



RETHINKING OUR NARRATIVES: THE CHALLENGE OF "SLOW SCIENCE"

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Slowpen Science Collective

The Open Science Movement



- **Improving Openness, Integrity, and Reproducibility of Scientific Research**

Identified problems

Available solutions



- Reproducibility

- Replicability projects

- Access to data and code

- Repositories (OSF, Git)

- Bias for positive results

- Preregistration, Archives

The Open Science Movement



◦ Improving Openness, Integrity, and Reproducibility of Scientific Research

Reproducibility is not for all types of science but biased toward lab, experimental sciences. Also tends to reinforce the idea of 'sound vs soft' sciences



Identified problems

- Reproducibility
- Access to data and code
- Bias for positive results

Available solutions

- Replicability projects*
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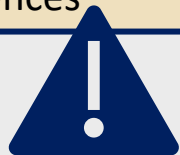
* Replication is not sufficient to "curb the natural selection of bad science" and improve the quality of publications and the probability that results are true results. Smaldino & McElreath (2016)

The Open Science Movement



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++ Exponential growth of publications

Going back to the origins of the troubles



- **How did we end up there?**

What went wrong that we now need to convince researchers of the benefits of opening science?

Why do we need Open Science tools to 'fix' scientific practices?

We need to go to the roots of the contemporary problems that academia is facing.

Going back to the origins of the troubles



"The research culture has also changed in the last few decades. It is more **competitive**, everything is happening **fast** and putting a lot of **pressure** on everyone, [...] students are **more protective of their ideas** and in a **hurry** to put them out, by **fear** that someone else would be working on the same thing elsewhere, and in general a PhD ends up with at least **50% more papers** than what I gather it was 20 or 30 years ago."

Yoshua Bengio (2020, Feb.)

The Tyranny of the **Top Five Journals**: "Getting published in a top five economics journal is a **near-requirement for tenure**. But it's a poor measure of research quality within a system that **punishes creativity**."

James Heckman and Sidharth Moktan (2018, Oct.)

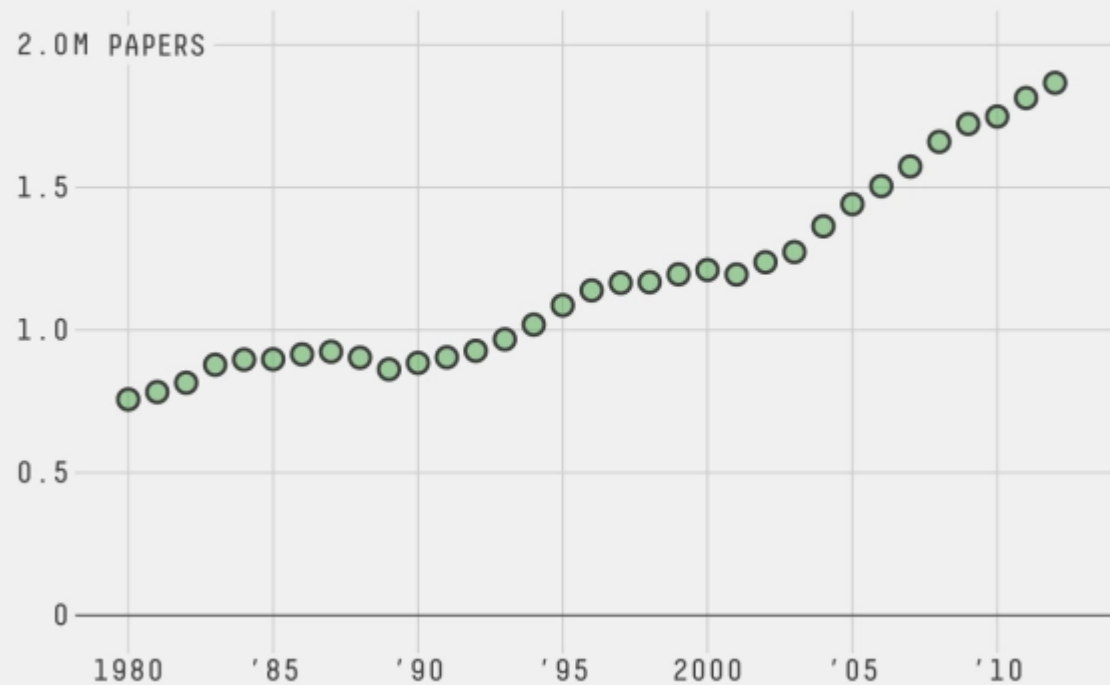
Rogue ESR survey (2500 resp., 2020 May): 50% of the respondents admit to publish episodically or regularly **unfinished works**. 14% also declare having done so "once". 68% say they do **not have the time to follow the state of research** in their field.

Going back to the origins of the troubles



The Pace Of Publishing

Number of scientific papers in Max Planck Digital Library's database, by year of publication



FIVETHIRTYEIGHT

Bornmann & Mutz (2014) ArXiv

more papers = more knowledge?

→ Cumulation of knowledge

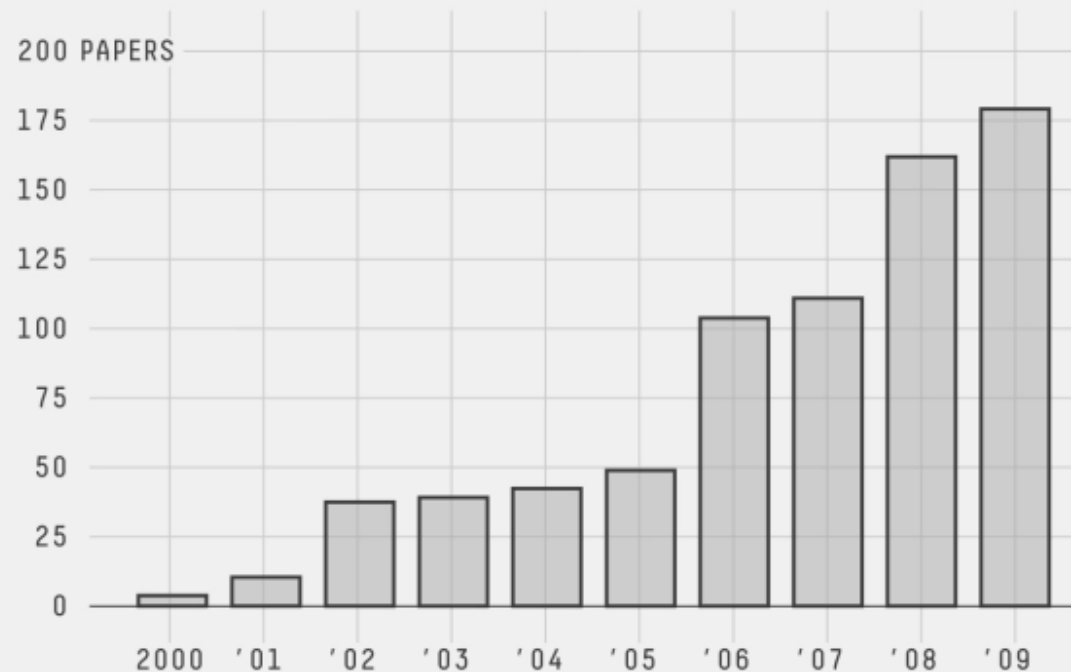
What do we do with that knowledge?

Going back to the origins of the troubles



Retractions On The Rise

Retractions of scientific papers in the PubMed database



FIVETHIRTYEIGHT

SOURCE: JOURNAL OF MEDICAL ETHICS

more papers = more knowledge?



Amitangshu Acharya

@amitangshu

How is this going to work? So many manuscripts being submitted to journals on a daily basis. Who has time to review & give each the time needed? Large volumes of low quality papers keeps getting published without thorough scrutiny. This is a serious disservice to science.

[Traduire le Tweet](#)

4:13 PM · 17 juil. 2020 · Twitter Web App

Going back to the origins of the troubles



"The research culture has also changed in the last few decades. It is more competitive, everything is happening fast and putting a lot of pressure on everyone, the field has grown exponentially in size, students are more protective of their ideas and no one else would be working on them. At least 50% more people are publishing now than there were 10 years ago." *Yoshua Bengio (2018)*

Publish or perish culture → competition

Publish or perish culture → following the publication pace has become impossible

Consequences of the heavy use of metrics

The Tyranny of the Top Five Journals: The pressure to publish in a top five economics journal is a near-requirement for tenure. But it's a poor measure of research quality within a system that punishes creativity." *James Heckman and Sidharth Moktan (2018, Oct.)*

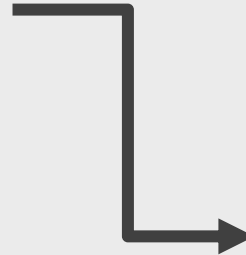
(Survey data, 2020 May): 50% of the respondents admit to publish episodically or regularly unfinished works. 14% also declare having done so "once". 68% say they do not have the time to follow the state of research in their field.

Going back to the origins of the troubles



→ Fast science

- Quest for excellence → homogenised criteria
- External reward (metrics)



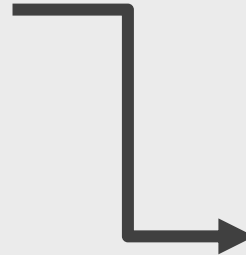
- Competition instead of cooperation
- Harking, p-hacking
- Cumulation of publications
- Threatened peer-reviewing system

Going back to the origins of the troubles



→ Fast science

- Quest for excellence → homogenised criteria
- External reward (metrics)
- No time to waste, especially not for “futile” questions (societal, ethical)
- Ivory tower of Science (as a monolith)



- Competition instead of cooperation
- Harking, p-hacking
- Cumulation of publications
- Threatened peer-reviewing system
- Not enough (time for) questioning
- Science as an Authority



Open Science is hardly fixing Academia



- External reward = incentives to open your research (badges, new metrics)
- Open-washing practices not necessarily addressed
- Publication-based research not challenged



“Making science better is not just about “creating better incentives”, but a collective cultural shift beyond viewing competition and individualistic success as the sole defining feature of science.”

Lancaster et al. 2018

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Disclaimer: the Open science movement is useful but it doesn't go far enough!



“Making science better is not just about “creating better incentives”, but a collective cultural shift beyond viewing competition and individualistic success as the sole defining feature of science.”

Lancaster et al. 2018

The philosophy of Slow Science



What Slow Science is not:

- Asking you to slow down your pace
 - Limiting the number of publications
 - Publishing one paper every ten years
- A hippie alternative
- Disconnected from society
- Going back to an idealised Golden Age of Science



THE SLOW SCIENCE MANIFESTO

We are scientists. We don't blog. We don't twitter. We take our time.

Don't get us wrong—we do say *yes* to the accelerated science of the early 21st century. We say *yes* to the constant flow of peer-review journal publications and their impact; we say *yes* to science blogs and media & PR necessities; we say *yes* to increasing specialization and diversification in all disciplines. We also say *yes* to research feeding back into health care and future prosperity. All of us are in this game, too.

However, we maintain that this cannot be all. Science needs time to think. Science needs time to read, and time to fail. Science does not always know what it might be at right now. Science develops unsteadily, with jerky moves and unpredictable leaps forward—at the same time, however, it creeps about on a very slow time scale, for which there must be room and to which justice must be done.

Slow science was pretty much the only science conceivable for hundreds of years; today, we argue, it deserves revival and needs protection. Society should give scientists the time they need, but more importantly, scientists must *take* their time.

We do need time to think. We do need time to digest. We do need time to misunderstand each other, especially when fostering lost dialogue between humanities and natural sciences. We cannot continuously tell you what our science means; what it will be good for; because we simply don't know yet. Science needs time.

—Bear with us, while we think.

<http://slow-science.org/>

The philosophy of Slow Science

The analogy with the Slow Food movement

“a world in which all people can access and enjoy food that is good for them, for those who grow it and for the planet”

- Comprehensive approach of the **strong connections** between plate, planet, people, politics and culture
- Preserving the **local ecosystem**: traditional and regional cuisine and farming characteristics
- Focus on food **quality**, rather than quantity

→ Globalisation: a process in which small and local farmers and food producers should be simultaneously **protected from and included in the global food system**



The philosophy of Slow Science



The analogy with the Slow Food movement

“a world in which all people can access and enjoy *science* that is good for them, for those who make it and for the planet”

- Comprehensive approach of the **strong connections** between *researchers, industries, ‘connoisseurs’, citizens, politics/funding*
- Preserving the **local ecosystem**: traditions and specificities of *different disciplines* (different time scales, evaluation criteria)
- Focus on *research quality*, rather than quantity

→ Globalisation: a process in which small universities, less known researchers, less economically strong countries, researchers from minorities... should be simultaneously **protected from and included in global academia**



Slow science

The philosophy of Slow Science



What Slow Science is about: Developing a **sustainable research praxis**

- What kind of research do we want? How do we see academia in a couple of years, or in a decade?
- How do we define the job of a researcher?
- How do we assess the good value of a piece of research?
- What is the relevance of my question? Of my study?
- What do I do with my knowledge?

→ **We need to reform/rethink academia, not to fix it**

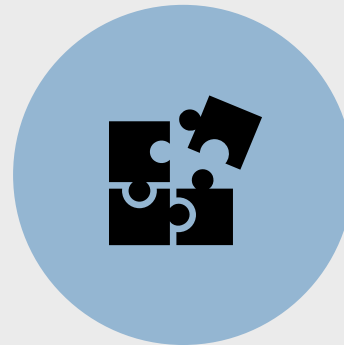
“ethics lies at the very heart of scientific endeavours and much of our work revolves around ethical considerations. Researchers are used to thinking about and discussing ethical matters; we can build on that and extend this tradition to reflective action on the way we construct our communities.”

Chapman et al., 2019

The philosophy of Slow Science



What Slow Science is about: Developing a **sustainable research praxis**



Slow science relies on a collective praxis, dependent on wondering, thinking, discussing and sharing in recurring cycles

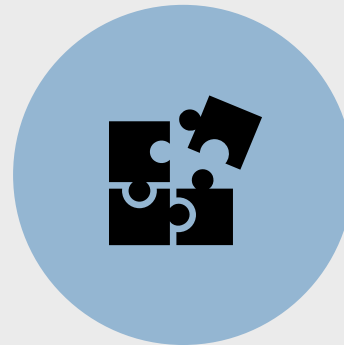
Time and space are the essential resources for exercising professional judgement, for imagining (radical) alternatives, for critical playfulness and for 'exposure to diversity and difference regarding ways of seeing and being in the world'.

The philosophy of Slow Science



What Slow Science is about: Developing a **sustainable research praxis**

Patience, receptiveness,
carefulness, reflection
and mindfulness



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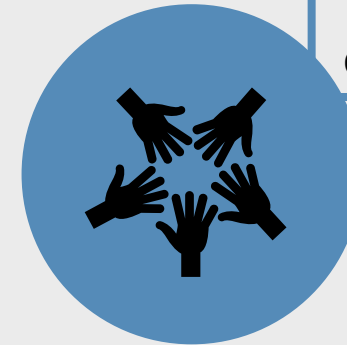
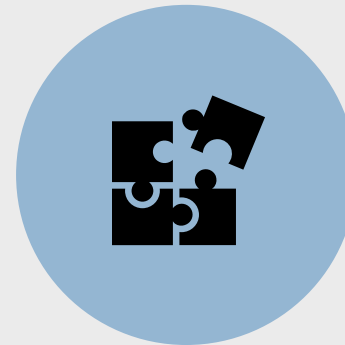
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The philosophy of Slow Science



What Slow Science is about: Developing a **sustainable research praxis**

Patience, receptiveness,
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Slow science as an open,
collective and public praxis

→ One goal is to improve the
dialogue between academia
and citizens

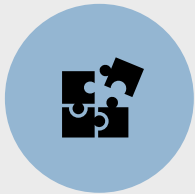
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The philosophy of Slow Science



What Slow Science is about: Developing a **sustainable research praxis**



“This is generous thinking: listening to one another, recognizing that we have as much to learn as we do to teach, finding ways to use our collective knowledge for the public good. From the broadest rethinking of our political and institutional landscape, to developing new ways of working in public, to sharing our ways of reading, to focusing on the most intimate practice of listening — at each level, we must be connected to, fully part of, the world around us”

Fitzpatrick, 2019

Where to begin?

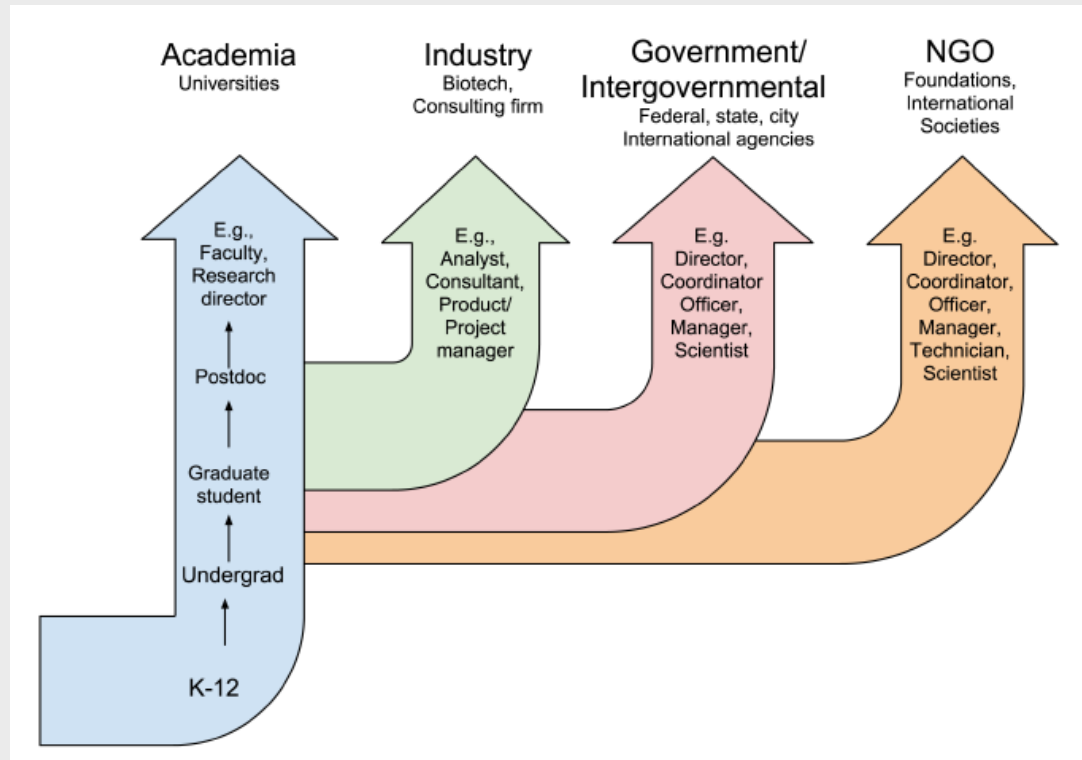


- Organise discussions within your team/lab, start the conversation!
 - Challenge our injunctions, think about our relation to the non academic worlds*
- Be curious to other disciplines, broaden your perspectives
- If you are an Editor, use your power to challenge top tier journal publication criteria!
- Check the Declaration on Research Assessment ([DORA](#))
- Explore and imagine alternative ways of doing science
 - E.g.: Independent institutes, independent scholars, part-time researchers



* You can check this Wellcome initiative for some inspiration: <https://reimagineresearchwellcome.uk.engagementhq.com/Reimagine-Research>

Challenging the pipeline narrative



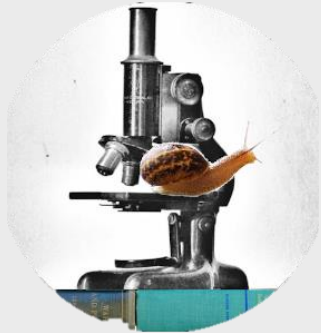
The traditional scientific career pipeline (Lancaster et al. 2018)

Fixing the pipeline:

- Adjusting flow in the pipeline
- Adapting to the pipeline
- Finding another pipeline
- Thinking outside the pipeline

By framing solutions in terms of “fixing the pipeline”, the underlying career structures for scientists remain largely unchallenged.

Existing initiatives and structures



Slow science in Belgium
<https://slowscience.be/>



The Ronin Institute
<http://ronininstitute.org/>



<https://igdore.org/>



<https://picomps.org/>



DORA
<https://sfdora.org/>



<https://researchcooperative.org/>

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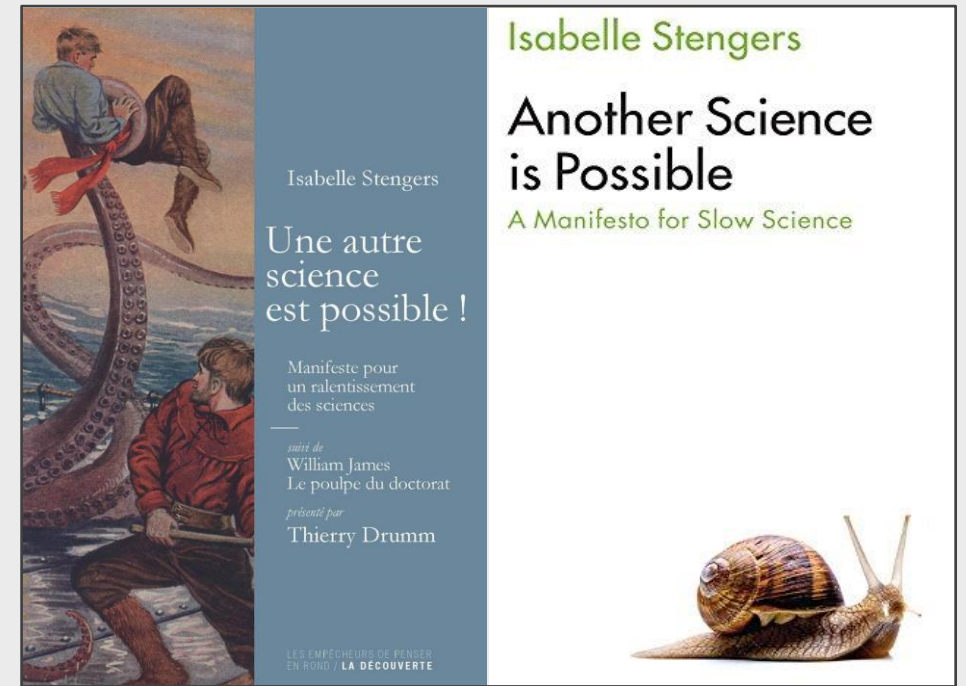


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<https://www.societyandspace.org/articles/another-science-is-possible-by-isabelle-stengers>



Thank you for your attention!

