

Introduction to Open Science

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Open Science (A.Y. 2023/2024)

Second Cycle Degree in Digital Humanities and Digital Knowledge

Alma Mater Studiorum - Università di Bologna



For starting

Using at most two words, describe what the concept **Open Science** evoke to you

What do we mean with “science”

From Latin *scientia* = knowledge

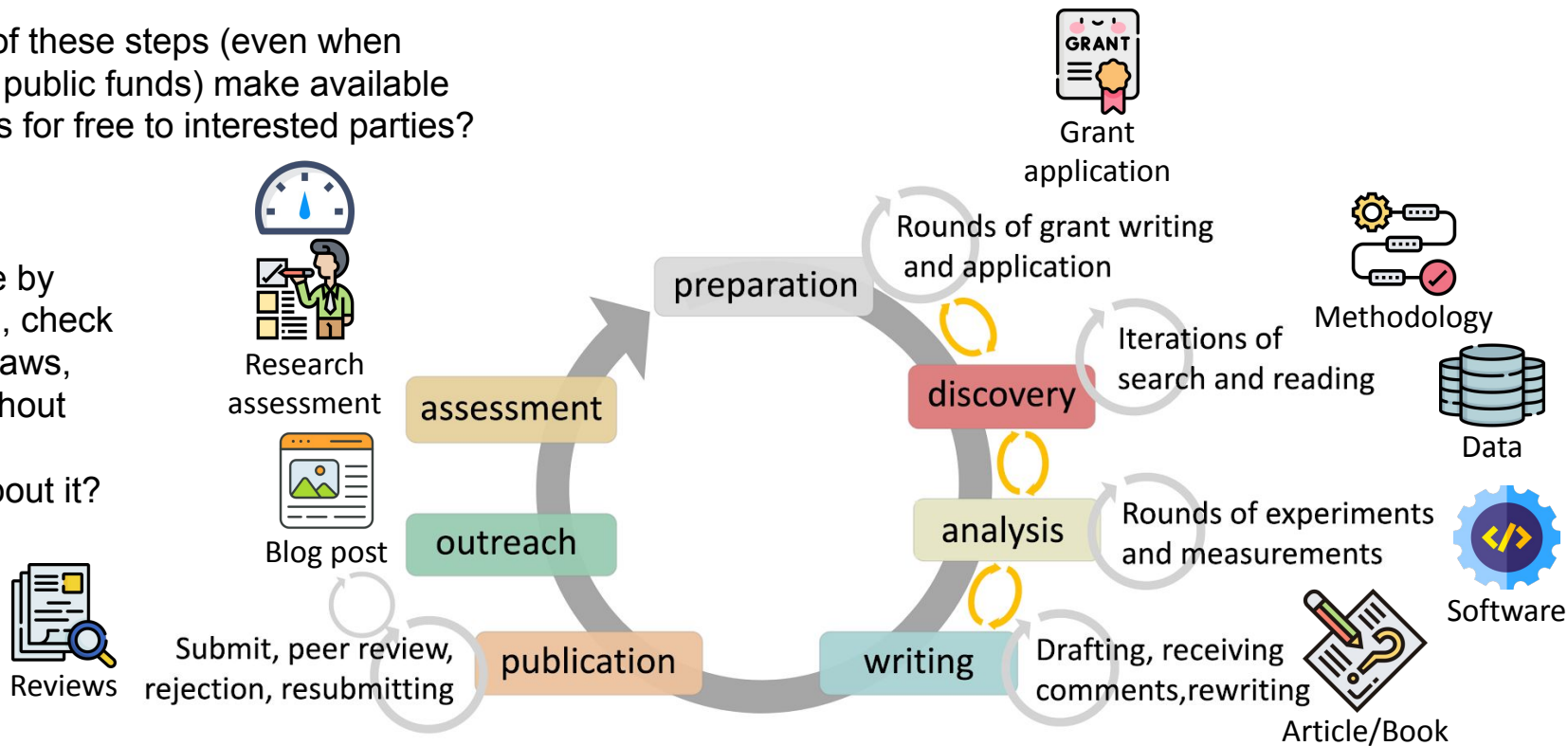
Archaic definition: “Knowledge gained through study or practice; mastery of a particular discipline or area.” – <https://en.wiktionary.org/wiki/science>

Recent definition: “the enterprise whereby humankind, acting individually or in small or large groups, makes an organized attempt, in cooperation and in competition, by means of the objective **study of observed phenomena** and **its validation** through **sharing of findings and data** and through **peer review**, to discover and master the chain of causalities, relations or interactions; brings together in a coordinated form subsystems of knowledge by means of **systematic reflection and conceptualization**; and thereby furnishes itself with the opportunity of using, to its own advantage, **understanding of the processes and phenomena occurring in nature and society**”

Research workflow

What if **none** of these steps (even when supported via public funds) make available their outcomes for free to interested parties?

How can we understand a research done by someone else, check if it is free of flaws, improve it, without having crucial information about it?



Open Science: your definition

Could you please provide me a definition?

Informal definition (a slogan)



Open Science schools of thought

Democratic

access to knowledge is unequally distributed → making knowledge freely available for everyone

Pragmatic

knowledge-creation could be more efficient if scientists worked together → opening up the process of knowledge creation

Infrastructure

efficient research depends on the available tools and applications → creating openly available platforms for scientists

Public

science needs to be made accessible to the public → making science accessible for citizens

Measurement

scientific contributions today need alternative impact measurements → developing an alternative metric system for scientific impact

Advantages

Faster: “experts identified themselves, and spontaneously contributed based on what was being posted online”

Transparent: “public can be assured that funding for science, arising from their taxes, is being used responsibly and [...] no suggestion of political interference”

Available: “available on the web [...] need not cease with the graduation of students, the termination of a grant or the demise of a principal investigator”

Reliable: “review process never ends [...] commenting function on results, and a mechanism for the community to police those comments”

Definition by UNESCO

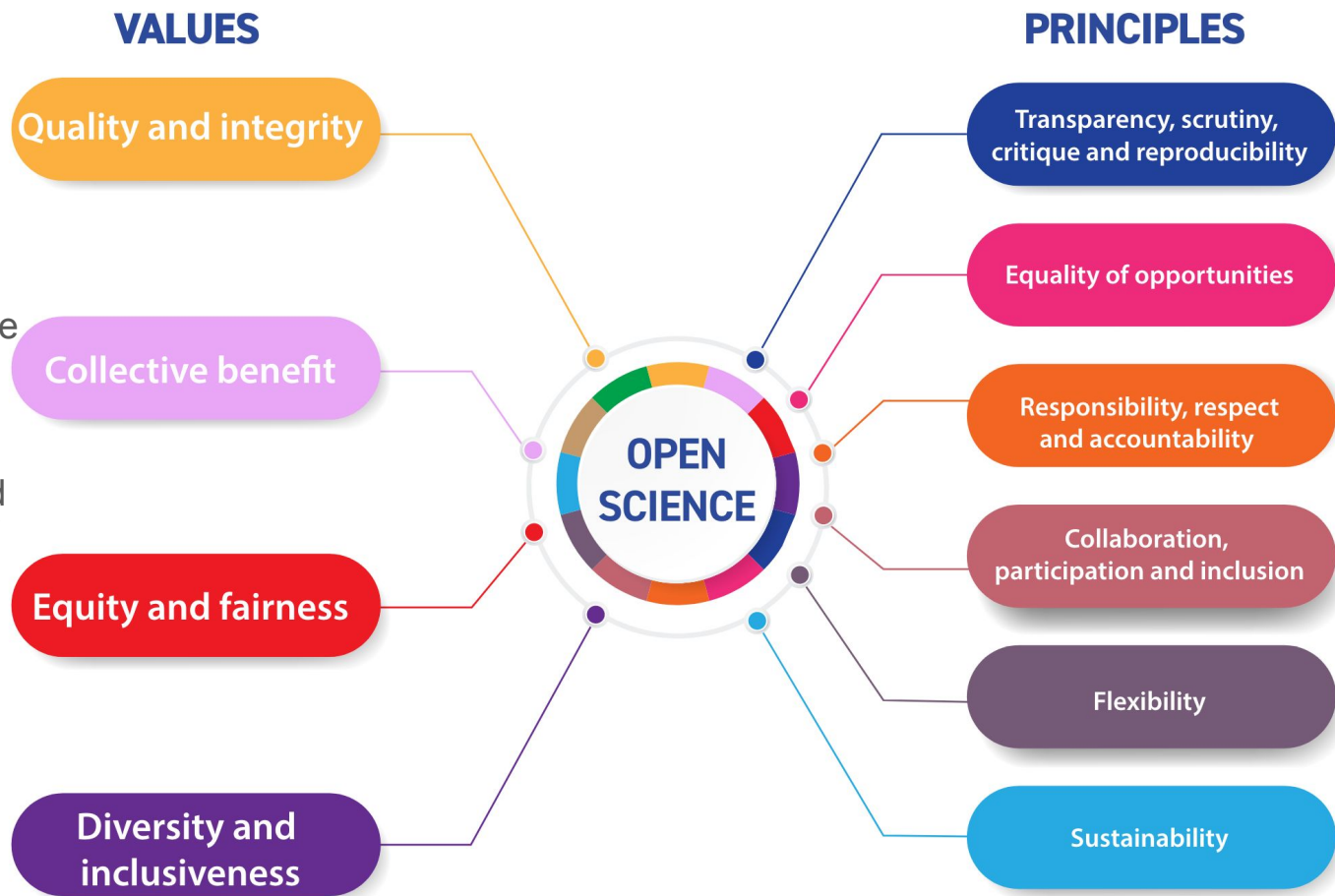
‘Open Science’ is an **inclusive construct** that combines various **movements and practices** aiming

- to make **multilingual** scientific knowledge **openly available, accessible and reusable for everyone**
- to increase scientific collaborations and sharing of information for the **benefits of science and society**
- **to open the processes** of scientific knowledge creation, evaluation and communication **to societal actors** beyond the traditional scientific community

In addition, it comprises **all scientific disciplines** and **aspects of scholarly practices**, including basic and applied sciences, natural and social sciences and the humanities

Values and principles

Core values of Open Science stem from the rights-based, ethical, epistemological, economic, legal, political, social, multi-stakeholder and technological implications of opening science to society, and the guiding principles provide a framework for enabling conditions and practices within which such values are upheld



Some other Open Science stakeholders



https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/our-digital-future/open-science_en

Research and innovation

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[Strategy 2020-2024](#) > [Our digital future](#) > [Open Science](#)

Open Science

An approach to the scientific process that focuses on spreading knowledge as soon as it is available using digital and collaborative technology. Expert groups, publications, news and events.



<http://www.orfg.org>

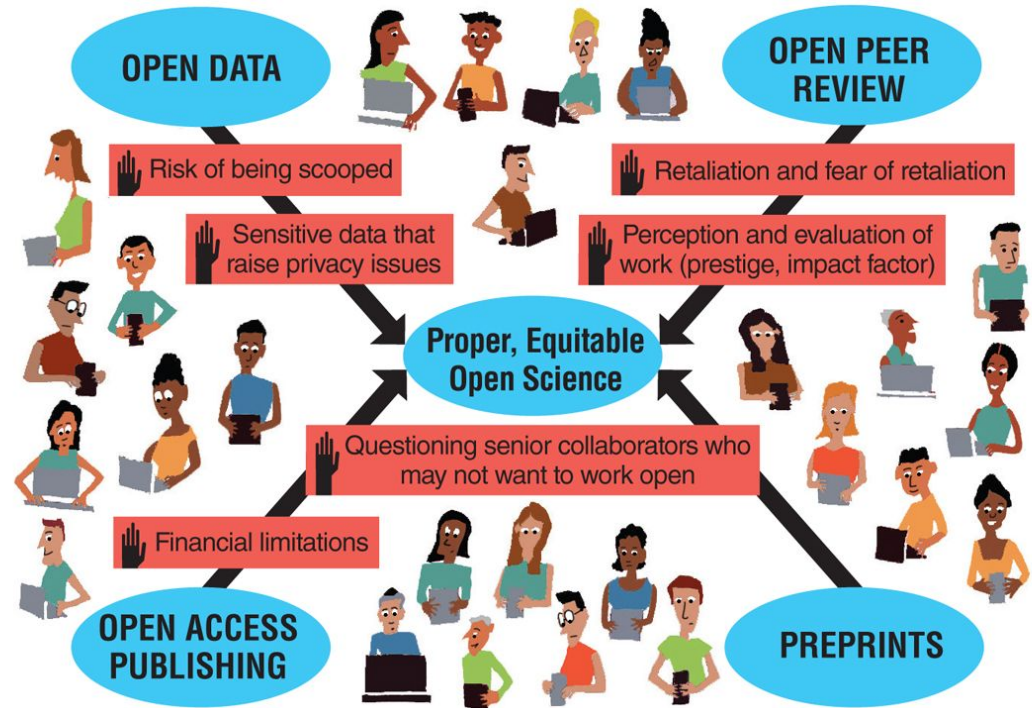


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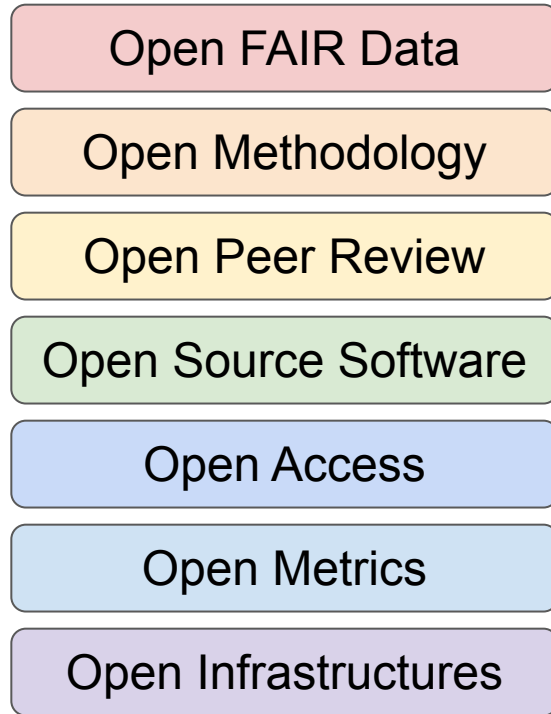


Do all support Open Science?

“Factors such as a scientist’s career stage, employment stability, financial circumstances, country of origin or residence, and cultural context (including their race, gender identity, and ethnicity) may all create barriers to specific aspects of open science”



Which Open Science facets we will see



point of view

Reproducibility

“a result obtained by an experiment or observational study should be achieved again with a high degree of agreement when the study is replicated with the same methodology by different researchers”

End

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