Encouraging Academics to Embrace #OpenScience

The 5th UGM Public Health Symposium

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Getting it right, not just getting it published*

Is "publish or perish" culture still relevant?

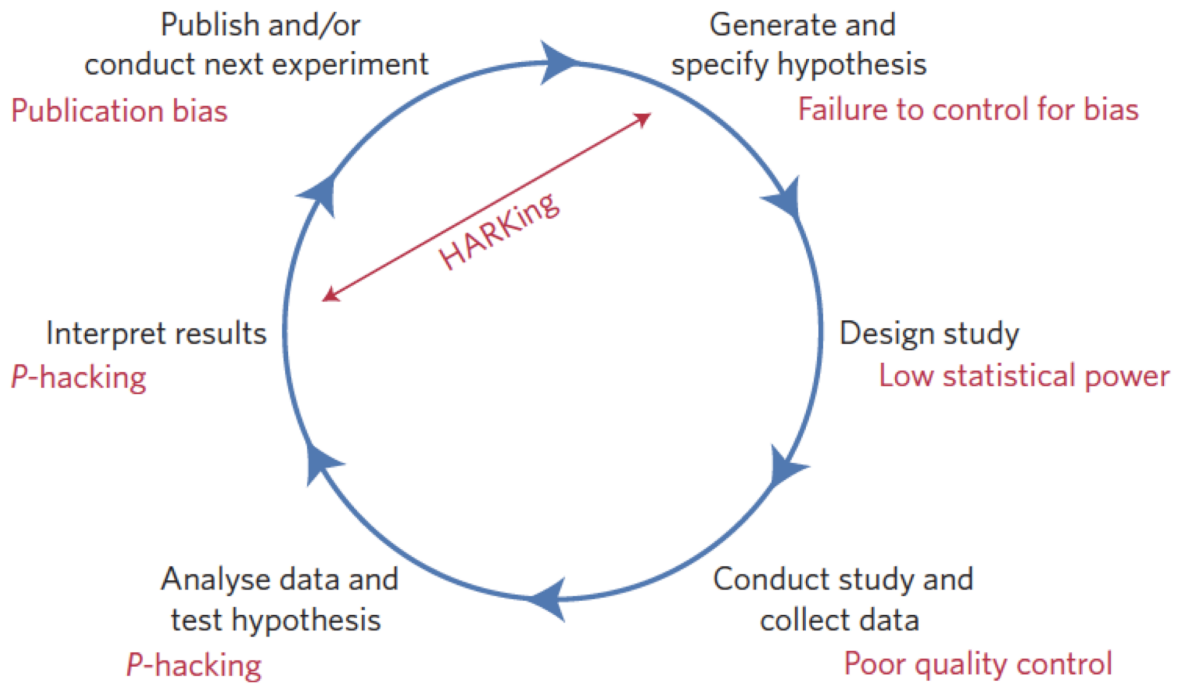
[*] Taken from Brian Nosek as presented in Open Science Symposium in Ghent University, 2019

Changing the norms

- From `secrecy` to `communality`
  - We need to make our works **openly accessible** to everyone instead of **locking up** in paywalled outlets
- From `particularism` to `universalism`
  - Despite **the reputation** (metrics, citation count), we should solely assess research impacts by **its own merit**
- From `self-interestedness` to `disinterestedness`
  - Treating science as **a competition**? Bad idea! It definitely **hinders innovations**.
  - Can we put our **love of knowledge** and our **desire to discover** something (useful) as our motivations instead?
- From `dogmatism` to `skepticism`
  - Stop putting too much time **to defend certain theories** or findings, start to consider **all new evidence**
- From `quantity` to `quality`
  - **Stop relying on crude metrics**. The real question that should be answered: have our research been done with **sound methodology**? **Are the findings credible?**

The trouble with our current way of doing science...

Threats to Reproducible Science



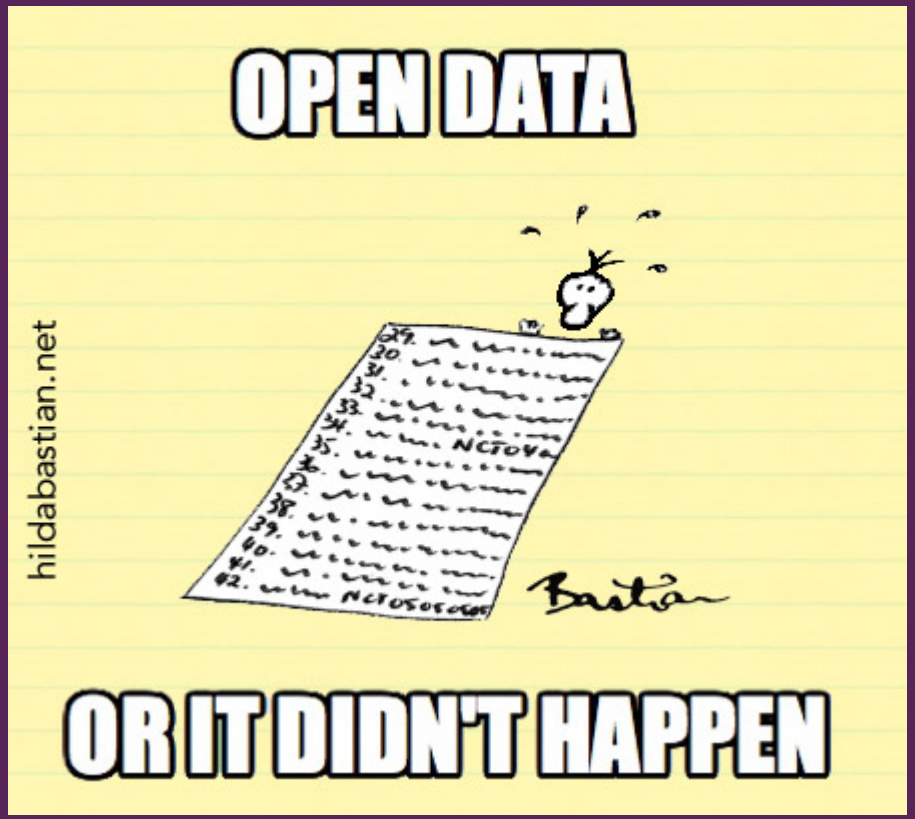
Munafo et al. (2017)

Replication crisis is real...

1. It happens almost in every disciplines
    - Including medicine, biology, chemistry, hydrology, psychology, and many more! (it's a long list, tbh)
2. Undermining the credibility of science (and scientists, too)
3. Integrity is **preceeded by** openness, transparency and sharing
4. Science and pseudoscience are no longer distinguishable
5. Cumulative science is no longer useful, because it is based on highly-biased estimation (due to publication bias)[1]
6. John Ioannidis[2] argues that "...there is massive production of **unnecessary**, **misleading**, and **conflicted systematic reviews** and **meta-analyses**. Instead of promoting evidence-based medicine and health care, these instruments often serve mostly as **easily produced publishable units or marketing tools**..."

[1] See Lin (2018)
[2] The context of this criticism is a massive increase of the number of meta-analytic study from 1986 to 2015, yet the studies were mostly sponsored by large industries with high potential of conflict of interest. See Ioannidis (2016)

How can we improve it?



A Manifesto for Reproducible Science*

- Protecting against (our) cognitive biases
- Improving methodological training
- Independent methodological support
- Collaboration and team science
- Promoting study pre-registration

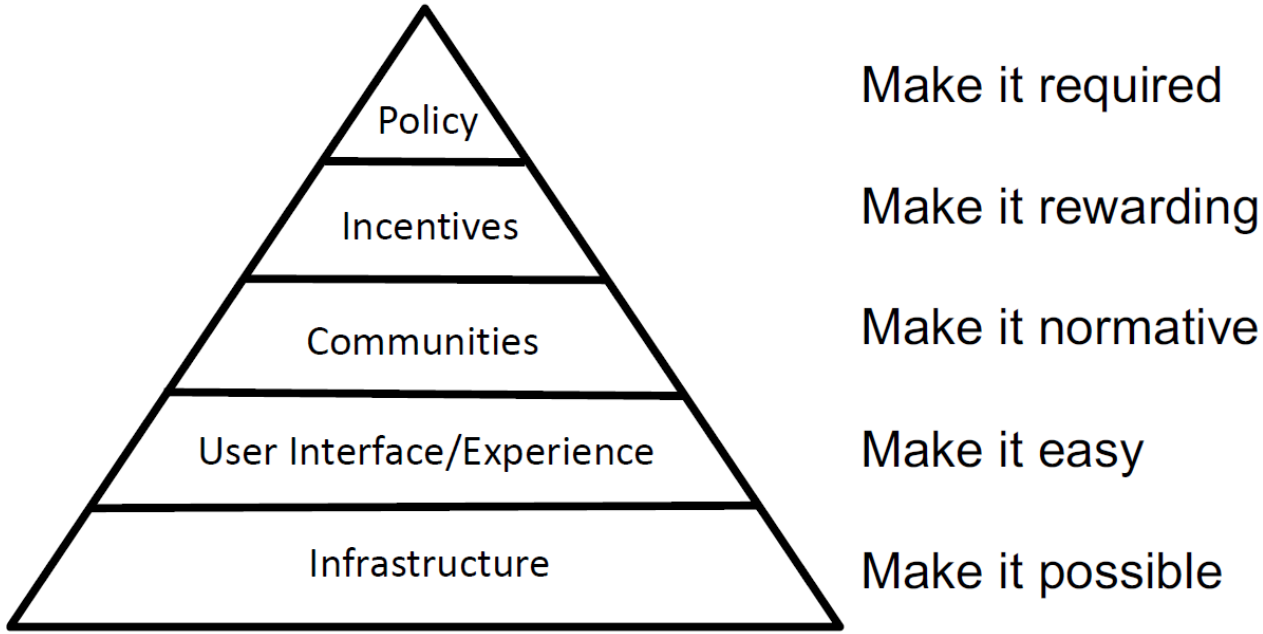
[*] Munafo et al. (2017)

A Manifesto for Reproducible Science*

- Improving the quality of reporting
- Protecting against conflicts of interest
- Encouraging transparency and open science
    - Share materials and data, use open-source, reproducible software (, and many more)
- Diversifying peer review
- Rewarding open and reproducible practices

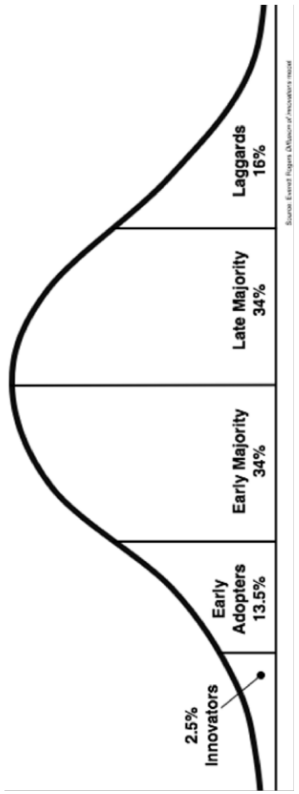
[*] Munafo et al. (2017)

Changing research culture*



[*] As presented by Brian Nosek (2019)

Promoting #OpenScience to Academia*



Make it required

Make it rewarding

Make it normative

Make it easy

Make it possible

As presented by Brian Nosek (2019); Diffusion of Innovations, Rogers (1963)

Many thanks!

Slides created via the R package **xaringan** using `R-Ladies` template and fonts.

The chakra comes from remark.js, **knitr**, and R Markdown.