FUNDAMENTAL PRINCIPLES OF
PEER REVIEW &
PEER REVIEW ETHICS

1st J-STAGE Seminar
Japan Science and Technology Agency
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Education Consultant, AsiaEdit
FUNDAMENTAL PRINCIPLES OF PEER REVIEW & PEER REVIEW ETHICS

Agenda

• Introduction to peer review & COPE (Committee on Publication Ethics)
• Aims & models of peer review
• Ethics of peer review
FUNDAMENTAL PRINCIPLES OF PEER REVIEW & PEER REVIEW ETHICS

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• Introduction to peer review & COPE
  • Aims & models of peer review
  • Ethics of peer review
Most scientists regard the new streamlined peer review process as “quite an improvement”
PEER REVIEW

“A process where peer experts in a particular field of knowledge creation—from scientific research to creative arts production—are invited and accept to review, and provide learned and critical evaluation of the scholarly merit of the researchers’ or creators’ intellectual product.”

Deborah Poff, Past Chair, Committee on Publication Ethics, China COPE Seminar 2017, Beijing, China; 26 March 2017

“Peer review is the critical assessment of manuscripts submitted to journals by experts who are usually not part of the editorial staff. Because unbiased, independent, critical assessment is an intrinsic part of all scholarly work, including scientific research, peer review is an important extension of the scientific process.”

PEER REVIEW LANDMARKS

First science journal: *Philosophical Transactions*, Royal Society, 1665
Starts using external peer review ("refereeing"), 1832

First peer-reviewed journal: *Medical Essays and Observations*, Royal Society of Edinburgh, 1731

1950s-60s: *Science & Journal of the American Medical Association* start using peer review

1970s: *Nature & Lancet* start using peer review

1999: *BMJ* switches to open-identity peer review; *BMC* journals start to publish signed peer reviews

2013: Post-publication open-platform peer review at *F1000*

2021: *eLife* peer reviews only preprints

CC BY https://en.wikipedia.org/wiki/Philosophical_Transactions_of_the_Royal_Society
https://blog.f1000.com/2020/01/31/a-brief-history-of-peer-review/
# PEER-REVIEWED SCHOLARLY JOURNALS

<table>
<thead>
<tr>
<th>Gatekeeping &amp; curation</th>
<th>Dissemination</th>
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<tbody>
<tr>
<td>• Defines aims &amp; scope, acceptance criteria</td>
<td>• Access, distribution, marketing</td>
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<table>
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<th>Registration</th>
<th>Archiving</th>
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<td>• Formal record, correction/retraction, indexing</td>
<td>• Persistent identifiers, backup system</td>
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<th>Certification (peer review)</th>
<th>Knowledge &amp; capacity building</th>
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<td>• Quality control</td>
<td>• Metadata/data sharing, education, resources</td>
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<th>Production</th>
<th>Community building</th>
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<tr>
<td>• Layout, (editing,) coding, print/online formats</td>
<td>• News, editorials, user commenting, blogs, events</td>
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TRUSTED JOURNALS

- Do you know the journal & can find papers?
  - Publisher contacts?
  - Indexing?

- Peer review process?
  - Fees?
  - Editorial board?

- COPE member?
- If open access: DOAJ?
- INASP platform: Journals Online, AJOL?

https://thinkchecksubmit.org/
PRINCIPLES OF TRANSPARENCY AND BEST PRACTICE IN SCHOLARLY PUBLISHING

Website

Name of journal

Peer review process

Ownership and management
Journal content must be clearly marked as whether peer reviewed or not. Peer review is defined as obtaining advice on individual manuscripts from reviewers expert in the field who are not part of the journal’s editorial staff.

The journal’s website should:
- clearly describe this process, as well as any policies related to the journal’s peer review procedures including the method of peer review used.

The journal’s website should not:
- guarantee manuscript acceptance or very short peer review times.
PRINCIPLES OF TRANSPARENCY AND BEST PRACTICE IN SCHOLARLY PUBLISHING

Governing body

Editorial team/contact information

Copyright and licensing

Author fees

publicationethics.org
PRINCIPLES OF TRANSPARENCY AND BEST PRACTICE IN SCHOLARLY PUBLISHING

- Allegations of research misconduct
- Publication ethics
- Publishing schedule
- Access
PRINCIPLES OF TRANSPARENCY AND BEST PRACTICE IN SCHOLARLY PUBLISHING

Archiving  Revenue sources  Advertising  Direct marketing
Promoting integrity in scholarly research and its publication

COPE provides leadership in thinking on publication ethics and practical resources to educate and support members, and offers a professional voice in current debates.

Read more
ABOUT COPE

• Provides **support**, **leadership**, and a **professional voice** to help preserve and promote the integrity of the scholarly record through policies and practices that reflect current **best principles of transparency and integrity**

• Is an international membership organisation. Our **>12,000 members** are primarily editors and owners/publishers of scholarly journals of all disciplines. We are exploring **expanding membership**, eg research institutions

• Operates, manages, and governs the non-profit organisation with a small group of paid employees and a **group of volunteers** who serve on the Trustee Board and Council
Join us at our next COPE forum to discuss publication ethics cases sent in by members
COPE RESOURCES

Examples of resources

From our Core practices and our guidelines to useful sample letters and flowcharts, COPE offers a range of useful tools for journal editors and publishers.
COPE CORE PRACTICES

Policies and practices required to reach the highest standards in publication ethics:

- Allegations of misconduct
- Authorship and contributorship
- Complaints and appeals
- Conflicts of interest/Competing interests
- Data and reproducibility
- Ethical oversight
- Intellectual property
- Journal management
- Peer review processes
- Post-publication discussions and corrections
COPE CORE PRACTICE

Peer review processes

All peer review processes must be transparently described and well managed. Journals should provide training for editors and reviewers and have policies on diverse aspects of peer review, especially with respect to adoption of appropriate models of review and processes for handling conflicts of interest, appeals and disputes that may arise in peer review.
WHAT TO CONSIDER WHEN ASKED TO PEER REVIEW A MANUSCRIPT

1. **You receive a reviewer invitation from a journal.**
   - **Is it a journal you know?**
     - Otherwise, see guidance.
     - **ThinkCheckSubmit.org**
   - **Is the journal legitimate?**
     - Yes
     - **Yes**
     - **No**
     - **Decline invitation**
       - You may want to let the journal know not to contact you again.

2. **Read the instructions for reviewers provided by the journal.**
   - **Consider the review model of the journal and the evaluation criteria given.**
   - **Do you understand and accept the review model and policies?**
     - Yes
     - **Yes**
     - **No**
     - **Decline invitation**
       - You may want to give the reason and/or suggest other potential reviewers.

3. **Consider any potential conflicts of interest – professional, personal, or financial – and check the journal’s COI policy.**
   - **Is author information provided?**
     - Yes
     - **Yes**
     - **No**
     - **Decline invitation**
       - Contact the Editor or Editorial Office and discuss how potential COIs will be minimized, otherwise
     - **Yes**
     - **Yes**
     - **Decline invitation**

https://publicationethics.org/resources/flowcharts/what-consider-when-asked-peer-review-manuscript
HOW TO RECOGNISE POTENTIAL MANIPULATION OF THE PEER REVIEW PROCESS

Peer reviewers may be suggested by:

- the Editor handling the manuscript;
- authors on submission of their manuscript to a journal;
- another reviewer who is unable to peer review the manuscript.

While there is an expectation that everyone involved in the process acts with integrity, the peer review process can be susceptible to manipulation, as discussed at COPE’s 2016 North American Seminar (R9).

The features or patterns of activity shown opposite are suggested to help Editors recognize potential signs of peer review manipulation. Often it is the occurrence of these features in combination that may indicate a potential issue, and they may only become apparent at later stages in the peer review or publishing process.

Relevant COPE Cases:

- Case 11-12: Author Creates Begun Email Accounts for Proposed Reviewers
  http://bit.ly/2sIKWJW
- Case 12-13: Compromised Peer Review in Published Papers
  http://bit.ly/2wWtLkU
- Case 12-16: Compromised Peer Review (Unpublished)
  http://bit.ly/2j3fCDw

References:

1. COPE Ethical Guidelines for Peer Review.
2. COPE Statement on Inappropriate Manipulation of Peer Review Process.
   http://bit.ly/2z3Bm2w
3. Who Reviews the Reviewer? Jigisha Patel
   http://bit.ly/2y0l1G3
4. Inappropriate Manipulation of Peer Review. Elizabeth Moylan
5. Can You Spot a Flaw? The ‘Trail of False Peer Reviews’. Allison McCook

Best Practice to Minimize Peer Review Manipulation

1. SUBMIT
   Require that authors submit manuscripts to the journal themselves.

2. VERIFY
   Try to use institutional emails or institutionally verified ORCID when inviting peer reviewers.

3. QUALIFY
   Always check that suggested peer reviewers are qualified to review the manuscript and their email address is accurate.

4. BEHAVIOUR
   Check for unusual patterns of behaviour which in combination may suggest peer review manipulation is occurring.

GUIDELINES:
ETHICAL GUIDELINES FOR PEER REVIEWERS

https://publicationethics.org/resources/guidelines-new/cope-ethical-guidelines-peer-reviewers
COPE Discussion document:
Who “owns” peer reviews?

COPE Council

Summary
This document aims to stimulate discussion about ownership rights in peer reviewer reports.
Here we set out some of the issues that have arisen in previous discussions around peer review, some of which are specific to various models of peer review. We hope that the concepts discussed assist journal editors and publishers in establishing guidelines and clear policies for handling issues surrounding who owns peer reviews. COPE welcomes additional comments from journal editors, reviewers, researchers, institutions, funders and third party services on this subject.

Reference
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- Introduction to peer review & COPE
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PRE-PUBLICATION PEER REVIEW

Editor (or Office)

Desk review checks:
- Completeness, adherence to guidelines, writing quality
- Topic / article / study type, quality, bias, ethics
- Data quality & availability, [+ study novelty/impact]

Editor

2-3 Reviewers
Single / Double / Triple anonymised, or “Open identity” peer review

Peer review criteria:
- Interest, coverage of literature, analysis / interpretation
- Writing style, organization
- Method quality, originality, contribution to field

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**TYPICAL EDITORIAL DECISIONS**

<table>
<thead>
<tr>
<th>Decision Level</th>
<th>Accept</th>
<th>Revise</th>
<th>Reject</th>
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<tbody>
<tr>
<td><strong>Accept</strong></td>
<td><strong>Accept as is</strong></td>
<td><strong>Resubmit for review after minor revision</strong></td>
<td><strong>Reject; invitation of resubmission (“soft”)</strong></td>
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<td></td>
<td>(unconditional acceptance)</td>
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<tr>
<td><strong>Reject</strong></td>
<td><strong>Resubmit for review after major revision</strong></td>
<td></td>
<td><strong>Reject; no resubmission (“hard”)</strong></td>
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**Roles:**
- **Chief Editor** / Proxy / Committee
- **Deputy editor**
- **Associate editor**
- **Senior Editor**
- **Handling/Academic editor**
- **Executive editor**
- **Reviewers / Tiebreaker reviewer?**
POST-PUBLICATION PEER REVIEW

Desk review checks:
- Intelligible & in good English
- Appropriate (including content, quality, tone, format)

https://blog.f1000.com/author-guidelines/

Editor

> 2 Reviewers nominated by authors
(need approval from 2)

Transparent peer review:
- Open identity
- Open, signed reviews
- Uses public platform

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PEER REVIEW MODELS

AUTHOR’S PAPER

REVIEWERS’ REPORTS

EDITOR

Single
anonymised

Double
anonymised

Triple anonymised

Open identity

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## PEER REVIEW VARIATIONS

### Author/reviewer choices
- Author picks model; reviewer can reveal name

### Opened/semi-open review
- Reviewers’ names revealed later & published

### Open reports (transparent review)
- Reviews published +/- names; +/- revisions (DOIs)

### Interactive/collaborative review
- Allowed interaction between parties (eg, cross-reviewing by reviewers; open interaction among parties directly)

### Author recommendations
- Author can recommend/exclude reviewers

### Portable (pre-submission) review
- Third-party peer reviews commissioned

### Cascading/transferable review
- Rejected paper + reviews forwarded

### Post-publication commenting
- Online public commenting on articles
PEER REVIEW INNOVATIONS

Registered reports
- Protocol peer reviewed before results obtained

Results-free review
- Results & discussion 1st withheld from reviewers

Re-review opt out
- Author chooses if revision goes only to editor

Assisted review
- Automated checks assist editor

Patient review
- Patients collaborate with editors & reviewers

Fast-track review
- Priority given to papers on urgent topics

Expedited review
- Rejected papers bypass full review at next journal

Overlay review
- Preprints reviewed +/- formally published

https://www.biomedcentral.com/about/advancing-peer-review
https://europepmc.org/article/med/28580134
https://rapidreviews2covid19.mitpress.mit.edu/
PEER REVIEWERS

• Characteristics:
  o 2-3 experts in field
  o Know current literature & journal guidelines
  o Willing and available; can keep to deadline
  o Can perform impartial, professional review
  o Declare any conflicts of interest; decline review if needed

• Examples:
  o Qualifications
    Typically hold a doctorate
    Supervisor could arrange to be co-reviewer
  o Expertise
    Published at least 3 articles as lead author in a relevant topic
    At least 1 article in the past 5 years
  o Impartial
    Not close collaborator or be personally associated with author
    (not co-authored 3 years before Version 1;
    not co-authored after Version 1;
    not same institution)
  o Global
    Reviewers from different countries

https://f1000research.com/for-authors/tips-for-finding-referees
TYPICAL REVIEWER CHECKLIST

1. Does article content/style fit journal's mission & readership? [+ Is the study novel/important enough?]

2. - Are Q & aim clear, timely, relevant, interesting?
   - Are references accurate & recent primary sources?
   - Is there enough theoretical grounding?
   - Are methods/analyses appropriate & reproducible?

3. - Are findings/illustrations presented well & discussed in context, with limitations/implications?
   - Are conclusions supported?

4. Is study complete (not salami; no selective/misleading reporting; follows EQUATOR Network guidelines)?

5. List strengths & weaknesses. Recommend improvements (for errors, flaws, arguments, title/abstract, style).

6. Confidential notes to Editor:
   - Any parts not reviewed / need other/statistics review?
   - Any plagiarism, potential legal/ethics problems (inc. fraud, multiple submission, multiple publication, citation bias, no trial registration, © problems)?
   [Recommendation: accept/revise/reject?]
CRITICISMS

Slow, inefficient; need to contact many reviewers to find 2-3

Reviewer pool limited; lack of succession plan, training

Subjective; variable quality; can be opaque

Disagreement between reviewers likely

Lack of diversity; groupthink

Researchers know each other in some fields; difficult to anonymise

Reviewer burnout; low incentive

Difficult to detect fraud, irreproducible data

https://europepmc.org/article/med/28580134
ETHICAL ISSUES IN SCHOLARLY PUBLISHING

Error → Misconduct → Fraud

Non-intentional

Intentional

1. wrong observation
2. wrong analysis
3. inadequate record keeping
4. withholding method details
5. double and sliced publications
6. biased or post-hoc revision of study design
7. ignoring previous work of others
8. suppressing own data, dropping data points
9. undeclared conflicts of interest, corruption
10. undeserved authorship
11. unfair review, wrong testimony
12. espionage, giving away secrets
13. misuse of public funds
14. bullying, nepotism
15. overlooking others’ use of flawed data
16. suppressing fraud allegation
17. no informed consent
18. plagiarism
19. falsification
20. fabrication
21. illegal human experiments

Expression of Concern
Correction
Retraction

“Post-publication peer review”

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2829174/ (CC BY)
Data dredging
Also known as p-hacking, this involves repeatedly searching a dataset or trying alternative analyses until a 'significant' result is found.

Omitting null results
When scientists or journals decide not to publish studies unless results are statistically significant.

Underpowered study
Statistical power is the ability of an analysis to detect an effect, if the effect exists – an underpowered study is too small to reliably indicate whether or not an effect exists.

Issues

Errors
Technical errors may exist within a study, such as misidentified reagents or computational errors.

Underspecified methods
A study may be very robust, but its methods not shared with other scientists in enough detail, so others cannot precisely replicate it.

Weak experimental design
A study may have one or more methodological flaws that mean it is unlikely to produce reliable or valid results.
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…“peer review and citation ring,” 60 papers retracted

...retractions... bring total fake peer review count to 250

The Peer Review Scam: How authors are reviewing their own papers

Major publisher retracting more than 100 studies from cancer journal over fake peer reviews
PEER REVIEW FRAUD

• **Author level** (journal over-relying on & not checking author-recommended reviewers)
  o Mutual review among colleagues, hiding conflicts of interest
  o Fake name or known expert’s name with fake email address owned by colleague or self (fake review by colleague or self)
  o With or without author’s knowledge: unethical third party offers online submission assistance and recommends fake reviewer details (fake review by company)

• **Author or third party**
  o Hacks into & alters records in journal review system

• **Journal/publisher level**
  o Guaranteed publication for fee (peer review absent, too fast, of low quality, or faked)
  o Fake journal submission platform
  o Fake guest editor of theme/special issue organises fake/substandard review
  o Journal editorial board bypasses proper review to publish in own journal
UNETHICAL PEER REVIEW

Nightmare scenario: Text stolen from manuscript during review

Dear peer reviewer, you stole my paper: An author’s worst nightmare

“I am really sorry.” Peer reviewer stole text for own paper

Chem journal yanks paper because authors had stolen it as peer reviewers
1. A peer reviewer notices ~2/3 data in a submitted paper have been described before. The editors suspect salami publication. What should they do?

2. An author references her past studies in a submitted paper, but some paragraphs are plagiarised. However, when the editor contacts the author’s institution, it says the author has already been transparent by citing her past work. What should the editor do?

3. An author publicly but wrongly names and blames a reviewer for rejecting a paper. The editors/reviewers/authors agree to publish the positive peer review report in a journal blog. What else should happen?

4. A handling editor notices a reviewer has been recommending that authors cite many of the reviewer’s own works. Apart from banning the reviewer from reviewing, what else can be done?
Peer reviewers play a role in ensuring the integrity of the scholarly record. The peer review process depends to a large extent on the trust and willing participation of the scholarly community and requires that everyone involved behaves responsibly and ethically. …Journals have an obligation to provide transparent policies for peer review, and reviewers have an obligation to conduct reviews in an ethical and accountable manner. Clear communication between the journal and the reviewers is essential to facilitate consistent, fair and timely review.

COPE Ethical guidelines for peer reviewers
https://publicationethics.org/files/cope-ethical-guidelines-peer-reviewers-v2_0.pdf
ETHICAL PEER REVIEW 1

1. Declare conflicts of interest (before/during review)

   **Examples of COIs:** Connected to project / grant or funding, current collaborator, recent co-author/mentor/mentee, disagreement, public viewpoint

2. Give correct personal details; do not impersonate others or manipulate peer review

3. Reply quickly to invitation after checking abstract/manuscript

4. Decline if no time, wrong area of expertise, or you do not accept journal’s peer review model

5. Recommend other peer reviewers neutrally and truthfully

6. Do not forward (eg, to postdoc/colleague) without permission

7. State if you had help or did not review parts

8. Do not contact authors
ETHICAL PEER REVIEW 2

9. Keep to deadline and journal guidelines; do not delay review / publication for personal gain or revenge

10. Be concise, courteous, and constructive

11. No libel; no bias; no (self-)plagiarism

12. Recommend references only if relevant

13. Keep manuscript & peer review report/process confidential (check journal policy: who owns review?)

14. Destroy / delete materials after review

15. Do not use information/ideas until after publication and citation

16. Inform journal if you know author identity (double-anonymised review) or suspect ethical problems

Joint investigations (permission may be needed if peer review report is to be used in investigations):

Cooperation & Liaison between Universities & Editors (CLUE): recommendations on best practice:
PEER REVIEW DEVELOPMENTS

Peer review standardisation
A Standard Taxonomy for Peer Review
https://osf.io/68rz/

Reviewer training, diversity
https://researcheracademy.elsevier.com/navigating-peer-review/certified-peer-reviewer-course
https://ioppublishing.org/peer-review-excellence/
https://webofscienceacademy.clarivate.com/learn

Review recognition, incentive
https://publons.com/
https://www.reviewercredits.com/

Preprint peer review
https://peercommunityin.org/
https://www.reviewcommons.org/
https://prereview.org/

Public post-publication commenting
https://pubpeer.com/

Reviewer training, diversity
https://researcheracademy.elsevier.com/navigating-peer-review/certified-peer-reviewer-course
https://ioppublishing.org/peer-review-excellence/
https://webofscienceacademy.clarivate.com/learn

Peer recommendations
https://prelights.biologists.com/
https://facultyopinions.com/
https://collectionsblog.plos.org/author/channels/
https://peeriodicals.com/
https://publons.com/
https://www.reviewercredits.com/

Peer review research, promotion
https://peerreviewcongress.org/
https://peerreviewweek.wordpress.com/
https://about.scienceopen.com/collections/
https://peercommunityin.org/
https://www.reviewcommons.org/
https://prereview.org/
https://peerreviewcongress.org/
https://peerreviewweek.wordpress.com/
https://about.scienceopen.com/collections/
https://peerreviewweek.wordpress.com/
PEER REVIEW CORE PRINCIPLES (European Science Foundation, 2011)

Excellence

Impartiality

Transparency

Appropriateness of purpose

Efficiency & speed

Confidentiality

Ethical & integrity considerations in submissions

Ethical & integrity considerations in submissions

5 Pillars supporting good practices of review with quality and equity

Monument to an Anonymous Peer Reviewer

Institute of Education, National Research University
Higher School of Economics (HSE University), Moscow,
26 May 2017

5 faces showing results of peer review:
Accept/Reject/Major changes/Minor changes/
Revise & Resubmit

“Reviewers are ‘invisible heroes in science’”
Igor Chirikov, HSE University
https://www.nature.com/articles/nature.2017.22060

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THANK YOU

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