electronic publishing has created an "arms race" where in order to keep one's CV distinguished above one's peers, publishing multiple times per year is required. I believe this has resulted in yet more incremental, piecemeal publications that further dilute the content of research over more articles and journals. Scores such as impact factor and Hirsch number simply serve to act as an insufficient proxy to evaluate one's research output in lieu of actually reading the increased volume of papers being produced,

Do you think that there is a way electronic publishing could be used to increase the quality of publications rather than just the quantity, and help consolidate the increasingly fractured and disparate collections of publications that works are spread over?

profdc9

This is a great question, and I don't have a simple answer to it I'm afraid. I certainly found that the sheer volume of papers appearing every week in my field was difficult to keep track of, and indeed looking back I wonder if I would have been better off not trying to keep track of it and just concentrating on my research.

But I think it’s part of a wider picture which is much more positive – if electronic publishing was solely focused on static papers then I would be worried, but there is an increasing drive (through funder and government mandates) to ensure that data, code and other research outputs are also made available (and that the people that contribute those elements are recognised for them). Taking all that into account, I see the rise in publications being more a marker for the rise in global collaborations and overall, a faster rate of progress (albeit perhaps with more noise along the way).

I would love to write more about this when I have time (these AMAs are pretty intense!), but in the meantime I can recommend reading through the Royal Society’s report[1] on global collaboration, as it contains a lot of interesting observations.

[1] Knowledge, networks and nations: global scientific collaboration in the 21st century: https://royalsociety.org/topics-policy/projects/knowledge-networks-nations/report/

redditWinnower

Thanks to The Winnower for providing this service, very handy!

For those who've asked in this AMA about the benefits / challenges about publishing open access vs traditional journals with higher impact factors, it's worth taking a read through this series of posts on The Winnower from researchers on their experiences of being open: https://thewinnower.com/keywords/arcs2015

Hello!

What are your thoughts on the current state of publishing as it relates to underreviewed (or unreviewed) papers being published and cited? As the pressure to publish cranks up and quality drops, what can be done to maintain scientific purity?

Thanks!

nudibranch

That's a tough one!

As a mathematician / physicist, I was fortunate enough to do my research in a field where pre-prints are published on the arXiv as soon as they're ready, and can then go on to be reviewed and published afterwards. To me this is a great workflow, as it allows research to be read early by colleagues in your field, whilst still allowing for subsequent review and update.

There are also publishers in other fields starting to adopt this model, such as F1000Research[1] in the life sciences, who publish your paper immediately (after light-touch editorial review) and follow that with open, post-publication peer-review.

I also don't know whether this is a new problem. With the move towards more open research and with government and funder mandates now being put in place to require publicly funded research to be made open access (and where applicable, the data behind the results to be made open too), we are moving towards a position where papers can have their results reproduced more easily.

I don't know if that answers your question, and it may be that the situation is very different in different fields. There are some good stories on the benefits of open research on The Winnower [2] for further reading, and there's a great list of recent innovations in scholarly communication at [3].

[1] http://f1000research.com/ [2] https://thewinnower.com/keywords/arcs2015 [3] 101 Innovations in Scholarly Communication - the Changing Research Workflow https://figshare.com/articles/101_Innovations_in_Scholarly_Communication_the_Changing_Research_Workflow/1286826

Hello. Like a lot of people, I'd like to thank you for Overleaf, it's been really helpful.

What's your favorite field in mathematics? Do you have a favorite theorem or proof?

plarah

Thanks for the kind words, it's great to hear you've found Overleaf useful.

I haven't done any work in it, but I feel I should give a shout out to percolation theory, because of the famous John Hammersley (no relation) who worked in that field for many years.

My PhD research was in holography, and I find the AdS/CFT correspondence to be particularly nice, in part because I was able to explain it to my non-mathematical friends and family using a pint glass!

My favourite theorem is Squall's theorem -- it doesn't actually exist, but it was the theorem one of my friends at university would use in his exams to 'explain' an answer whenever he couldn't remember the real method / theorem :)

Hi! Just finished submitting my Physics PhD applications a month ago. In graduate school, what's a good way of examining opportunities outside of academia?

mahler_symph

I would recommend going to a jobs fair at your school if they're holding one in the near future -- it's a great way to get an idea of some of the different types of industries out there. Otherwise I would start by working out what type of job you want to go into -- is it one that's physics-related, or something total different? Once you have an idea, do a search of job ads worldwide (not limited by region or country) on the internet, to see what sort of opportunities there are out there, and once you spot something you like, you can use that to further refine your search to ones that are in your region (or somewhere you'd be able and willing to move to).

I also found that talking to industry-specific recruiters was a very useful way to find out about opportunities relevant for someone with my experience, and these were often roles and industries that I hadn't heard of, which was great for broadening out my search! For example, http://www.ecmselection.co.uk/ is a recruiter in the UK who specialize in high tech jobs.

First of all thank you so much!

I use Overleaf a lot and it makes my life so much easier. Can you spoil us a bit on upcoming changes for Overleaf?

Quickitt

Thank you - it's messages like this (especially those we received in the early days) that help keep us pushing on to make things better!

What's next? Well, it's also not yet been announced, but as of yesterday our git-sync [1] now works with protected projects, which has been a much requested upgrade.

We also put in a lot of effort late last year on our API to integrate with services such as the IEEE's Collabratec platform [2], and there will definitely be more integrations coming in 2016 to help make Overleaf better through links with other services.

But the big one this year is full project history - you'll be able to go back through all the changes to a project (in a user-friendly way!), and revert it back to any point if you need to. That's certainly one I'm looking forward to! :)

[1] https://www.overleaf.com/blog/195 [2] https://www.overleaf.com/blog/278

PS: You can find out about all our upgrades as they happen through our blog!

Dr. Hammersley, just wondering what your thoughts are on open access publishing and how many of your clients use your service for open access publishing. I expect this number to be quite low and was hoping you might expand on how to publish open access without compromising your impact factor or perceived scientific rigor. Please share any and all thoughts on the subject. Thanks!

Shpeck

That is a fantastic question, and I would recommend taking a look at whyopenresearch.org to find out more about the benefits of being an open scientist. That site is created and run by Erin McKiernan, a scientist who makes all of her work as open as she can, and I recommend searching for a video of her

speaking about open science to hear her story. We are actually seeing an increasing number of papers submitted through to our open access partners, in particular to platforms such as F100Research and PeerJ who've worked with us to help streamline the submission process. Those types of journals are seeing a growth in impact and there is also research to indicate that articles published as open access get more citations and are shared more widely -- I will try to find and add the link later.

Looking ahead, more and more funding bodies are requiring work (and data) to be made open, and so I expect we'll continue to see a move towards open access (of some sort - I appreciate there are differences between fields). I would recommend talking to others in your field who've published open access, and check out the stories at https://thewinnower.com/keywords/arcs2015 on the rewards of being open.

Hello!, Thanks for the AMA, and thanks for overleaf!, it is a wonderful plataform.

Could you quickly comment on how overleaf became a reality?, did you have the idea before finishing your PhD?, how did you got funds to launch it up?

Thanks!

kastoro

That's a long story, and if you'd like to hear it rather than read it, check out this video which my co-founder and I recorded in the middle of last year: https://www.youtube.com/watch?v=eBwfu_eQwB4

Essentially we ran into the problem of not being able to collaborate with our co-authors (based in universities around the world) on writing papers in LaTeX, especially given that some of them had never used LaTeX before and preferred to use platforms like MS Word. On top of that, emailing a LaTeX file to someone who doesn't know LaTeX really doesn't work for multiple reasons, and so the first version of writeLaTeX (as it was called then) was put together over a weekend by my amazing colleague and co-founder, John Lees-Miller to help solve these problems.

This was whilst we were working on the Heathrow driverless taxi system (and about 4-5 years after my PhD), and because the WriteLaTeX (Overleaf) prototype was on the Internet, other people started to find it and use it, and it started to grow. We were featured on HackerNews a couple of times, and so at the end of 2012 we decided to go for it full time![1] We decided to apply to startup accelerators – YC was our first, we got an interview but totally messed it up because it was our first one and we pitched it all wrong. But a couple of months later we got into the excellent #techforgood incubator called Bethnal Green Ventures which gave us a little bit of money but more importantly, we spent three months there learning a huge amount about building this into a business. At the end of BGV we had about 25,000 users, and were able to use the demo day presentation created there to kick off the raising of our seed money round, which led us to where we are today with Digital Science.

Do you think your academic background is essential to your career?

huskyhk

Yes, absolutely -- I've learnt different things through each phase (school / degree / PhD / industry / start up founder), and I don't think I would have been able to launch and successfully run Overleaf without both my academic background and the connection to science & research that it brings, together with my experiences in industry.

Dear Dr. Hammersley,

Has your company, Overleaf, collaborated with/funded academic research? If the answer is Yes, can you discuss the expectation of final results (or the perceived expectation if the funding comes under the form of no-string-attached gift) from an industrial perspective, as compared to funding coming from agencies like NSF, NIH, etc

Damark81

At the moment we've not funded any research, and I don't really have any experience with this so it's difficult to comment.

One perhaps relevant experience I had was when I received an EU grant for a research project whilst working in industry -- here, although it was a grant, and so in one respect "free money", the amount of paperwork and administration it created meant that in real terms it probably cost us money. So I would always check up on that before taking any money, even if from a results perspective it comes with no strings attached.

Hi John, what does Overleaf plan to do to disrupt the hegemony of traditional publishing? We need peer review and publicity for new results, but traditional publishing seems to exist due to a distribution problem which no longer exists in the internet age.

StevenXC

I agree that the internet has transformed the distribution model for academic papers, and global collaborations have also been increasing steadily over the past 20 or so years[1]. I think the big change in the past few years is the arrival of new cloud-based services.

This has led to many new ideas and innovations in scholarly communication that are all disrupting different areas of the workflow, as we're doing for authoring. For a recent list of innovations see [2].

What's great to see is that the traditional publishers are working with these new technologies to improve the experiences for their authors and readers. Where will we get to in 5-10 years? I wish I knew!

[1] Knowledge, networks and nations: global scientific collaboration in the 21st century: https://royalsociety.org/topics-policy/projects/knowledge-networks-nations/report/ [2] 101 Innovations in Scholarly Communication - the Changing Research Workflow https://figshare.com/articles/101_Innovations_in_Scholarly_Communication_the_Changing_Research_Workflow/1286826

I publish in a field where we don't use a lot of Latex. What is the benefit to my co-author's and I of using Overleaf vs MS Word and Dropbox?

Case_Control

If you ever need to collaborate with anyone who's used to using LaTeX, then Overleaf provides a great platform for this. For example, one of our early partners was the life sciences journal F1000Research; before we worked with them, they didn't accept LaTeX submissions, but now they do and around 10-15% of their submissions each year come through us (driven primarily through the growth in computational biology).

Second, through our partnerships with journals such as F1000Research, we're greatly streamlining the submission process -- you can submit your paper directly from Overleaf with just a couple of clicks, and we pass not only all the necessary files across to the journal, but also extract out meta data such as the title, abstract and keywords in order to pre-populate the fields that you'd otherwise have to fill in by hand.

Hi Dr. Hammersley, how was the process of starting and growing a company? How difficult or easy was it through your experience and connections and being able to hire the right people and grow the company the right way?

linx000

It's just about the hardest thing I've ever done -- I'm lucky enough to now be the proud father of a 12 week old baby daughter, and I can say that having a baby and starting a company are both incredibly tiring and all-consuming!

I was also lucky enough to be starting a company with someone who I'd worked with for five years, trusted completely, and who was (and is still) the best all round programmer I've ever met. We've

certainly had our ups and downs as we've grown -- it's been a lot harder than either of us imagined, but equally a whole lot more rewarding too!

We found it invaluable to join a startup accelerator -- we learnt so much in such a short space of time, and wouldn't have been able to raise a seed round without both the experience and connections it gave us. Before starting out, I'd also recommend having enough money saved up to be able to go 12-18 months without paying yourself, as it will almost certainly take you longer than you think to be in a position to do so!

Are you related to JM Hammersley, a mathematician from Oxford who did significant work in the 1950s to 1980s?

J-V-R

I'm afraid I'm not, although I have read up on some of his work (once someone pointed out the shared name!)

Dr. Hammersley, when and what caused you to finally decide mathematics was going to be what you wanted to do?

Additionally, did you always have an idea of what you wanted to do with a degree in math or did you major and hope you found a place for a mathematician?

Last question: I feel as a microbiology major that math just isn't explained or taught in terms I can comprehend, I like connections and reasoning while math seems to be taught and practiced largely in a "remember the steps then apply the steps you don't need to know why" sort of way.

That said, can you explain Imaginary and Complex numbers in a way some one who needs physical evidence will understand?

ItsSilver

I started out loving math and science right from when I was at primary school (as it's called in the UK) -- I seem to recall being asked, aged 7, what I wanted to be when I grew up, and I think I said 'inventor scientist' even then :)

I think a lot of this comes from my fascination with space -- my sister was born on the very day Neil Armstrong walked on the moon, and so every year I had this reminder to look up at the stars! I also always loved logic puzzles, and my parents bought me book after book of them when I was a kid! So yes, for me it started early :)

I originally planned to do Space Science at university, but in the end felt that doing maths and physics would give me more opportunities -- and indeed when I was nearing the end of my degree I decided to pursue a PhD in maths. Although having recently seen the Falcon 9 landing, I do wish I was involved in that somehow!

There are lots of different approaches to teaching maths, and there definitely are connections there, even if they aren't taught! I'll see if I can find a nice online intro to mathematics that I think would help. I'll also have to come back to you on the complex numbers question -- I'm sure I've read a nice description of them somewhere which is along the lines you're asking, but I can't remember where (or when!).

Hello, I really like your product, can you talk about how you started out and what your role was in the startup process?

How do you feel about complicated symbols being necessary to express mathematics? For example Do we really have to keep using an oversized S as an integral sign? Wouldn't the form of other conventionally defined functions like lg() or sin() be a better fit (how do you feel about int(x,x) instead)?

Also where do I turn for feature requests suggestions on what I would like to see improved from a user

perspective?

not_perfect_yet

Thanks -- glad you like it! t's a long story, and if you'd like to hear it rather than read it, check out this video which my co-founder and I recorded in the middle of last year: https://www.youtube.com/watch?v=eBwfu_eQwB4, and you can find some more details in an early answer in this AMA.

Re the symbols used in mathematics, I can see two perspectives - one is that, as a reader, the integral sign (especially when there are limits) is very clear and easy to parse quickly, whereas written symbols would take longer. From the perspective of the author, LaTeX does let you write commands such as \int, and so you get the benefit of fairly easy writing combined with the nicely typeset version for reading!

We'd love to hear any feature requests -- feel free to send them to us via https://www.overleaf.com/contact