Four trends shaping the future of research evaluation

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The future of research evaluation

- This presentation is about

  - Trends and drivers that will influence the future

- This presentation is not about:

  - Future Research England policy or practice on research assessment

  - High-level direction or detailed implementation of any future national research assessment following REF 2021

Recent evidence on the future of research evaluation

Sources:
- https://doi.org/10.7249/RR3200
- https://www.elsevier.com/__data/assets/pdf_file/0003/898005/Research_Futures_full_report_Feb2019.pdf
- https://demos.co.uk/project/research-4-0-research-in-the-age-of-automation
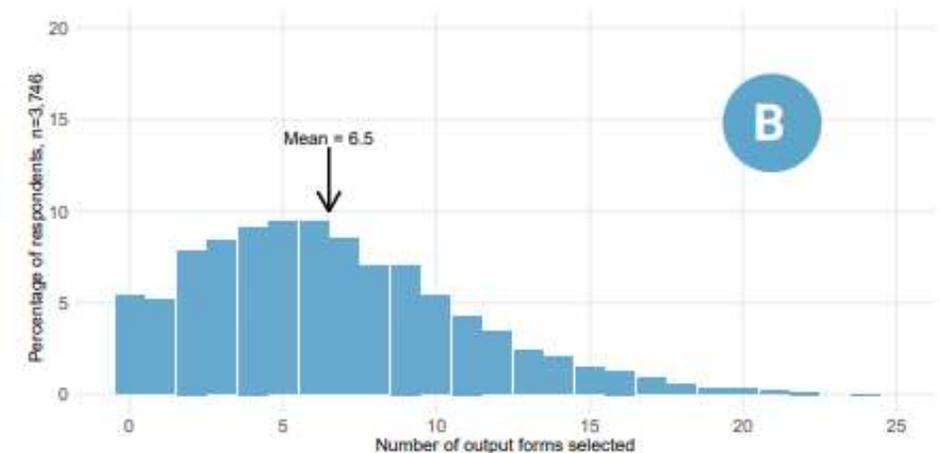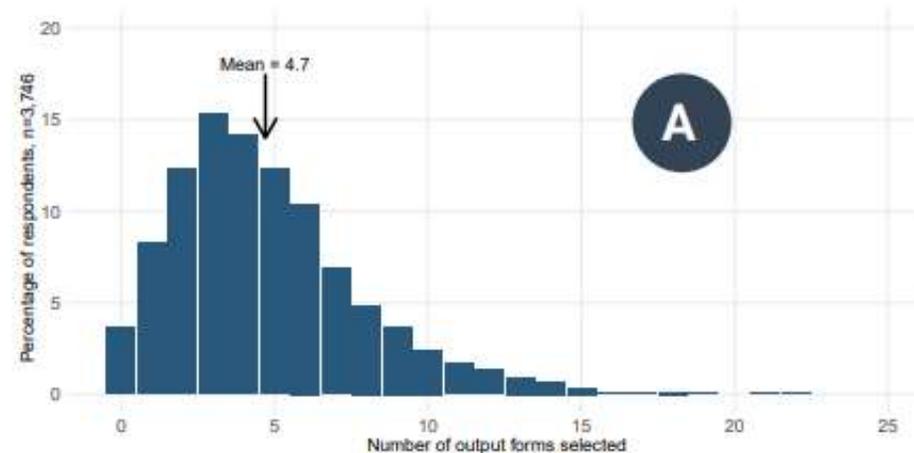
Four trends shaping the future of research evaluation

- The nature of research outputs is changing

- Insight from the citation network is increasing in sophistication

- There is an increasing focus on the culture of research

- Artificial Intelligence has the potential to revolutionise research assessment

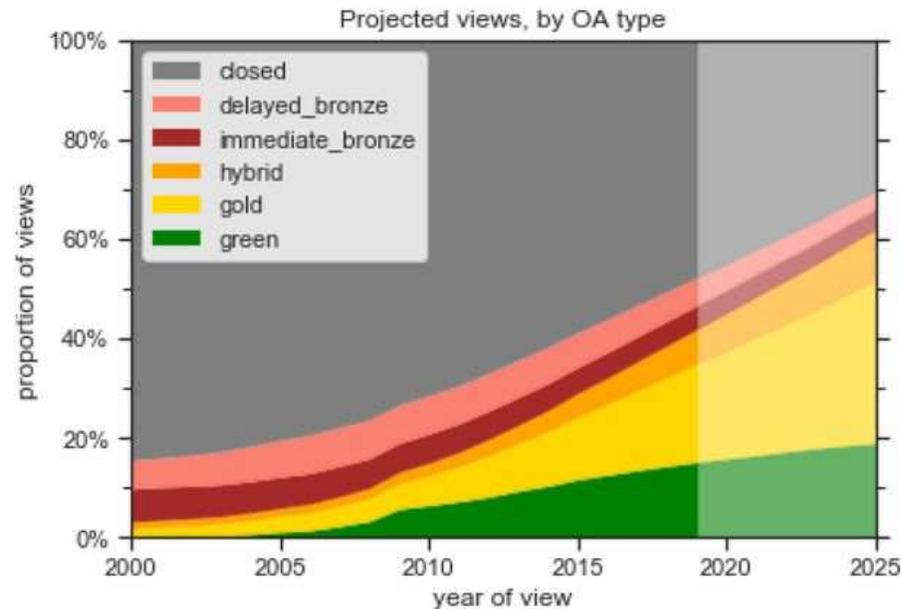UKRI Research England

The nature of research outputs is changing

- Diversity

Figure ES.2: Number of different forms of output that researchers produce now (A) and expect to produce in the next 5 to 10 years (B)
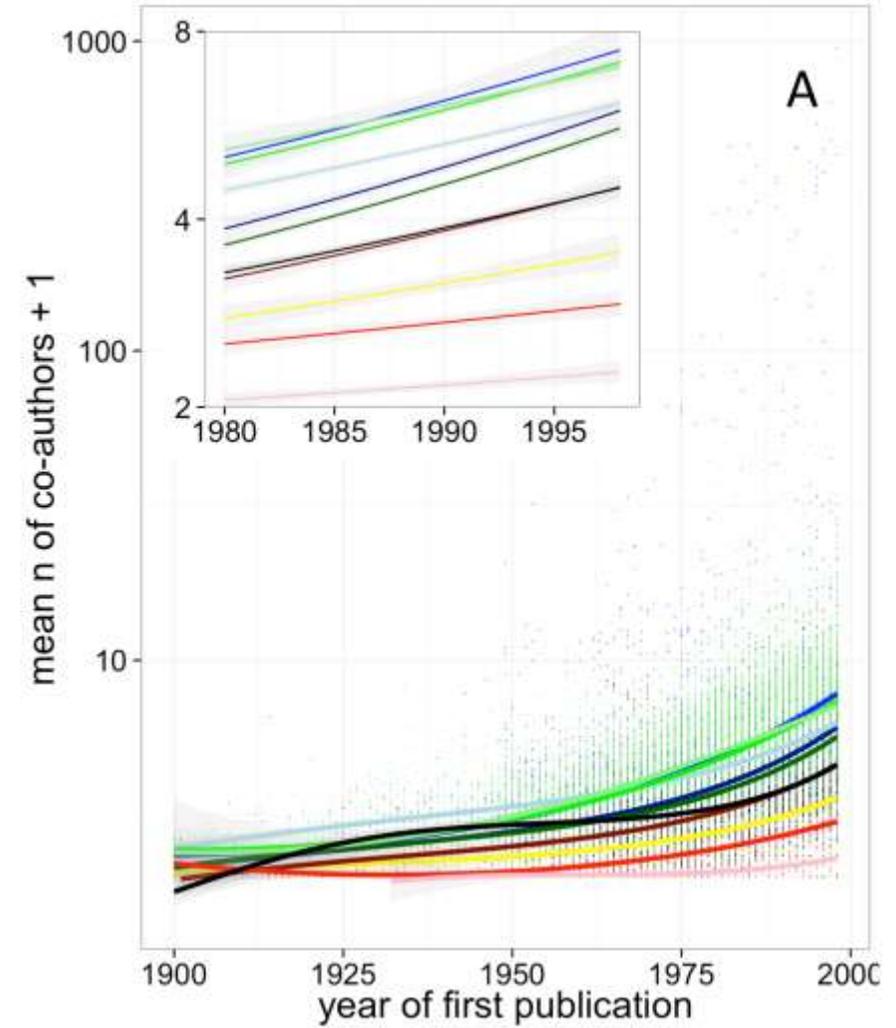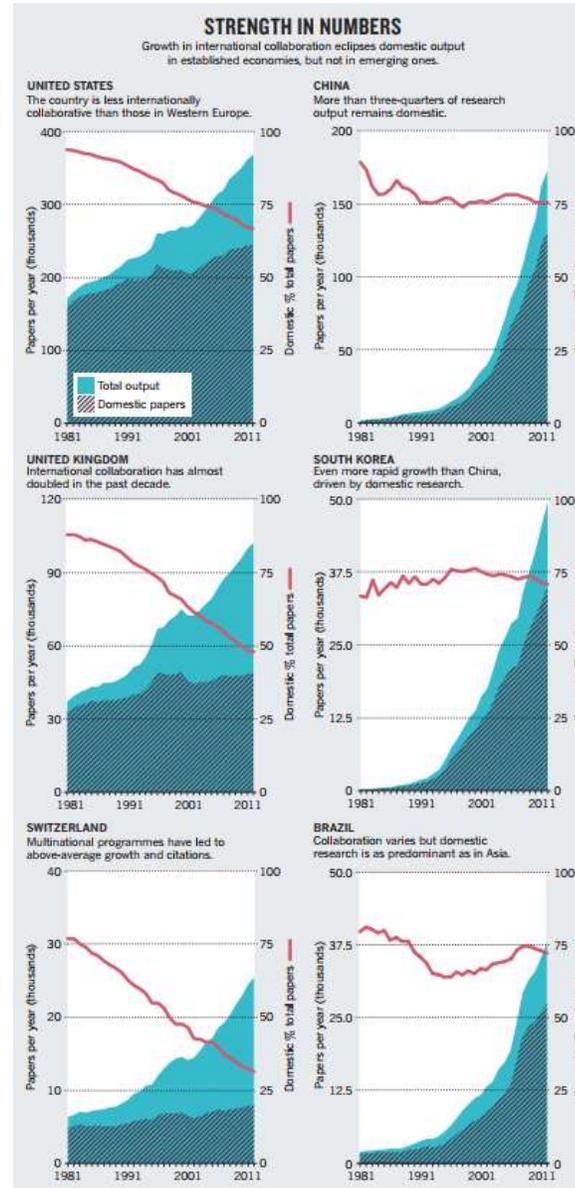
The nature of research outputs is changing

- Diversity

- Openness

Projected views, by OA type

Projected articles, by OA type
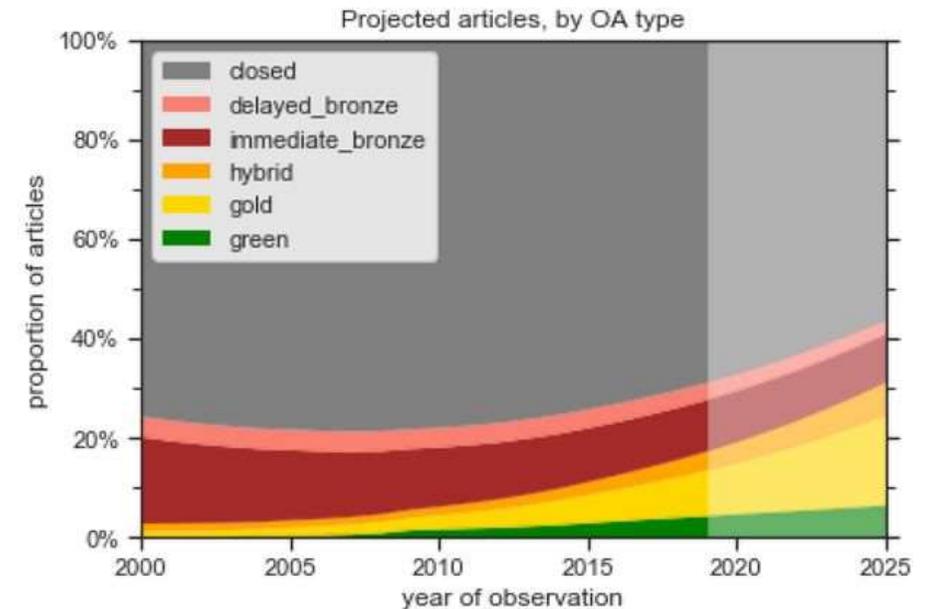
The nature of research outputs is changing

- Diversity
- Openness
- Collaboration

Sources:
- Adams (2013) https://doi.org/10.1038/497557a
- Fanielli and Larivière (2016) https://doi.org/10.1371/journal.pone.0149504

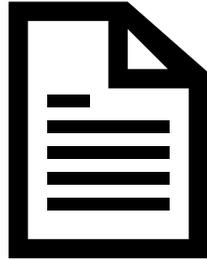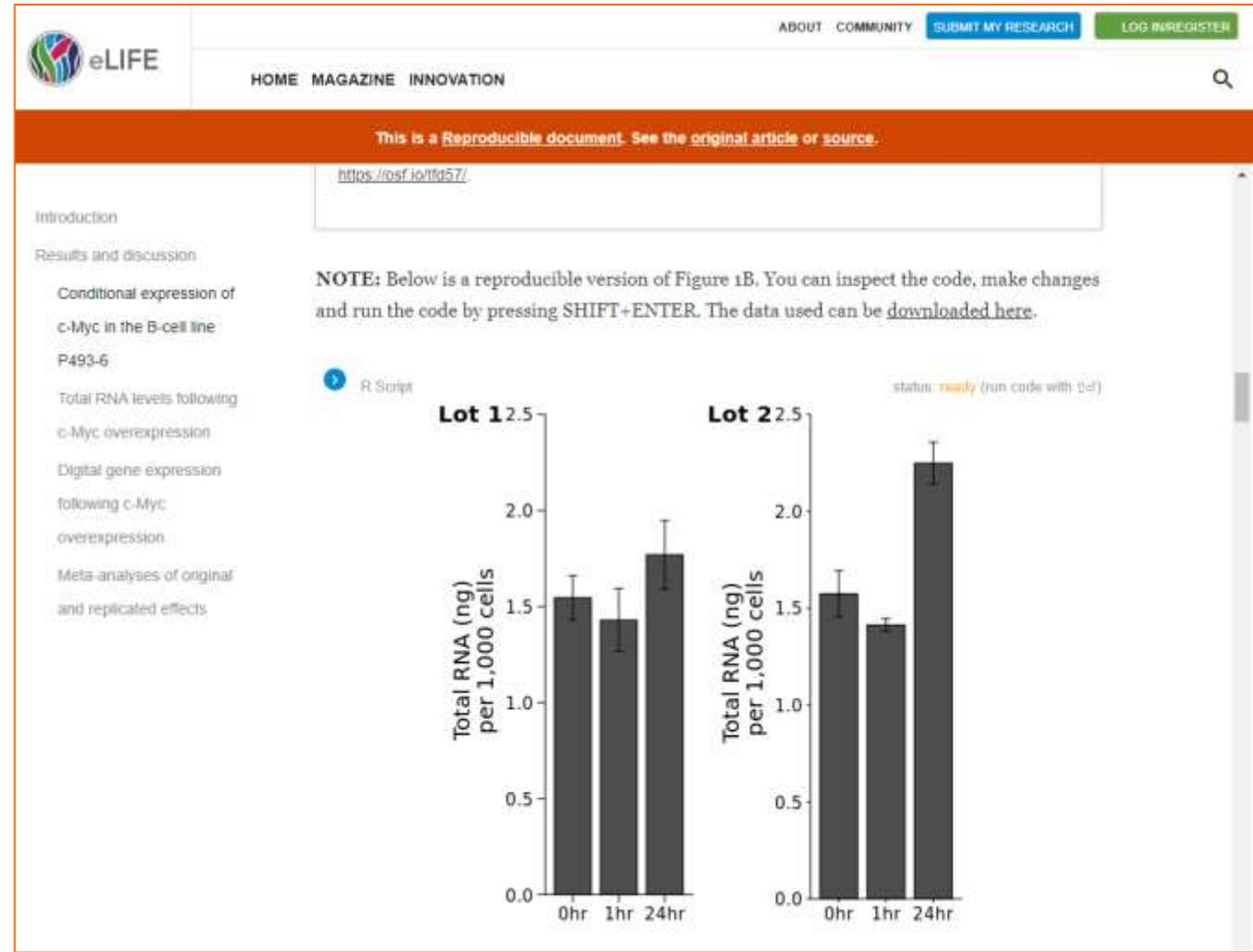# The nature of research outputs is changing

- Diversity
- Openness
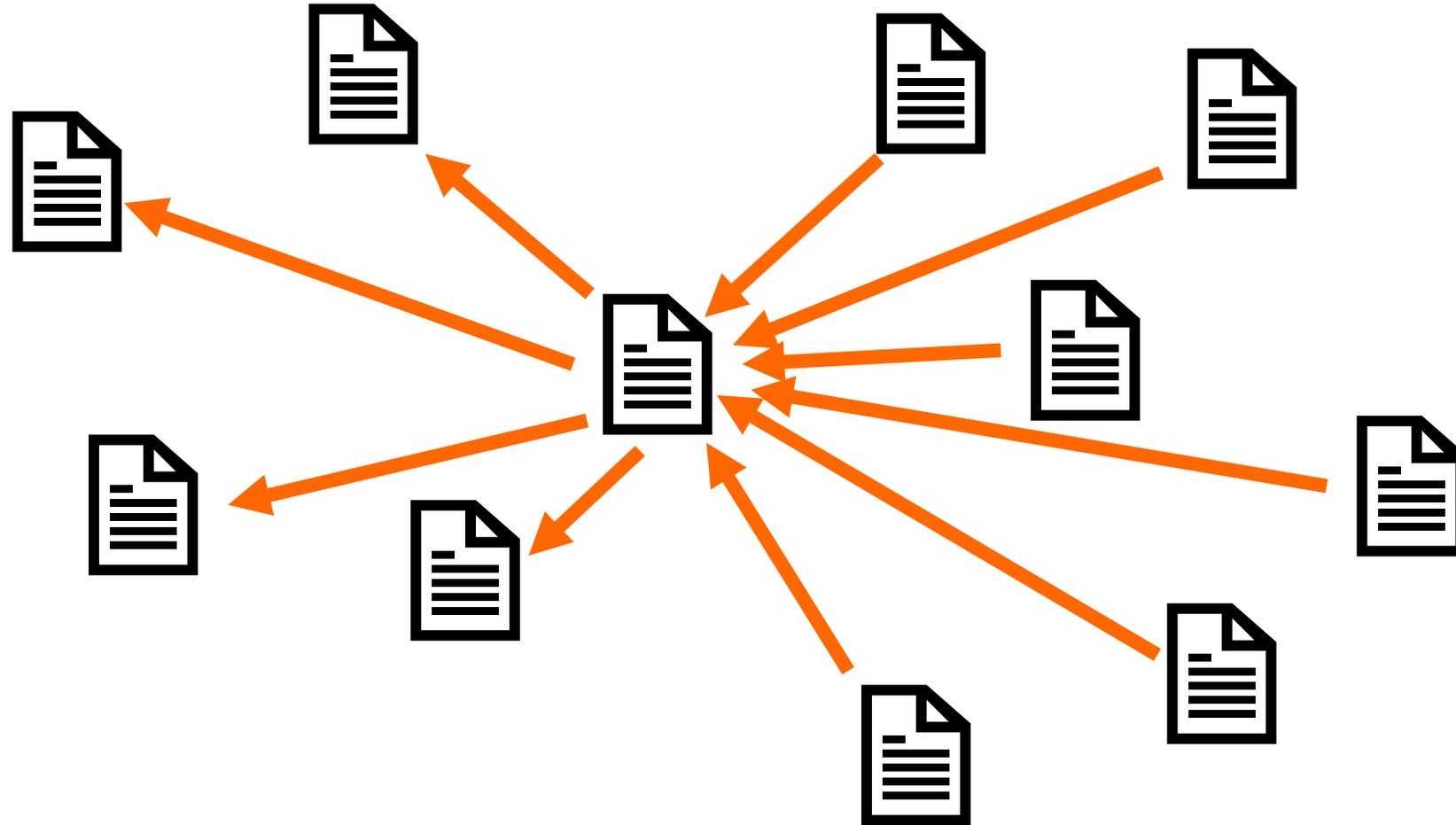- Collaboration
- Granularity

Research England
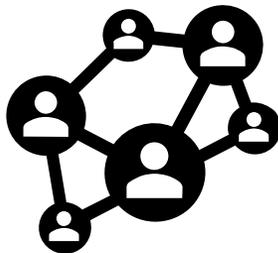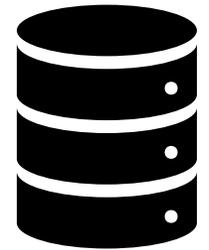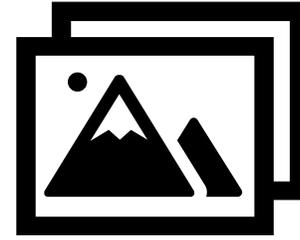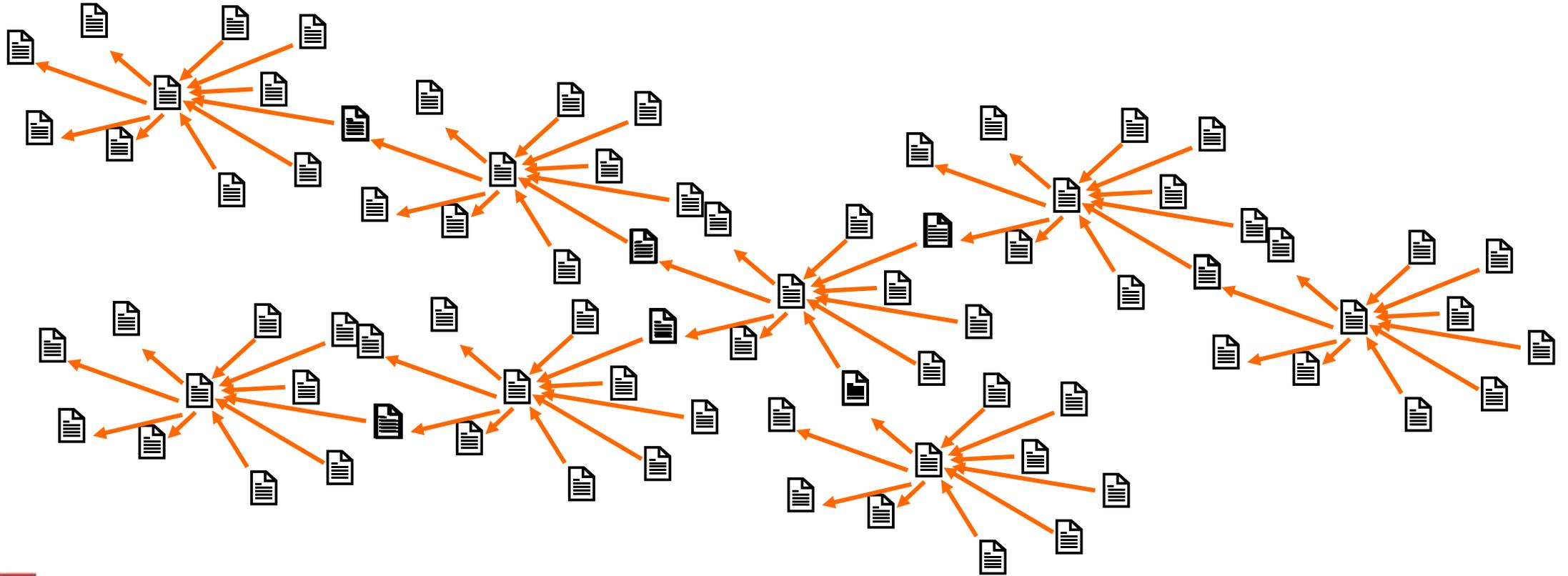
The nature of research outputs is changing

- Diversity
- Openness
- Collaboration
- Granularity
- Interactivity

Insight from the citation network is increasing in sophistication

Insight from the citation network is increasing in sophistication

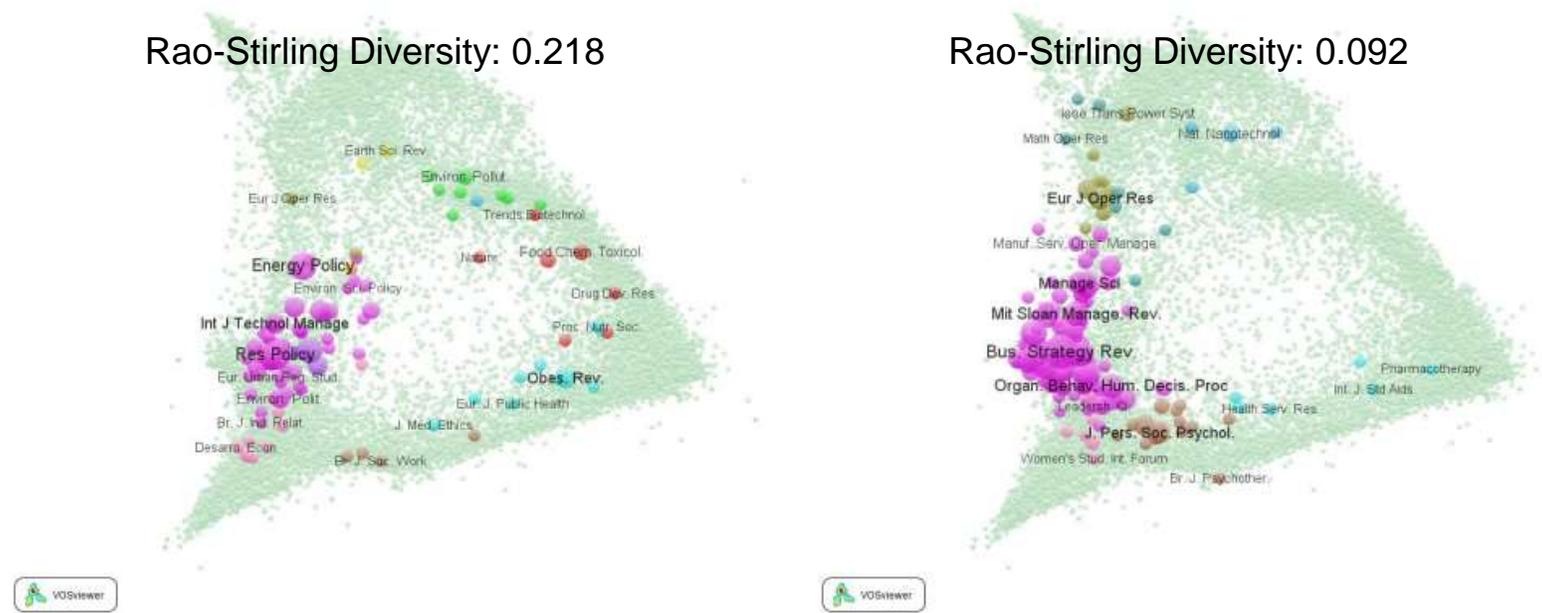# Insight from the citation network is increasing in sophistication

Crossref co-authorship network of scientometric researchers

Insight from the citation network is increasing in sophistication

Rao-Stirling Diversity: 0.218   Rao-Stirling Diversity: 0.092

Figure 8a and b: Scopus-based overlay maps 2012 comparing journal publication portfolios from 2006 to 2010 between the Science and Technology Policy Research Unit SPRU at the University of Sussex (on the left; $N = 268$; available at http://www.Vosviewer.com/Vosviewer.php?map=http://www.leydesdorff.net/scopus_ovl/spru.txt&label_size=1.35) and the London Business School (on the right; $N = 715$; available at http://www.Vosviewer.com/Vosviewer.php?map=http://www.leydesdorff.net/scopus_ovl/lbs.txt&label_size=1.35).
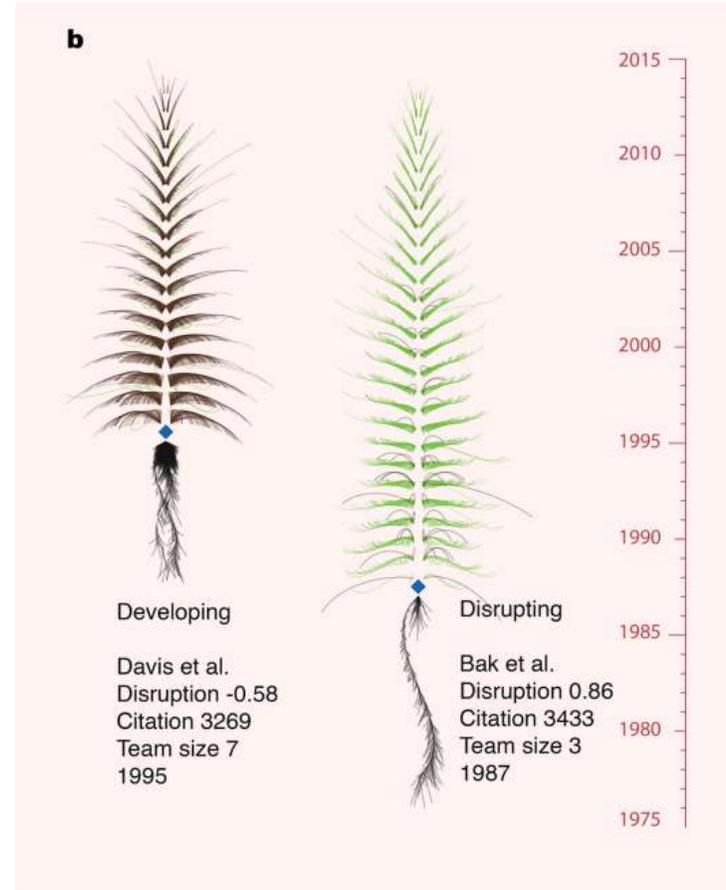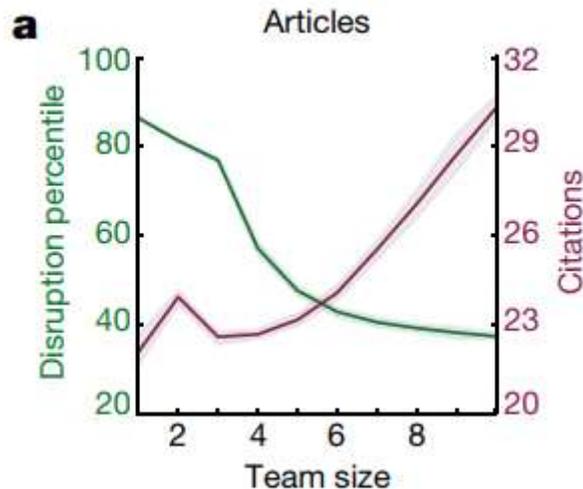
Insight from the citation network is increasing in sophistication
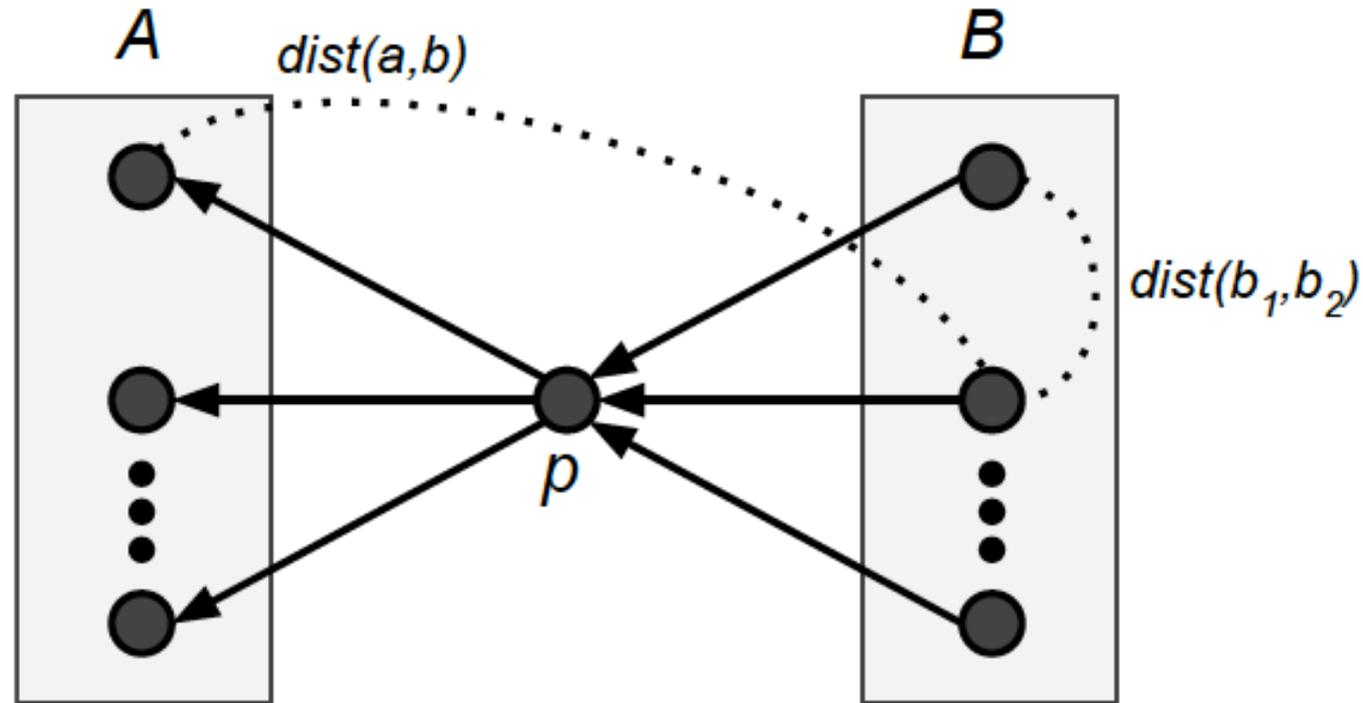
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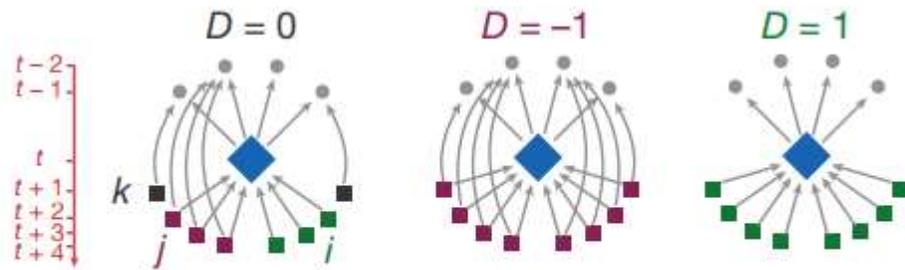
Disruption: $D = p_i - p_j = \dfrac{n_i - n_j}{n_i + n_j + n_k}$
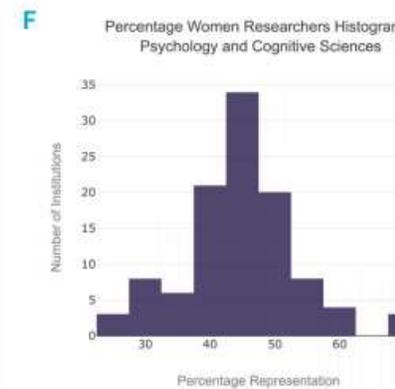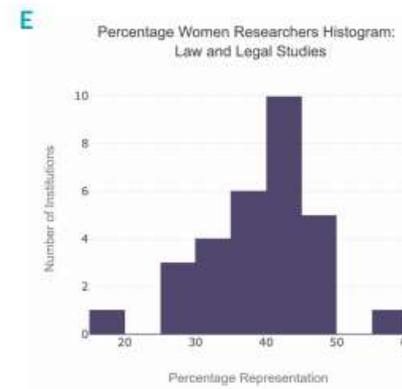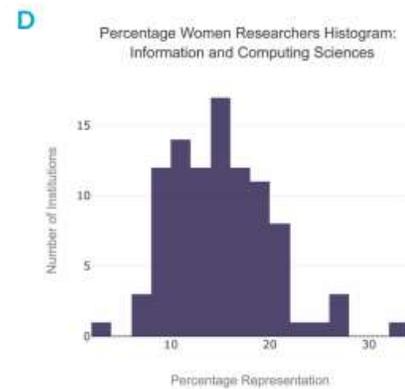
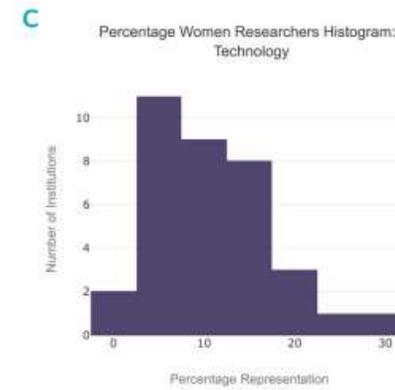# There is an increasing focus on the culture of research

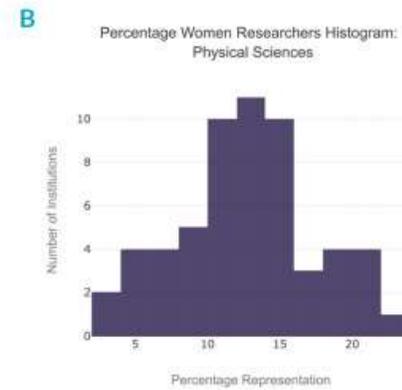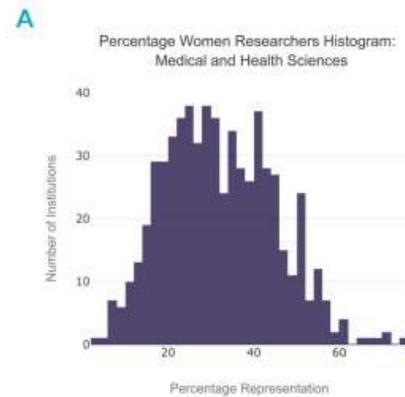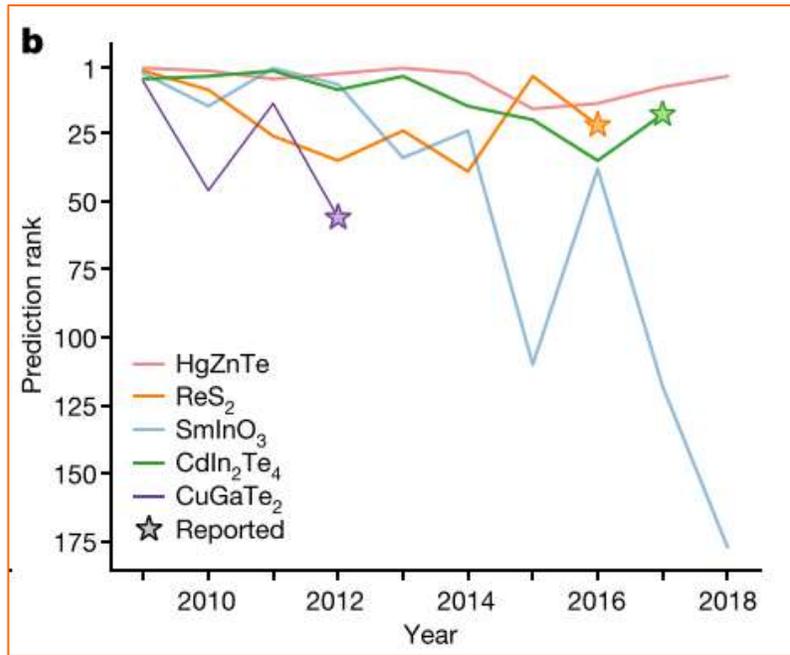# There is an increasing focus on the culture of research

- Academic impact and, increasingly, societal impact feature in national evaluations…

- …but inclusion of 'process' or 'culture' is rare.

- Examples

    - UK – parts of REF Environment element

    - BE-Flanders – gender (2%)

    - Number of doctoral graduates is a common measure

technopolis

International Landscape Study of Research and Innovation Systems

Annex report – country profiles

July 2019

UK RI Research England

There is an increasing focus on the culture of research

Artificial Intelligence has the potential to revolutionise research assessment

Sources:
- Tshitoyan et al. (2019): https://doi.org/10.1038/s41586-019-1335-8
- https://www.nature.com/articles/d41586-020-00018-3
- https://www.cam.ac.uk/research/news/ai-scientist-finds-that-toothpaste-ingredient-may-help-fight-drug-resistant-malaria

Artificial Intelligence has the potential to revolutionise research assessment

Sources:
- https://robotreviewer.vortext.systems/#report/_rmQVCDRn-JQWIGGnFbZi
- https://unsilo.ai/unsilo-evaluate/
- https://www.natureindex.com/news-blog/living-systematic-reviews-emerging-solution-problem-superseded-research-zika-virus

Artificial Intelligence has the potential to revolutionise research assessment

It's not ready for use in the production of systematic reviews, but Mavergames [Head of Informatics & Knowledge Management, Cochrane Collaboration] is excited by its potential. "If it gets good enough that we can let a machine do one review and a human do the other, that's huge," he says. "It's a 50% efficiency saving."

Sources:
- https://robotreviewer.vortext.systems/#report/_rmQVCDRn-JQWIGGnFbZi
- https://unsilo.ai/unsilo-evaluate/
- https://www.natureindex.com/news-blog/living-systematic-reviews-emerging-solution-problem-superseded-research-zika-virus

Artificial Intelligence has the potential to revolutionise research assessment

Opportunities

- Reducing biases

- Diversity of criteria

- Diversity of output types

- Increasing scale, speed or efficiency of non-metrics driven evaluation

Challenges

- Solidifying biases

- Lack of transparency

- Lack of confidence

- AI 'arms race'

- Commercial lock-in

UKRI Research England