



# Research Integrity: Challenges and solutions

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## About me



**40 years in Research Publishing (Journals, Books, Electronic products)**



**Worked at Springer Nature, Taylor & Francis, BioMed Central (and consulted for Elsevier and Wiley) amongst others**



**Established first Publisher Research Integrity Group**



**Now Independent research integrity specialist and Trustee of the Committee on Publication Ethics (COPE)**

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# What I will cover

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WHAT IS RESEARCH  
INTEGRITY



CURRENT CHALLENGES



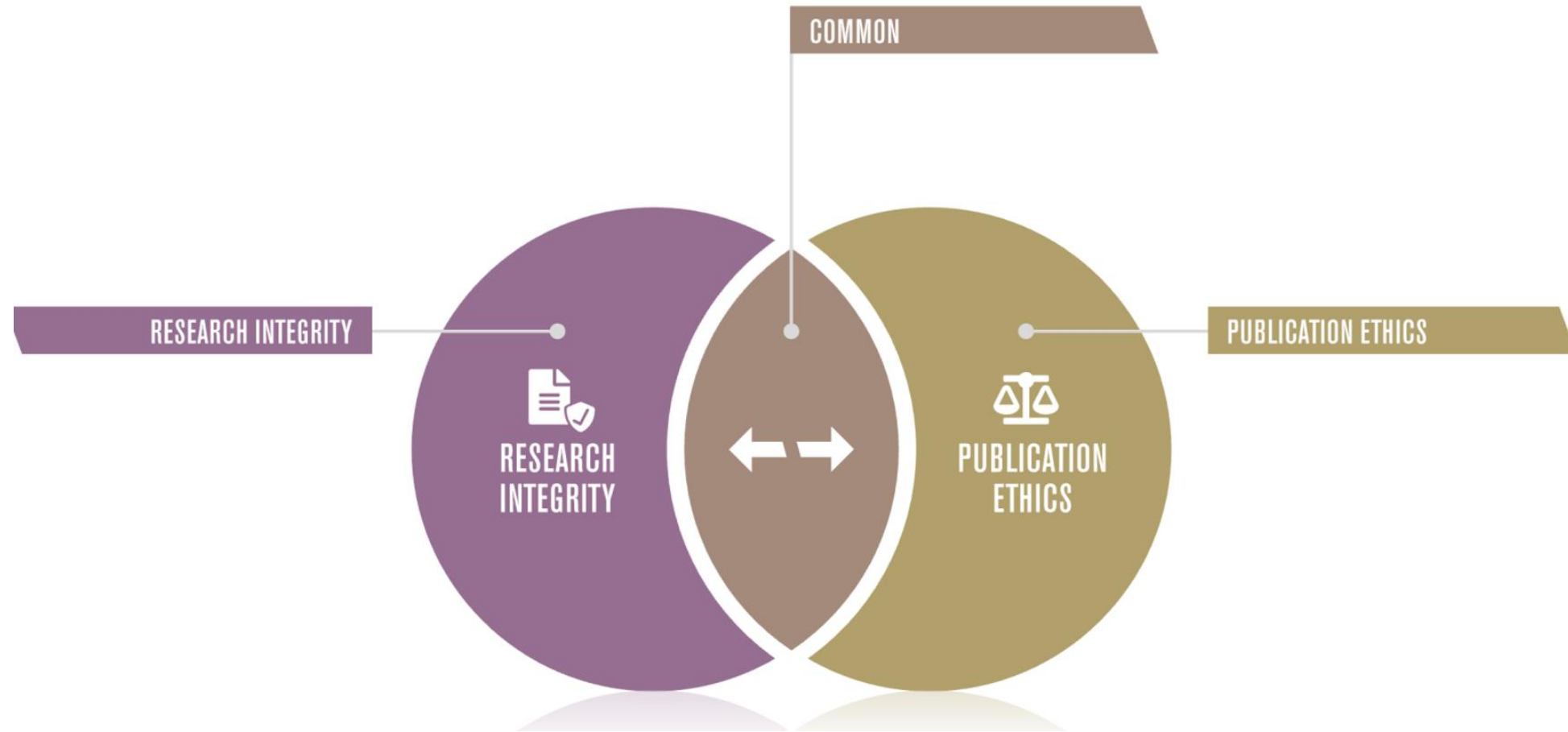
SOME SOLUTIONS

# What is Research Integrity?

- *Graphical representation of research integrity based on the core areas described in The Concordat to Support Research Integrity 2019, created by UKRIO.*



# Research Integrity or Publication Ethics?



# The stewardship of scholarship is a joint enterprise

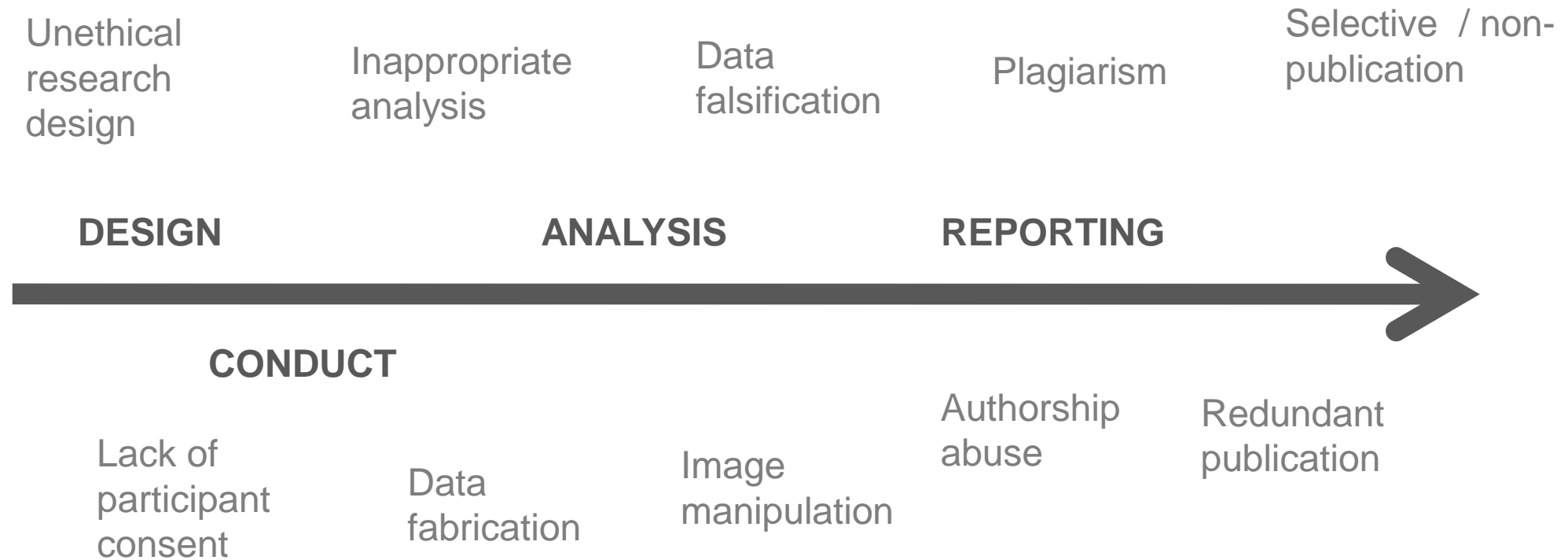


# Types of research misconduct

- Fabrication
  - Making up data or results and recording or reporting them
- Falsification
  - Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.
- Plagiarism
  - The appropriation of another person's ideas, processes, results, or words without giving appropriate credit.

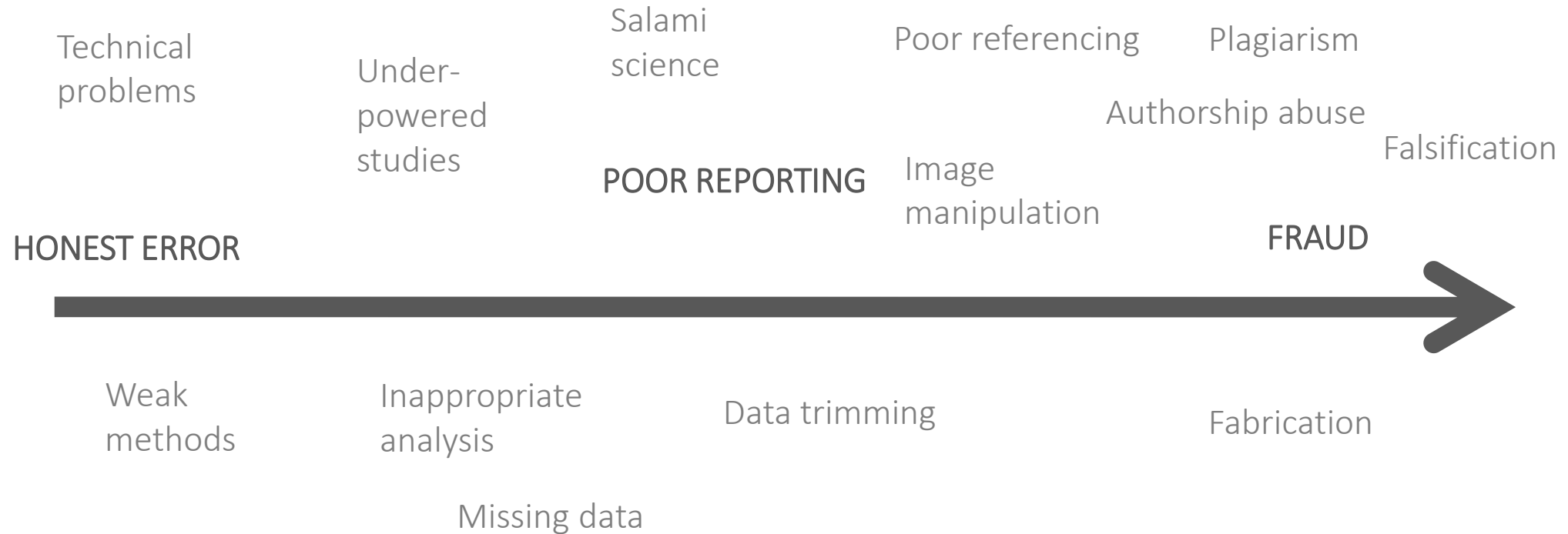
[https://grants.nih.gov/policy/research\\_integrity/definitions.htm](https://grants.nih.gov/policy/research_integrity/definitions.htm)

# RESEARCH AND PUBLICATION ETHICS ARE A SPECTRUM

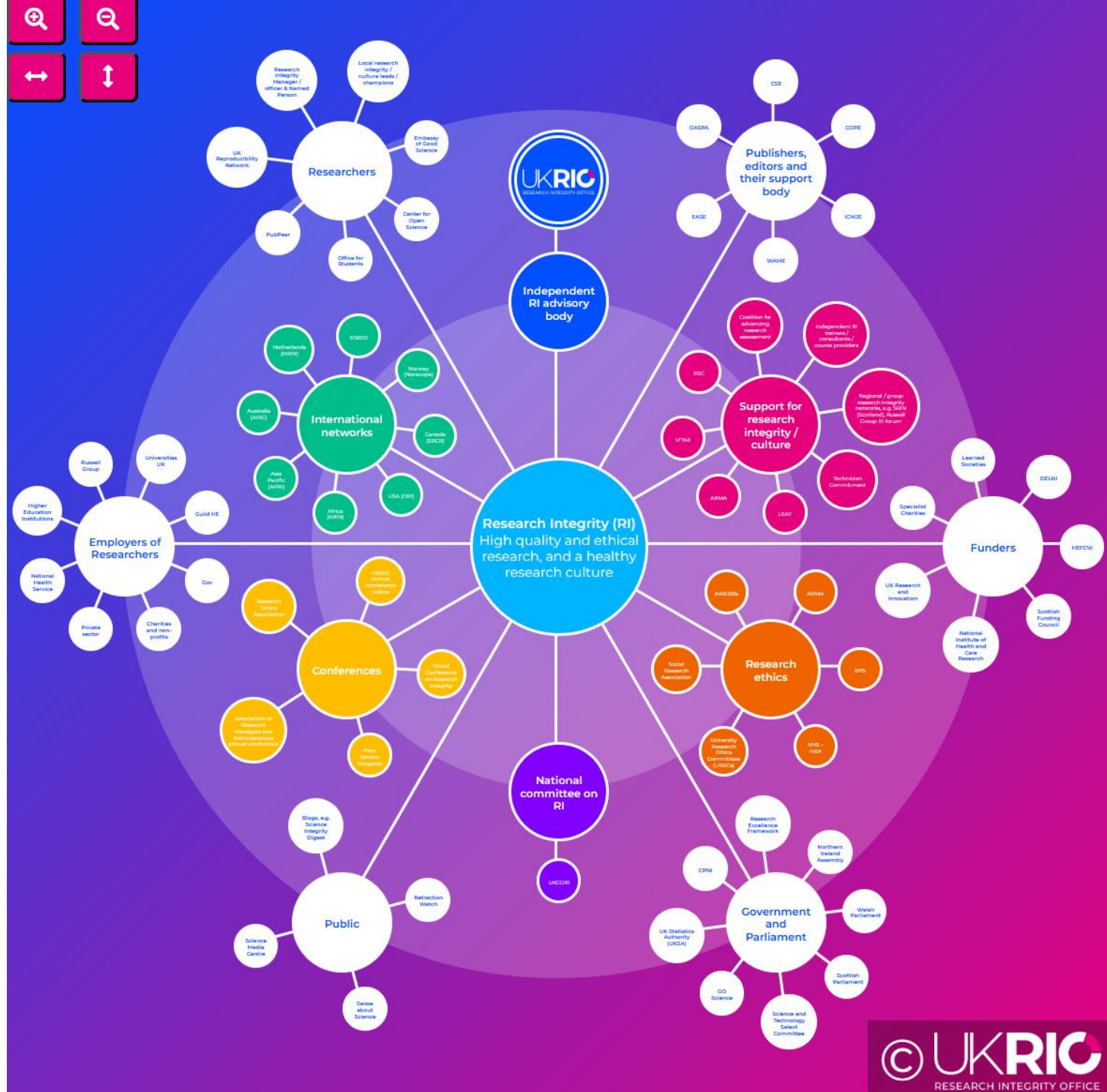




# GOOD CONDUCT AND MISCONDUCT ARE A SPECTRUM



# Research Integrity: A joint responsibility



# Some current challenges

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Perverse incentives and competition

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Large language models

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Image manipulation

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Authorship problems and Identity Fraud

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Paper Mills and the systematic  
manipulation of the publication process

# Perverse incentives

## Challenge

Researchers can be measured or rewarded in ways that incentivise them to exaggerate their findings, ignore results which do not give a positive result, or even to seek purchase manufactured papers with the aim of getting promoted or obtain a degree.

## What is happening?

Multi-stakeholder initiatives looking to change the way the outputs of research are measured and rewarded, e.g. DORA, Hong Kong Principles



# THE HONG KONG PRINCIPLES FOR ASSESSING RESEARCHERS








## FOSTERING RESEARCH INTEGRITY



### What are the HKP?

The Hong Kong Principles (HKP) were developed as part of the 6th World Conference on Research Integrity. They were developed to reinforce the need to ensure that researchers are rewarded for specific behaviors that promote trustworthy research. The HKP have been developed with the idea that implementation of them could assist in how researchers are assessed for career advancement with a view to strengthen research integrity.

| PRINCIPLE   | IMPLEMENTATION EXAMPLES  |
|---|--|
| 1 Assess responsible research practices.                                |  The NIH recommends Experimental Design Assistant (EDA) developed by N3CRs. This 10-module on-line tool helps researchers prepare the design and analysis requested for grant applications.   |
| 2 Value complete reporting.   |  Wellcome Trust's Open Research (WOR) editorial policies require authors to use reporting guidelines for protocols (e.g., SPIRIT) and completed studies (e.g., ARRIVE). The Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSA, Brazil) has a formal course on reporting guidelines that students can complete as formal credit towards their degree. |
| 3 Reward the practice of open science.                                  |  The University of Cambridge has introduced 'data champions'. Delft University of Technology, The Netherlands, is implementing this as a career assessment criterion. The Nanyang Technological University (NTU), Singapore, implemented an Open Access policy in 2011. At NTU's faculty of medicine, random audits are conducted to ensure adherence.              |
| 4 Acknowledge a broad range of research activities.                     |  The Netherlands Organization for Scientific Research is in its third call for replication studies. PLOS Biology and eLife have meta-research sections in their respective journals.  |
| 5 Recognize essential other tasks such as peer reviewing and mentoring. |  The University of Glasgow's academic promotion criteria rewards researchers for participation in peer review and other related activities (e.g., journal editorship).  |

The full HKP article can be accessed at: <https://osf.io/m9abx>. Individuals and/or academic institutions and other groups can endorse the HKP at <https://www.wcrif.org/guidance/hong-kong-principles>.

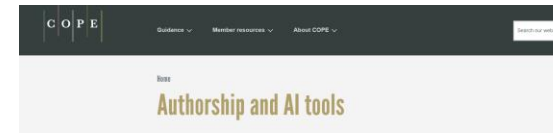
# Large Language Models

## Challenge

To find the appropriate balance between the opportunities and threats presented by the use of LLMs in creating research outputs.

## What is happening?

Publishers, Research bodies, Funders and others involved in the research process developing policies around the appropriate use of LLMs



### COPE position statement

The use of artificial intelligence (AI) tools such as ChatGPT or Large Language Models in research publications is expanding rapidly. COPE joins organisations, such as [WAME](#) and the [JAMA Network](#) among others, to state that AI tools cannot be listed as an author of a paper.

AI tools cannot meet the requirements for [authorship](#) as they cannot take responsibility for the submitted work. As non-legal entities, they cannot assert the presence or absence of conflicts of interest nor manage copyright and license agreements.

Authors who use AI tools in the writing of a manuscript, production of images or graphical elements of the paper, or in the collection and analysis of data, must be transparent in disclosing in the Materials and Methods (or similar section) of the paper how the AI tool was used and which tool was used. Authors are fully responsible for the content of their manuscript, even those parts produced by an AI tool, and are thus liable for any breach of publication ethics.

### RUSSELL GROUP

#### Russell Group principles on the use of generative AI tools in education

Our universities are committed to the ethical and responsible use of generative AI and to preparing our staff and students to be leaders in an increasingly AI-enabled world.

The rise of generative artificial intelligence (AI) has the potential for a profound impact on the ways in which we teach, learn, assess, and access education. Our universities wish to ensure that generative AI tools can be used for the benefit of students and staff – enhancing teaching practices and student learning experiences, ensuring students develop skills for the future within an ethical framework, and enabling educators to benefit from efficiencies to develop innovative methods of teaching.

Valuable work undertaken by organisations such as the Quality Assurance Agency for Higher Education (QAA) and Jisc has helped develop the sector's understanding of the opportunities and considerations of generative AI<sup>1</sup>, and the Department for Education (DfE) has set out its position on the use of generative AI in the pre-university education sector<sup>2</sup>. Russell Group universities have contributed sector-wide insight and have been proactively working with experts to revise and develop policies that provide guidance to students and staff.

Collaboration, coordination, and consistency on this issue across the education and professional sectors – including professional bodies, schools, FE colleges and employers – will be crucial. In recognition of this, Russell Group universities have collectively developed the following principles that will guide the approach to generative AI tools across our universities and, we hope, beyond:

1. Universities will support students and staff to become AI-literate.
2. Staff should be equipped to support students to use generative AI tools effectively and appropriately in their learning experience.
3. Universities will adapt teaching and assessment to incorporate the ethical use of generative AI and support equal access.
4. Universities will ensure academic rigour and integrity is upheld.
5. Universities will work collaboratively to share best practice as the technology and its application in education evolves.



## Funders joint statement: use of generative AI tools in funding applications and assessment

Generative AI tools offer potential benefits for research but also challenges and risks. The Research Funders Policy Group, of which Wellcome is a member, sets out expectations around the use of generative AI tools in funding applications.

### Joint statement

On behalf of our Research Funders Policy Group, we recognise Generative Artificial Intelligence (AI) tools, such as ChatGPT or Bard, present opportunities and bring benefits in the context of research such as supporting content generation for computer code or assisting neurodivergent researchers or reducing potential language barriers.

However, the use of Generative AI tools in the funding application and assessment process also presents potential risks for research in areas such as rigour, transparency, originality, reliability, data protection, confidentiality, intellectual property, copyright, and bias. We want to protect against potential



# 6 Tenets of Postplagiarism: Writing in the Age of Artificial Intelligence

Sarah Elaine Eaton

In [\*Plagiarism in Higher Education: Tackling Tough Topics in Academic Integrity\* \(2021\)](#) I introduced the idea of life in a postplagiarism world. Here, I expand on those ideas.

## Hybrid Human-AI Writing Will Become Normal

Hybrid writing, co-created by human and artificial intelligence together is becoming prevalent. Soon it will be the norm. Trying to determine where the human ends and where the artificial intelligence begins is pointless and futile.

## Human Creativity is Enhanced

Human creativity is enhanced, not threatened by artificial intelligence. Humans can be inspired and inspire others. Humans may even be inspired by artificial intelligence, but our ability to imagine, inspire, and create remains boundless and inexhaustible.

## Language Barriers Disappear

One's first language will begin to matter less and less as tools become available for humans to understand each other in countless languages.

## Humans can Relinquish Control, but not Responsibility

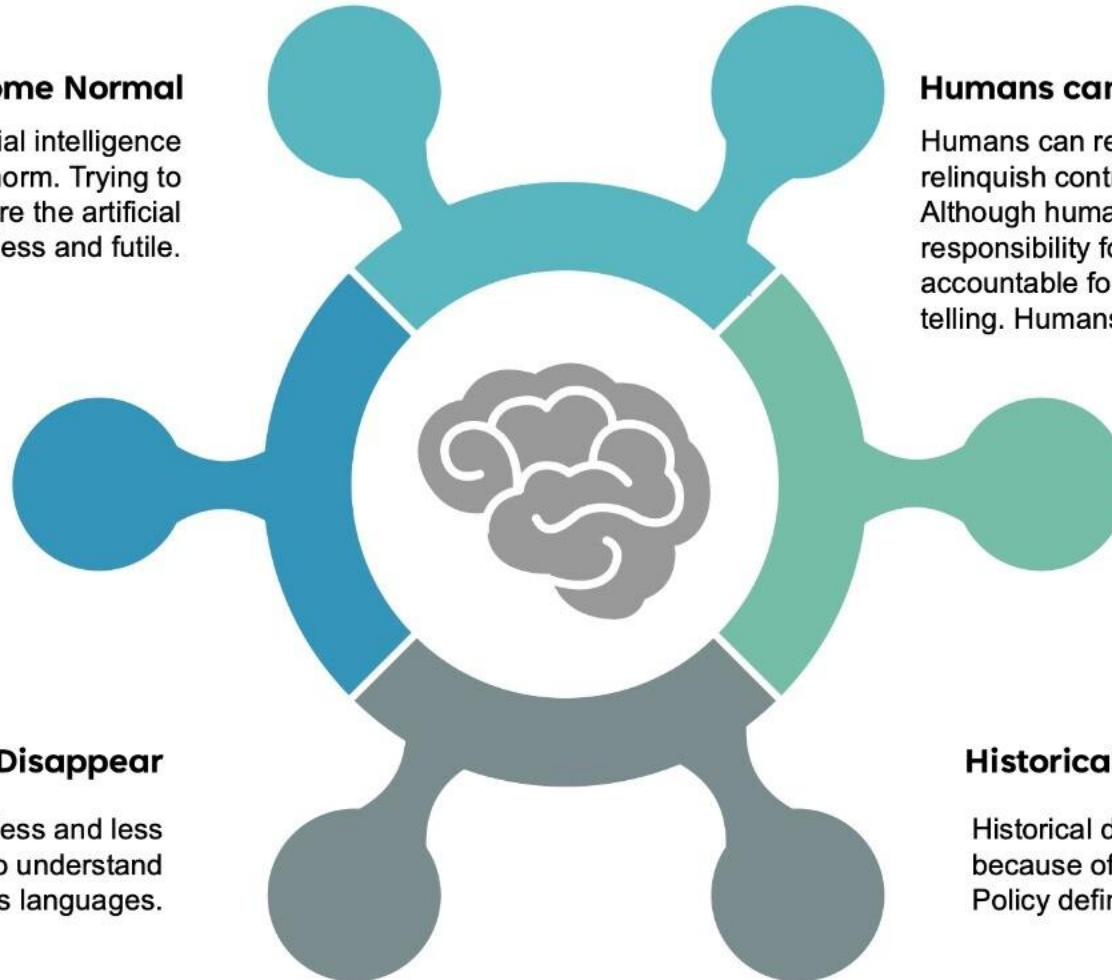
Humans can retain control over what they write, but they can also relinquish control to artificial intelligence tools if they choose. Although humans can relinquish control, they do not relinquish responsibility for what is written. Humans can – and must – remain accountable for fact-checking, verification procedures, and truth-telling. Humans are also responsible for how AI-tools are developed.

## Attribution Remains Important

It always has been, and always will be, appropriate and desirable to appreciate, admire, and respect our teachers, mentors, and guides. Humans learn in community with one another, even when they are learning alone. Citing, referencing, and attribution remain important skills.

## Historical Definitions of Plagiarism No Longer Apply

Historical definitions of plagiarism will not be rewritten because of artificial intelligence; they will be *transcended*. Policy definitions can – and must – adapt.



# Image manipulation

## Challenge

- In 2016, Bik found at least 4% of biomedical papers with inappropriate image duplication.

- Bik EM, Casadevall A, Fang FC. The Prevalence of Inappropriate Image Duplication in Biomedical Research Publications. mBio. 2016 Jun 7;7(3):e00809-16. doi: 10.1128/mBio.00809-16. PMID: 27273827; PMCID: PMC4941872.

- Honest error, or a sign of manipulation? A pointer towards research misconduct
- Increase in AI-generated images and deepfakes, especially from paper mills

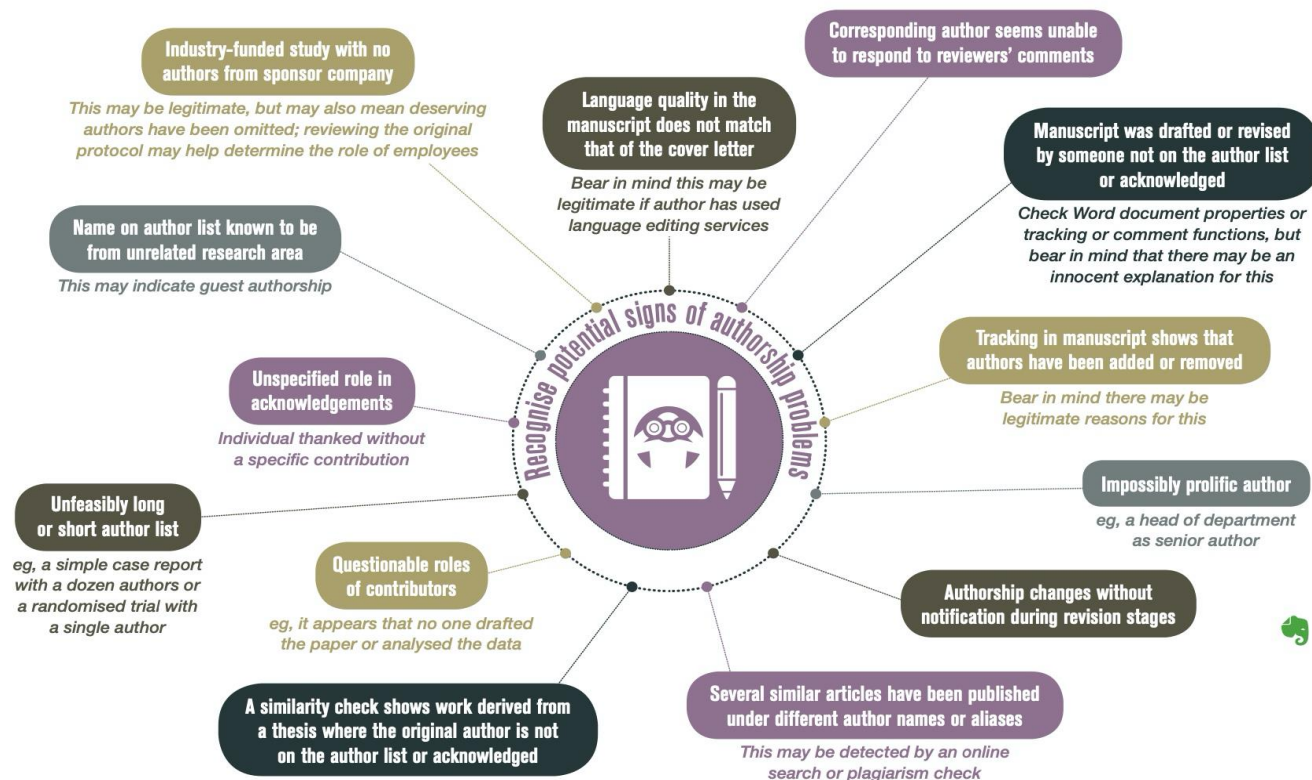
## What is happening?

- More emphasis on
  - data availability
  - Reproducibility
  - Image checking during submission and peer review
- Education and policies
- Increasing number of detection tools
  - Proofig, ImageTwin, FigCheck, Imacheck



# Authorship problems and Identity Fraud

## Signs that Might Indicate Authorship Problems



## Challenge

- Guest, ghost or gift authorship
- Authorship for sale

## What is happening?

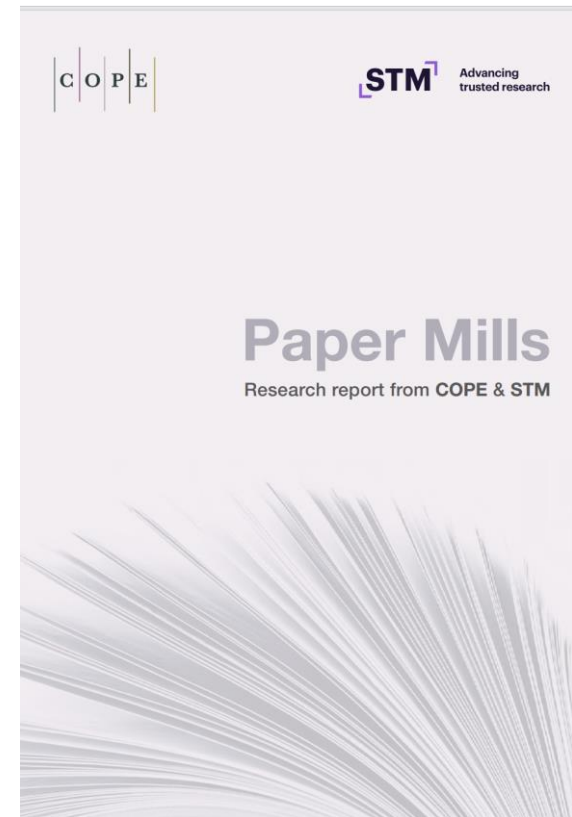
- COPE guidelines and flowchart
- Journal policies
- CRediT – Contributor Roles Taxonomy
- Trust Markers
  - ORCID, Digital Science

# Paper Mills and the systematic manipulation of the publication process

## Challenge

- Systematic manipulation of the publication process is where an individual or a group of individuals aim to guarantee publication by repeatedly using dishonest or fraudulent practices to:
  - prevent or inappropriately influence the independent assessment of a piece of scholarly work by an independent peer;
  - inappropriately attribute authorship of a piece of scholarly work;
  - publish fabricated or plagiarised research.

Systematic manipulation of the publication process, COPE  
<https://doi.org/10.24318/cope.2019.2.23>



# Paper Mills and the systematic manipulation of the publication process



## United2Act Consensus statement

The participants of the United to Act (U2A) Summit agreed on 5 key collaborative multi-stakeholder actions to address the problem of paper mills. These are:

### 1. Education and awareness

To create new educational tools and resources and to promote education and awareness activities to make researchers, journal editors, reviewers, journals, and publishers aware of the problem of paper mills.

### 2. Improve post-publication corrections

To investigate and agree ways to improve communication with those who report misconduct to journals, and to agree ways in which the correction of the literature can be speeded up when misconduct is discovered.

### 3. Research paper mills

To work with interested parties to facilitate and organise research to be carried out on paper mills, with particular attention to regional and subject specific aspects.

### 4. Enable the development of Trust Markers

To work with the various suppliers who are developing tools which verify the identity of authors/reviewers/editors to ensure that the solutions work for the variety of authors and author choices and are fit for purpose.

### 5. Continue to facilitate dialogue between stakeholders about the systematic manipulation of the publication process

To continue to bring together the many voices in this area through joint projects and initiatives.

The signatories of this document wish to support and advance these actions through participating in Working Groups and continuing to work under the U2A banner to address the problem of paper mills.

## Mission

to equip the scholarly communication community with data, intelligence, and technology to protect research integrity.

## The hub exists to:

### Spark + Sustain Collaboration

across publishers by allowing individuals and organizations from across the publishing ecosystem to come together. The first of its kind, the STM Integrity Hub is built from ground up to foster cross-disciplinary collaboration through legally compliant:

- Knowledge and idea exchange
- Development of voluntary policies, guidelines and frameworks
- Cooperative innovation
- Secure, safeguarded content submissions

### Uphold Research Integrity

by detecting manuscripts found to violate accepted research integrity standards, serving as an 'early warning system' for integrity issues by analyzing manuscripts for submitted publication to participating scholarly journals, through:

- Technology and screening infrastructure
- Secure, protected environment that protects data privacy and is consistent with competition laws
- Policies + frameworks
- A modular platform to safeguard research integrity for all



### Empower Publishers of Any Kind

to easily come together for the sole purpose of protecting the scientific record. The STM Integrity Hub is an accessible and secure means to identify manuscripts that violate accepted research integrity standards before getting further into the publication cycle and ecosystem — legally, adequately and efficiently.

- Saved time and resources
- Easy access to sharable information, data and tools
- Helpful resources to get started
- Collaboration between publishers of all sorts, shapes and sizes
- A means to influence change — protect the scholarly record, for all.

### Enable Rapid Responses

to new threats through a flexible, innovative system architecture — a hub — that integrates with a wide range of specific and individually chosen screening tools. This supports versatility and adaptability to respond as new threats arise. This is accomplished through:

- Flexible system architecture
- Ease of integration with other systems + tools
- A scalable, versatile framework

A wooden figure is positioned at the bottom center of the frame. To its left, there is a grey speech bubble icon with a black question mark inside. The background is a solid olive green color.

What can I do?  
Get educated and  
involved

Thank you  
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