

# Opening Science with Open Science

## Possibilities and Difficulties at Open Peer Review and Citizen Science

22<sup>nd</sup> June 2022, Oberseminar Szöllösi-Janze @ MPDL

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**MAX PLANCK**  
**digital library**

# Structure

1. MPDL and Open Science
2. Aspects of Open Science
3. Open Peer Review
4. Citizen Science
5. Discussion
6. Short site visit
7. Lunch (again in R213)

# Speaker

## Martin

- Historian / Library and Information Scientist
- Repository Manager for MPG.PuRe PuRe (Max Planck Publication Repository)

## Yves

- Historian by training (PhD in 2017 at LMU Historisches Seminar, Szöllösi-Janze&Geyer)
- Research Data Management Officer
- Repository Manager for Edmond (an Open Data Repository)
- and more RDM topics

# MPDL and Open Science

# The Max Planck Society

- 86 research institutes
- also Italy, Luxembourg, Netherlands and US (Florida)
- Max Planck Digital Library (central service unit)
- Local libraries at the institutes
- Three main computing facilities
- One Administrative Headquarter
- Around 24.000 employees
- Budget of 2 Billion € in 2020
- 29 Nobel laureates

[https://www.mpg.de/zahlen\\_fakten](https://www.mpg.de/zahlen_fakten)  
<https://www.mpg.de/preise/nobelpreis>



[https://www.mpg.de/institute\\_karte](https://www.mpg.de/institute_karte)

# Two Principles within the MPG

## Subsidiary Principle

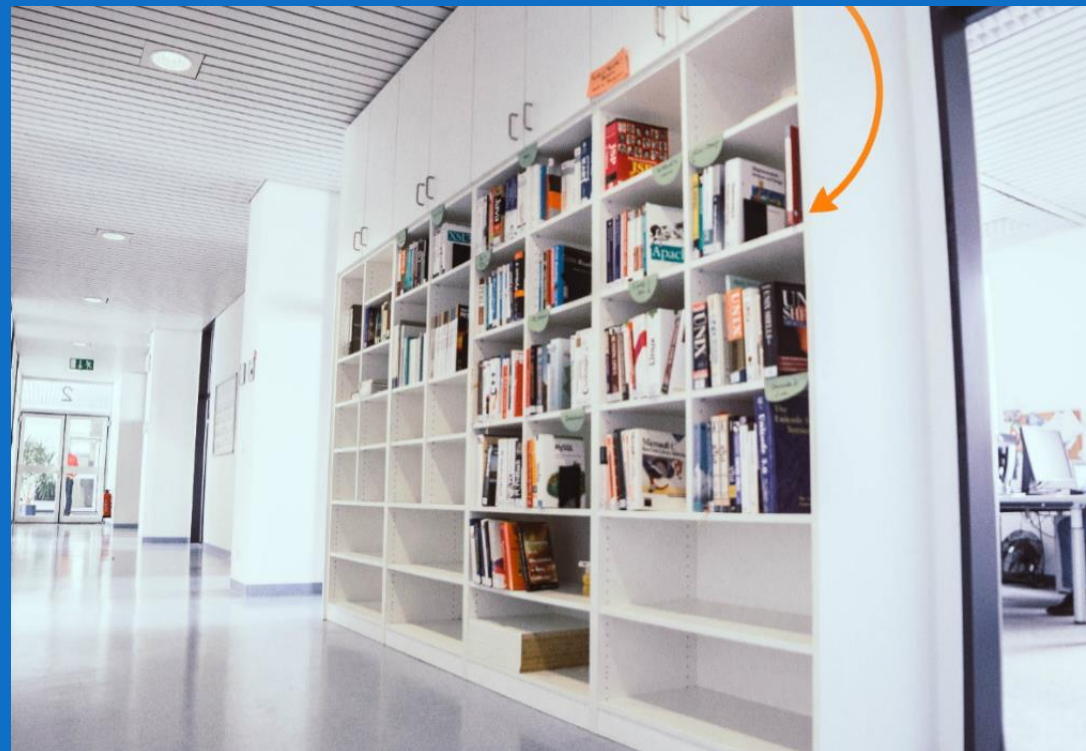
*“MPDL – pursuant to the subsidiary principle – takes on only those tasks which achieve true additional value creation.”*  
(<https://www.mpg.de/mpdl-en>)

## Harnack Principle

*“The fundamental principle of the Max Planck Society is to allow outstandingly creative scientists, who think in interdisciplinary terms, scope for independent scientific development.”* (p. 6, [https://www.mpg.de/39596/MPG\\_Introduction.pdf](https://www.mpg.de/39596/MPG_Introduction.pdf))

# Max Planck Digital Library

- Information Services since 2007
- located in Amalienstrasse 33, 80799 Munich
- no part of MPG Administrative Headquarter
- about 80 heads
- Developers, librarians, purchasers, administration
- [www.mpdl.mpg.de](http://www.mpdl.mpg.de)



the only bookcase in the MPDL

# Max Planck Digital Library

- [MPDL Service Catalog](#)
- Basic literature supply
- Bibliometric
- Publication and data repositories
- Research services
- and much more ...





# MPDL Internal Organisation

- Department Information
- **Department Collections**
- Department Digital Labs
- Big Data Analytics Group
- Software Licensing Group
- MPDL Infrastructure
- MPDL Services gGmbH (DEAL)

# Open Science Services by Collections

- [MPG.PuRe \(Publication Repository\)](#)
- [Edmond \(Open Data Repository\)](#)
- [FACES \(Database of facial expressions\)](#)
- [DOI Service](#)

# Open Science Days

- <https://osd.mpdl.mpg.de>
- 2014
- 2016: Citizen Science
- 2017: Open Data
- 2019: Open Source
- 2021



# Open Science in Practice

- <https://osip.mpdl.mpg.de>
- Talk Series in 2021
- [OSIP-Newsletter](#)

The logo for 'Open Science in Practice' features a background of overlapping, semi-transparent geometric shapes in shades of orange, yellow, and brown, creating a textured, layered effect. The text 'Open Science in Practice' is centered in a bold, black, sans-serif font.

**Open Science in Practice**

- Speaker from:
  - European Commission
  - Heidelberg University Library
  - TU Delft
  - Vienna University of Economics and Business
  - CNRS
  - Kompetenzzentrum Open Data
  - University of Basel
  - Zurich's central library
  - LMU Open Science Center
  - ...

# Open Science Ambassadors

- <https://osambassadors.mpdl.mpg.de>
- Remote Conference on 9<sup>th</sup> and 10<sup>th</sup> May 2022



- Objectives were:
  - **train** early career researchers from the Max Planck Society on open science
  - **promote** the integration of principles of openness and transparency
  - **push** for real changes and a sustainable transition towards open science

# Aspects of Open Science

# Aspects of Open Science I

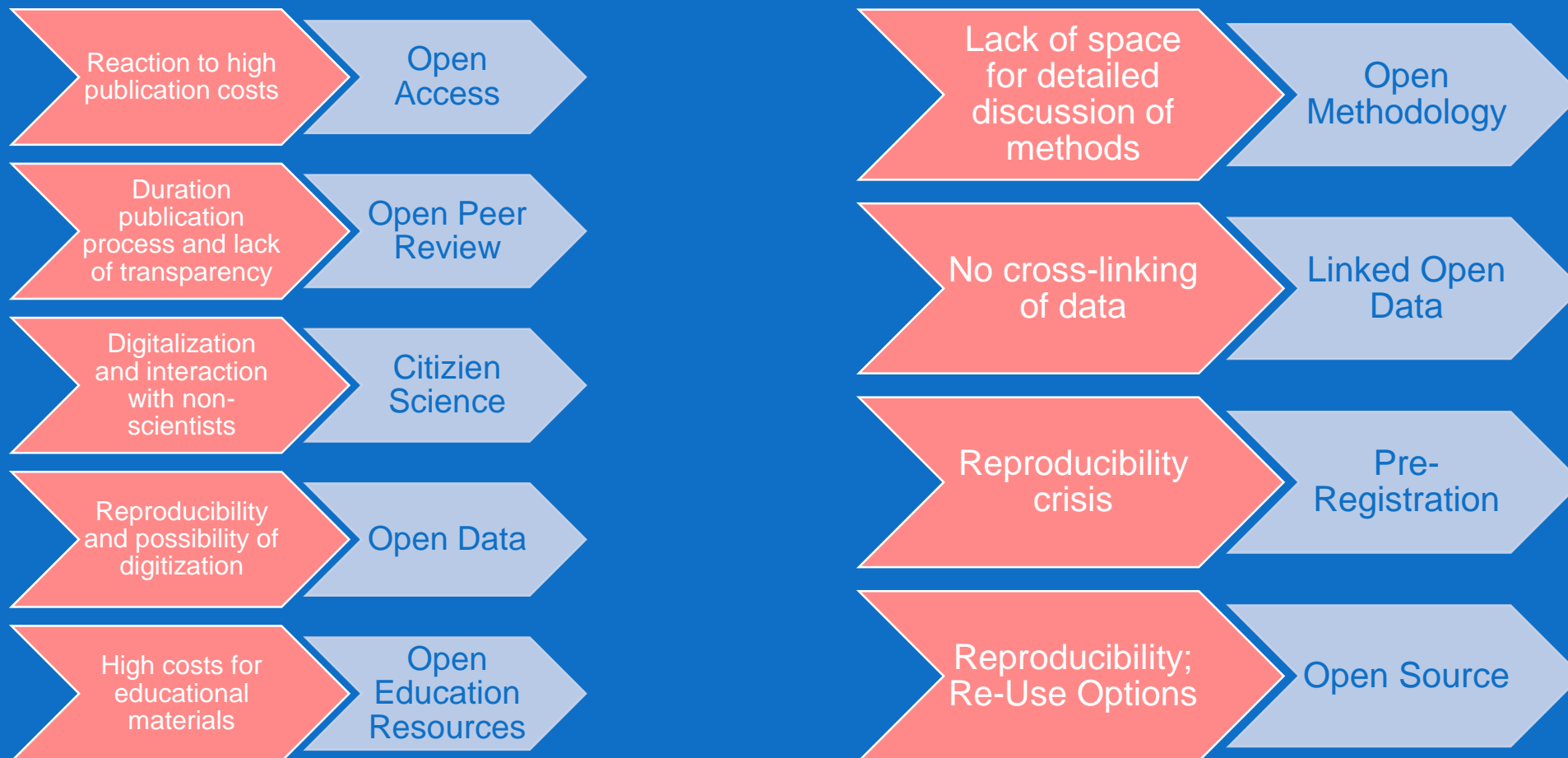
- **Open Access** Public access to research results in the form of publications
- **Open Research Data:** Free availability of research data/raw data
- **Linked Open Data:** Accessibility and networking of public data repositories
- **Open Peer Review:** Search for alternatives to the traditional review processes of journal publishers to ensure greater transparency in this area

# Aspects of Open Science II

- **Open Source:** Development and use of open source software for science
- **Citizen Science:** Involving non-professional scientists in the scientific process
- **Open Education:** Free access to digital teaching material and (recordings of) courses
- **Pre-registration:** Deposit and peer review of a project and method plan including hypotheses to be tested on a suitable platform
- **Open Methodology:** Detailed description of the method section (away from character restrictions in the publication)



# Hypothesis: OS as Reactions on ...



# UNESCO Recommendation on Open Science

- Adopted in November 2021
- <https://en.unesco.org/science-sustainable-future/open-science/recommendation> and <https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en>



UNESCO,  
<https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en>, CC BY-SA 3.0

# G6 Statement on Open Science



**G6 statement on Open Science**

<https://www.cnrs.fr/sites/default/files/download-file/G6%20statement%20on%20Open%20Science.pdf>

# Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (2003)

## Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities

Die Berliner Erklärung über den offenen Zugang zu wissenschaftlichem Wissen vom 22. Oktober 2003 wurde in englischer Sprache verfasst. Sie ist einer der Meilensteine der Open Access-Bewegung. Der Wortlaut der englischen Version ist maßgebend.

### Preface

The Internet has fundamentally changed the practical and economic realities of distributing scientific knowledge and cultural heritage. For the first time ever, the Internet now offers the chance to constitute a global and interactive representation of human knowledge, including cultural heritage and the guarantee of worldwide access.

We, the undersigned, feel obliged to address the challenges of the Internet as an emerging functional medium for distributing knowledge. Obviously, these developments will be able to significantly modify the nature of scientific publishing as well as the existing system of quality assurance.

In accordance with the spirit of the Declaration of the Budapest Open Access Initiative, the ECHO Charter and the Bethesda Statement on Open Access Publishing, we have drafted the Berlin Declaration to promote the Internet as a functional instrument for a global scientific knowledge base and human reflection and to specify measures which research policy makers, research institutions, funding agencies, libraries, archives and museums need to consider.

<https://openaccess.mpg.de/Berliner-Erklaerung>

## Signatoren

Nr	Datum	Organisation	Person
745	09.05.2022	Katholische Hochschule Nordrhein-Westfalen	Hans Hobelsberger, Bernward Robrecht
744	12.04.2022	Universidad La Salle	Alvaro Fernández Del Carpio
743	05.04.2022	Technische Hochschule Ingolstadt	Walter Schober
742	28.03.2022	Universidad Católica Los Ángeles de Chimbote	Wilberto Rubio Cabrera
741	24.03.2022	Universidad Nacional Toribio Rodríguez de Mendoza de Amazonas	Policarpio Chauca Valqui
740	24.03.2022	Medizinische Universität Wien	Michaela Fritz
739	24.03.2022	Walter Sisulu University	Rushiella Songca
738	12.03.2022	Management Science Research Journal	Siti Epa Hardiyanti
737	22.02.2022	Institute of Chemistry (Republic of Moldova)	Aculina Aricu
736	22.02.2022	Instituto Nacional de Salud	Ofelia Mamani

<https://openaccess.mpg.de/3883/Signatories>

# Open Science Policy by the University of Konstanz

[https://www.kim.uni-konstanz.de/typo3temp/secure\\_downloads/121290/0/87efd6413916f9f827ccd61bcbb5554c982cd34a/Open-Science-Policy-UKON-2021-en.pdf](https://www.kim.uni-konstanz.de/typo3temp/secure_downloads/121290/0/87efd6413916f9f827ccd61bcbb5554c982cd34a/Open-Science-Policy-UKON-2021-en.pdf)

# Open Science in Horizon Europe



The screenshot shows the OpenAIRE website interface. At the top left is the OpenAIRE logo. The navigation menu includes 'Services', 'Support', 'Open Science In Europe', and 'About', along with a search icon. The main content area features a large image of hands holding a globe, with the text 'Guides for Researchers' and 'Open Science in Horizon Europe proposal'. Below this is a breadcrumb trail: 'Introduction' (underlined), 'What to include in your proposal?', and 'How to address OS in HE proposals?'. Further down are links for 'View our webinars recordings' and 'How can OpenAIRE help?'. The 'Introduction' section contains a paragraph defining Open Science (OS) as an approach based on open cooperative work and systematic sharing of knowledge and tools. A 'Support' sidebar on the right lists 'RESOURCES' including 'Open Science Primers', 'Guides', 'Factsheets', and 'Use cases'.

OpenAIRE

Services Support Open Science In Europe About

Guides for Researchers

## Open Science in Horizon Europe proposal

Introduction What to include in your proposal? How to address OS in HE proposals?

View our webinars recordings How can OpenAIRE help?

### Introduction

Open Science (OS) is an approach based on open cooperative work and systematic sharing of knowledge and tools as early and widely as possible in the process. It has the potential to increase the quality and efficiency of research and accelerate the advancement of knowledge and innovation by sharing results, making them more reusable and improving their reproducibility. It entails the involvement of all relevant knowledge actors ([+ info](#)).

### Support

RESOURCES

- Open Science Primers
- Guides
- Factsheets
- Use cases

# Funding Agencies

i.e. Volkswagenstiftung (Open)  
Data Reuse:

<https://www.volkswagenstiftung.de/unsere-foerderung/unsere-foerderangebot-im-ueberblick/data-reuse-zusaetzliche-mittel-fuer-die-Aufbereitung-von-Forschungsdaten-open-science>



# Open Science Communities

## Example The Netherlands

- <https://www.osc-nl.com>
- <https://www.openscience.nl>



<https://www.osc-nl.com>, CC BY 4.0



# Open Science at the LMU

- Open Science Center (<https://www.osc.uni-muenchen.de/index.html>)
  - also institutional members: <https://www.osc.uni-muenchen.de/members/institutional-members/index.html>
- Research Data Management at the LMU University Library ([forschungsdaten@ub.uni-muenchen.de](mailto:forschungsdaten@ub.uni-muenchen.de))

# Open Peer Review

# General information and Clarification of Open Peer Review

# Open Peer Review at the End of 20<sup>th</sup> C

“Anonymous peer review, despite the criticisms often leveled against it, is used in more or less the same form by the great majority of scientific journals. The British Medical Journal (BMJ), however, has recently taken the bold step of abolishing referee anonymity, and now requires all referees to identify themselves to the authors.

The editor, Richard Smith, justifies this move primarily on ethical grounds, arguing that *"a court with an unidentified judge makes us think immediately of totalitarian states and the world of Franz Kafka"*.

Many other journals, including Nature Neuroscience, will await the results of this experiment with interest. Yet, whatever the results, there are a number of reasons to think that open review may not be the best solution for all journals.”

Editor Notice on “Pros and cons of open peer review”, in: Nature Neuroscience 2 (1999), pp.197-198, <https://doi.org/10.1038/6295>.

# What is Open Peer Review?

## 1. Peer Review

“Peer review is the evaluation of work by one or more people with similar competencies as the producers of the work (peers).”

[https://en.wikipedia.org/wiki/Peer\\_review](https://en.wikipedia.org/wiki/Peer_review)

A review (German: “Rezension”) of a book, for example, is a common form of internal discourse in the humanities. What is new is the **pre-review** rather than **post-review** of a publication.

# Some Types of Peer Review

Single Blind Peer Review	Author does not know the identify of the reviewer
Double Blind Peer Review	Author and reviewer do not know the identify of the opposite
Open Peer Review	Identity(ies) is/are known

- Several process stages are possible
- Plus rebuttal („Gegendarstellung“ possible)

# Problems with Peer Review

- Unreliability and inconsistency
- Delay and expense
- Lack of accountability and risks of subversion
- Social and publication bias
- Lack of incentives
- Wastefulness

Ross-Hellauer, T. (2017): What is open peer review? A systematic review, F1000Research, <https://doi.org/10.12688/f1000research.11369.2>.

# What is Open Peer Review?

## 2. Open Components of Peer Review

Open Identities	Disclosure of the persons involved
Open Reports	Open communication of the results
Open Participation	Open access for contributors
Open Interaction Communication	open, direct, two-way communication between submitters and assessors



# Open Peer Review

no common standard, i.e.:

- the colleagues know the articles in advance
- reviews name will be published with the article
- there are preprints
- there is a comment function on the article
- ...

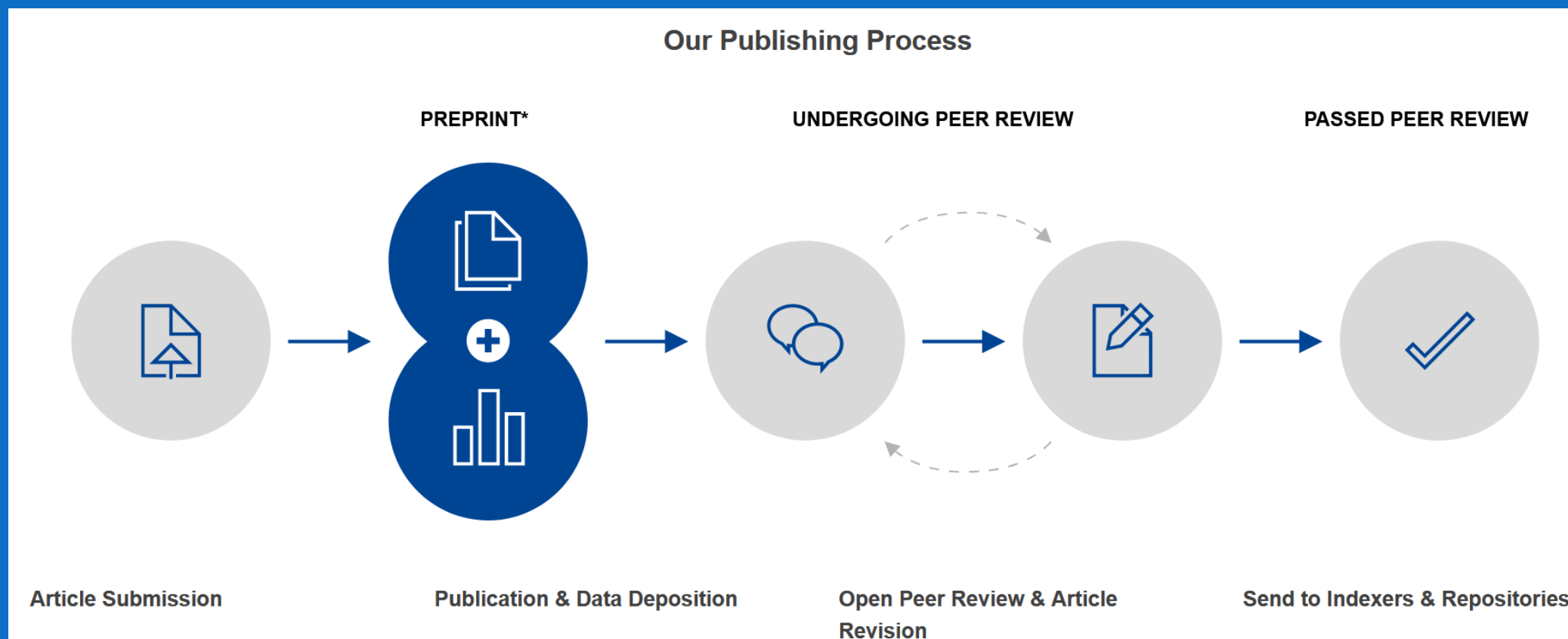
# Arguments pro and contra Open Peer Review

# Some Advantages

- Quality improvement
- Community based
- Prevent grievances
- More recognition for review work
- Transparency of communication
- All documents of the discourse in one place
- ...

# Publications Process Becomes Faster

Open Access Publishing on Open Research Europe



# Disadvantages of Open Peer Review

<https://twitter.com/petersuber/status/1412455826397204487?s=20&t=Shw40-smRVOYgkV6Bf6n6Q>

Information on Peter Suber: He is the Senior Advisor on Open Access (in Harvard Library) and Director of the Harvard Open Access Project (<https://library.harvard.edu/staff/peter-suber>)

# Examples of Open Peer Review

# Open Peer Review Example: F1000

- F1000Research is an Open Research publishing platform, specially for life scientists and clinical researchers
- “What is open peer review? A systematic review” by Tony Ross-Hellauer
- <https://f1000research.com/articles/6-588/v2>
- Open Peer Review directly towards the article
- Two versions of the article
- Four reviews

# Open Peer Review: eLife

- [eLife](https://elifesciences.org/) is a non-profit organization
  - receives financial support from the Howard Hughes Medical Institute, the Knut and Alice Wallenberg Foundation, the **Max Planck Society** and Wellcome
- only paper as preprint will be reviewed
- → publish article on eLife at the end of the review process

The screenshot shows the eLife website interface for a research article. At the top, there is a navigation bar with the eLife logo, a menu icon, and links for HOME, MAGAZINE, COMMUNITY, and INNOVATION. On the right side of the header, there are links for NEWSLETTER, ABOUT, SUBMIT MY RESEARCH, and LOG IN/REGISTER. Below the navigation bar, the article is categorized as a 'Research Article' in 'Developmental Biology'. The title is 'Amoeboid-like migration ensures correct horizontal cell layer formation in the developing vertebrate retina'. The authors listed are Rana Amiri, Archit Bhatnagar, Raimund Schliöbler, Stephanie Möllmer, Jochen Guck, and Caren Norden. The article is dated May 31, 2022, and has a DOI of 10.7554/eLife.76408. The abstract section is visible, starting with 'Migration of cells in the developing brain is integral for the establishment of neural circuits and function of the central nervous system. While migration modes during which neurons employ predetermined directional guidance of either preexisting neuronal processes or underlying cells have been well explored, less is known about how cells featuring multipolar morphology migrate in the dense environment of the developing brain. To address this, we here investigated multipolar migration of horizontal cells in the zebrafish retina. We found that these cells feature several hallmarks of amoeboid-like migration that enable them to tailor their movements to the spatial constraints of the crowded retina. These hallmarks include cell and nuclear shape changes, as well as persistent rearward polarization of stable F-actin. Interference with the organization of the developing retina by changing nuclear properties or overall tissue architecture hampers efficient horizontal cell migration and layer formation showing that cell-tissue interplay is crucial for this process. In view of the high proportion of multipolar migration phenomena observed in brain development, the here uncovered amoeboid-like migration mode might be conserved in other areas of the developing nervous system.' There is also an 'Editor's evaluation' section which states: 'The authors probe the role of multipolar migration of horizontal cells in the zebrafish retina. The results reveal amoeboid-like migration enabling cell movements to adapt to environmental spatial constraints in the crowded retina including cell and nuclear shape changes and rearward polarization of stable F-actin.' The article has 421 views and includes social media sharing options for Twitter, Facebook, LinkedIn, and a general share icon.

eLife, <https://doi.org/10.7554/eLife.76408>, CC BY 4.0.



# Open Peer Review Example: Embo Press

- Field of Biology
- “An engineered multicellular stem cell niche for the 3D derivation of human myogenic progenitors from iPSCs”
- <https://www.embopress.org/doi/abs/10.15252/emj.2022110655>
- Collected Open Peer Review documents as supplement in one single pdf file

[https://www.embopress.org/action/downloadSupplement?doi=10.15252/emj.2022110655&file=emj2022110655.viewer\\_comments.pdf](https://www.embopress.org/action/downloadSupplement?doi=10.15252/emj.2022110655&file=emj2022110655.viewer_comments.pdf)

# Open Peer Review Example: PeerJ

- Data Mining and Astronomy <https://peerj.com/articles/cs-979/reviews/>
- “An approach to fill in missing data from satellite imagery using data-intensive computing and DINEOF”
- <https://peerj.com/articles/cs-979/>
- Review history as separate website to the article

# Open Peer Review Example: PCI

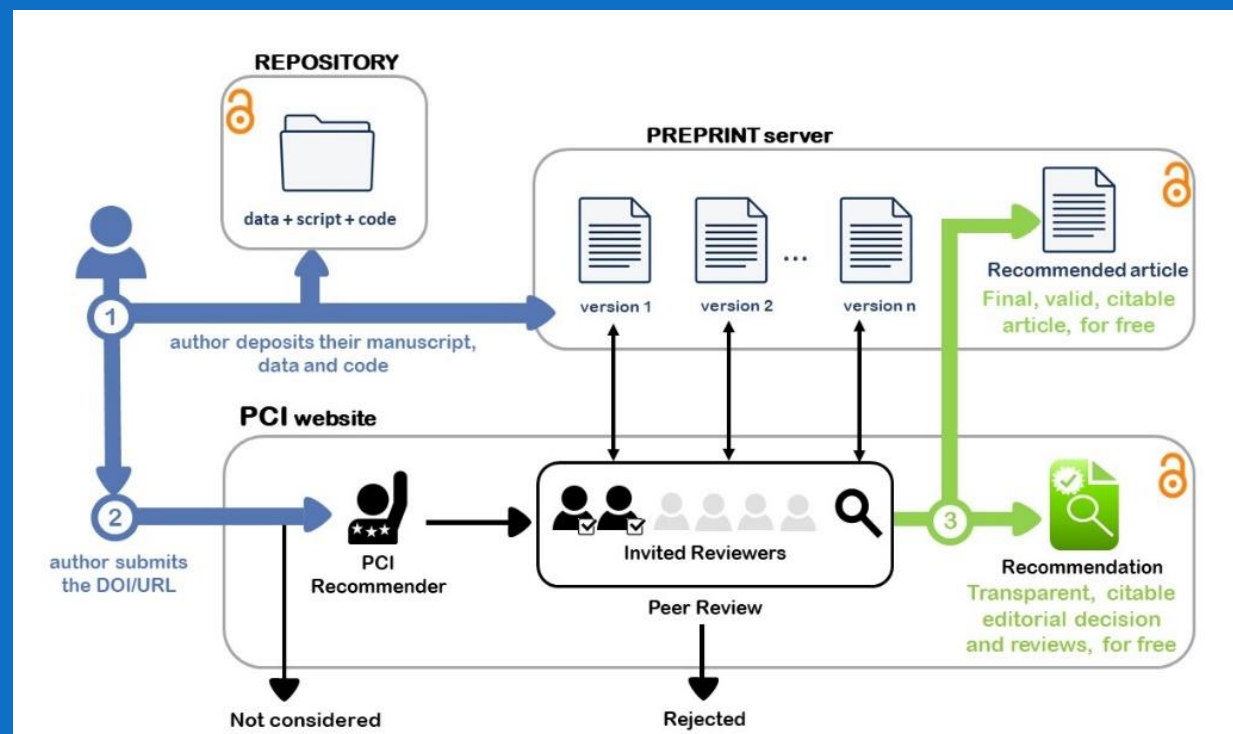


Modified from Martin Grandjean, <https://peercommunityin.org/movies-and-posters/>, CC-BY-SA-2.0.

- Article on a preprint server
- Recommendation on PCI
- Example Archaeology: <https://archaeo.peercommunityin.org>

## Facts and Figures

- 1.7000 recommenders
- 15 PCIs
- 90 PCI friendly journals
- 100 supporting organisations



Workflow of a preprint evaluation and recommendation by PCI, <https://peercommunityin.org/movies-and-posters/>, CC-BY-ND.

# Reprohack

- Call for hacking the own paper & software
- Submitted by the author(s)
- Aim: Improve reproducibility
- <https://www.reprohack.org>



# Discussion Open Peer Review in the Humanities

# Open Peer Review in the Humanities

Alex Lichtenstein:

“Under my editorship, the American Historical Review has tried many new things. But so far, the traditional form of “double-blind” peer review for article submissions has remained intact, indeed sacrosanct.

Until now.

In the ongoing commitment to experimentation, the AHR invites “open peer review” of a recently submitted manuscript, “History Can be Open Source: Democratic Dreams and the Rise of Digital History,”

from <https://ahropenreview.com> by The American Historical Review, 2020.

# Open Peer Review in the Humanities

Seth Denbo (Director of Scholarly Communication and Digital Initiatives at the American Historical Association):

“Open peer review hasn’t caught on in the humanities.”

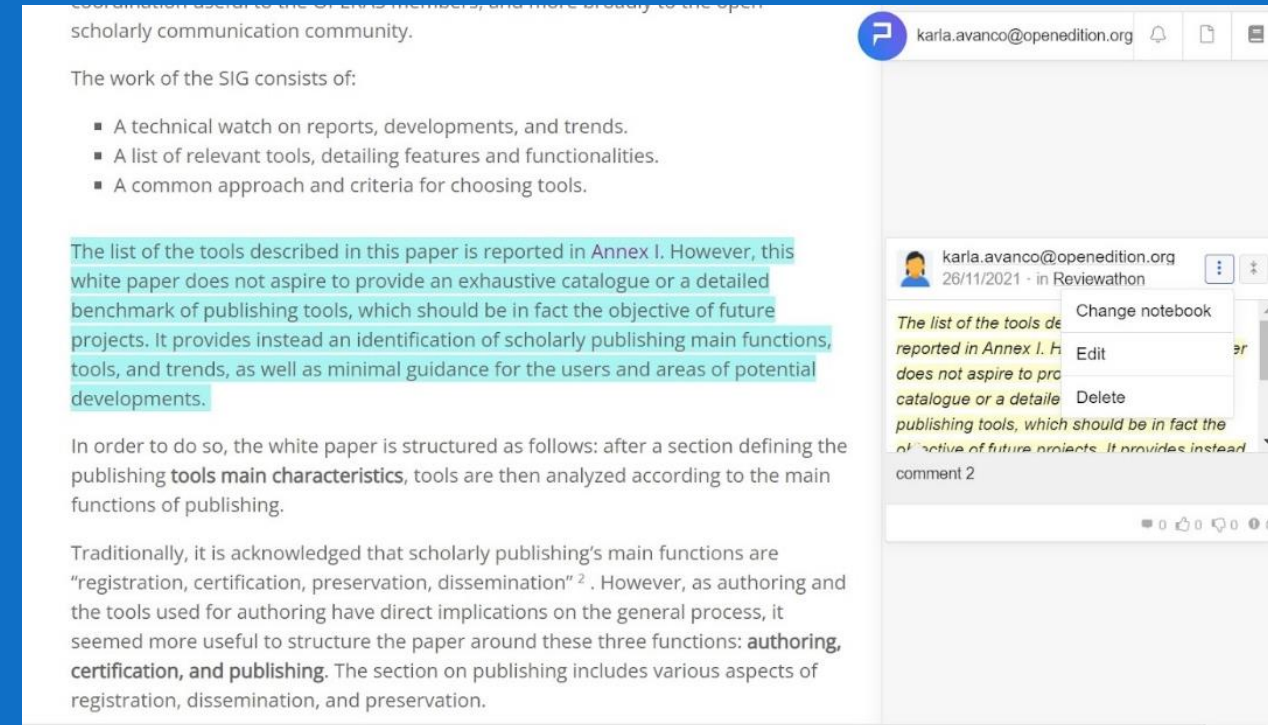
“Why, then, have humanities journals and scholars not taken up open review practices in more than a few notable instances? Openness as both value and practice has infused the discourse around scholarship and the communication of ideas among many in the humanities, but **old practices die hard.** [..]

Most humanities disciplines are comfortable with, and even rely upon, certain kinds of subjective judgments by scholars. It could be that with this outlook, authors and editors in the humanities feel less keenly the necessity to reform review to prevent inconsistency between reviewers.”

Seth Denbo (2020): Open Peer Review in the Humanities, in: The Scholarly Kitchen, <https://scholarlykitchen.sspnet.org/2020/03/04/guest-post-open-peer-review-in-the-humanities/>.

# OPERAS Living Book “Reviewathon”

- European Research Infrastructure for the development of open scholarly communication in the social sciences and humanities
- <https://www.operas-eu.org>
- Post-Publication Open Peer Review on White Papers
- <https://operas.hypotheses.org/5083>



The screenshot shows a Hypothesis comment interface. The main text is a white paper excerpt with a comment by karla.avanco@openedition.org. The comment text is: "The list of the tools described in this paper is reported in Annex I. However, this white paper does not aspire to provide an exhaustive catalogue or a detailed benchmark of publishing tools, which should be in fact the objective of future projects. It provides instead an identification of scholarly publishing main functions, tools, and trends, as well as minimal guidance for the users and areas of potential developments." The comment is dated 26/11/2021. A context menu is open over the comment, showing options: "Change notebook", "Edit", and "Delete".

scholarly communication community.

The work of the SIG consists of:

- A technical watch on reports, developments, and trends.
- A list of relevant tools, detailing features and functionalities.
- A common approach and criteria for choosing tools.

The list of the tools described in this paper is reported in Annex I. However, this white paper does not aspire to provide an exhaustive catalogue or a detailed benchmark of publishing tools, which should be in fact the objective of future projects. It provides instead an identification of scholarly publishing main functions, tools, and trends, as well as minimal guidance for the users and areas of potential developments.

In order to do so, the white paper is structured as follows: after a section defining the publishing tools main characteristics, tools are then analyzed according to the main functions of publishing.

Traditionally, it is acknowledged that scholarly publishing's main functions are "registration, certification, preservation, dissemination" <sup>2</sup>. However, as authoring and the tools used for authoring have direct implications on the general process, it seemed more useful to structure the paper around these three functions: **authoring, certification, and publishing**. The section on publishing includes various aspects of registration, dissemination, and preservation.

karla.avanco@openedition.org  
26/11/2021 - in Reviewathon

The list of the tools described in this paper is reported in Annex I. However, this white paper does not aspire to provide an exhaustive catalogue or a detailed benchmark of publishing tools, which should be in fact the objective of future projects. It provides instead an identification of scholarly publishing main functions, tools, and trends, as well as minimal guidance for the users and areas of potential developments.

comment 2

OPERAS-P project, CC BY 4.0, <https://www.operas-eu.org/special-interest-group-living-book/pundit-manual/>.



# Many developments, a kind of competition for ideas?



The Fortune Teller, Caravaggio, Louvre, Paris, <https://collections.louvre.fr/ark:/53355/cl010062329>, public domain.

# Citizen Science

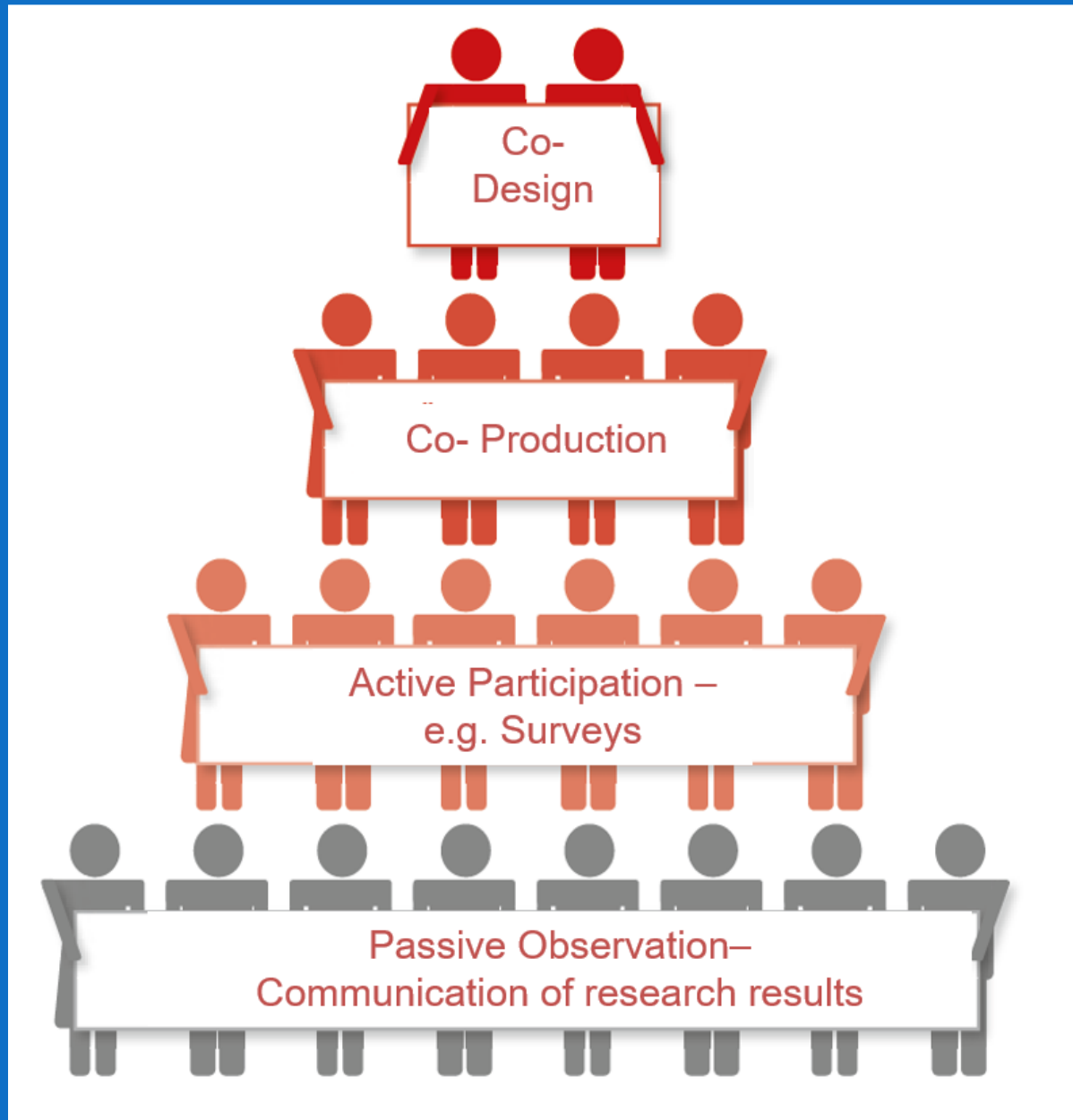
# Citizen Science

Involvement of non-scientists in research processes

Topic with a very wide spectrum:

- Heterogeneous community
- Broadly diversified across all disciplines (Environmental research, biology very strong, but e.g. also history)
- Online participation is a central aspect
- Distributed Computing
- Crowdfunding

In the vast majority of cases, the focus is on the collection of data or on the evaluation of content in the broadest sense.



(after Sonja Kreft (MfN) after Bonney et al 2009)

# Citizen Science

- Rather “exotic” field of Open Science
- Reproducibility / Replicability of research (credibility crisis) does not matter
- No direct mandates from politics, funding organizations or publishers
- But: Very strong encouragement and promotion (funding) on the political level
- Idealistic element plays a comparatively large role
- Justification towards society (demonstrate your own relevance)
- Transparency
- Real support with the generation or evaluation of data

# Criticism

- Unnecessary (idealistic) gimmick
- Exploitation of "cheap" labor
- Research should not be driven too much by the pressure to justify itself

# Examples

- Seti@home <https://setiathome.ssl.berkeley.edu/>
- Einstein@home <https://einsteinathome.org/de/home>
- Animal Tracker <https://www.ab.mpg.de/345422/citizen-science>
- Flora Incognita <https://floraincognita.com/>
- Dawn Chorus <https://dawn-chorus.org/>
- Chimp&see <https://www.zooniverse.org/projects/sassydumbledore/chimp-and-see/>
- Quallen-Galaxien <https://www.zooniverse.org/projects/apillepich/cosmological-jellyfish>

# Examples

- Artigo <https://www.kunstgeschichte.uni-muenchen.de/forschung/digitalekg/laufende-projekte/artigo/index.html>
- Verein für Computer Genealogie <https://www.compgen.de/>
- Europeana Transcribe <https://europeana.transcribathon.eu>
- Lil Bubome <https://lilbubome.wordpress.com/>



# Platforms / Documents

Bürgerschaftenwissen

<https://www.buergerschaftenwissen.de/>

European Open Science Association

<https://ecsa.citizen-science.net/>

EU platform

<https://eu-citizen.science>

Zooniverse

<https://www.zooniverse.org>

Citizen Science @ NASA

<https://science.nasa.gov/citizenscience>

Grünbuch Citizen Science Strategie 2020 (<https://d-nb.info/1104198576/34>)

Weißbuch Citizen Science Strategie 2030 für Deutschland

(<https://doi.org/10.31235/osf.io/ew4uk>)

# Conclusion

Have the option in mind (Funding, supporting bodies)

Never (!) works by itself - without a tremendous amount of effort on your part

Motivation of (potential) participants is crucial:

- Do you have a good topic that appeals to many people?
- Is there any way to “make” the topic more interesting?
- Include gaming elements or competition aspects to the process
- Offensive advertising needed throughout the entire course

Central question:

Will the expected result of the project justify the enormous effort for myself?

# Thanks for the attention!

[osip@mpdl.mpg.de](mailto:osip@mpdl.mpg.de)