Lecture 12
Peer Review and Response to Comments

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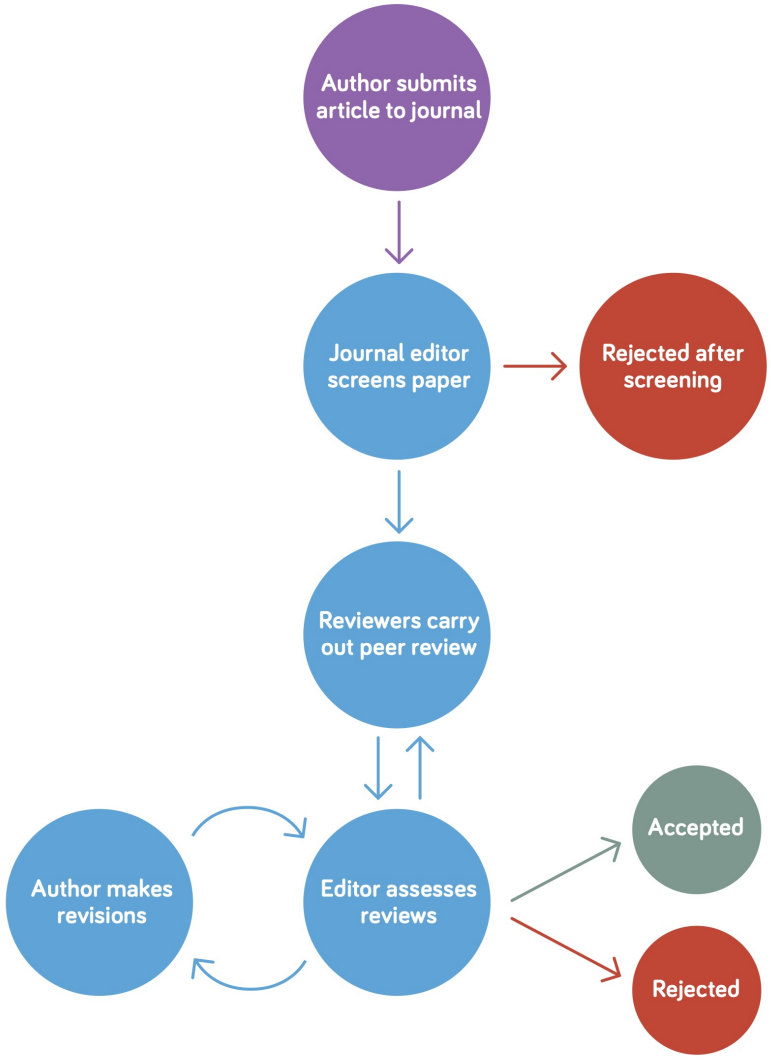
The peer review process

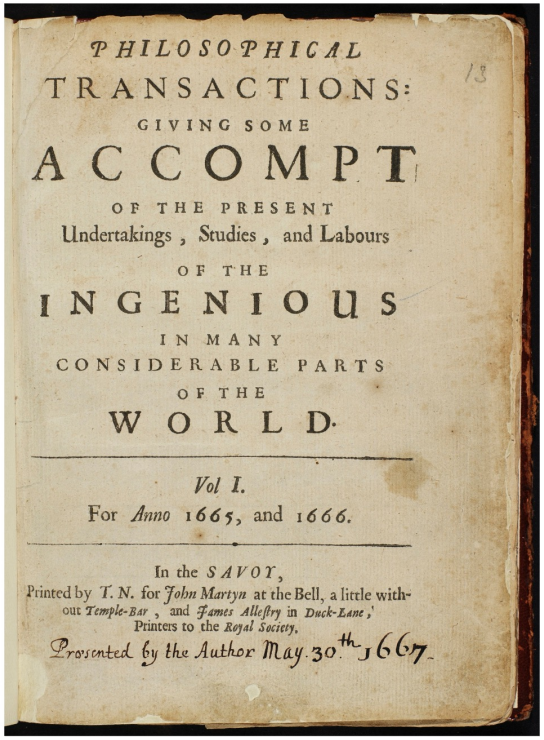
Peer review is a central part of the scientific publishing process.



Peer review

Peer review is the foundation of scientific publishing as It validates the quality of published research.

The Philosophical Transactions of the Royal Society is the first journal to formalize the peer review process under the editorship of Henry Oldenburg.



PHILOSOPHICAL
TRANSACTIONS:
GIVING SOME
ACCOMPT
OF THE PRESENT
Undertakings, Studies, and Labours
OF THE
INGENIOUS
IN MANY
CONSIDERABLE PARTS
OF THE
WORLD.

Vol I.
For *Anno* 1665, and 1666.

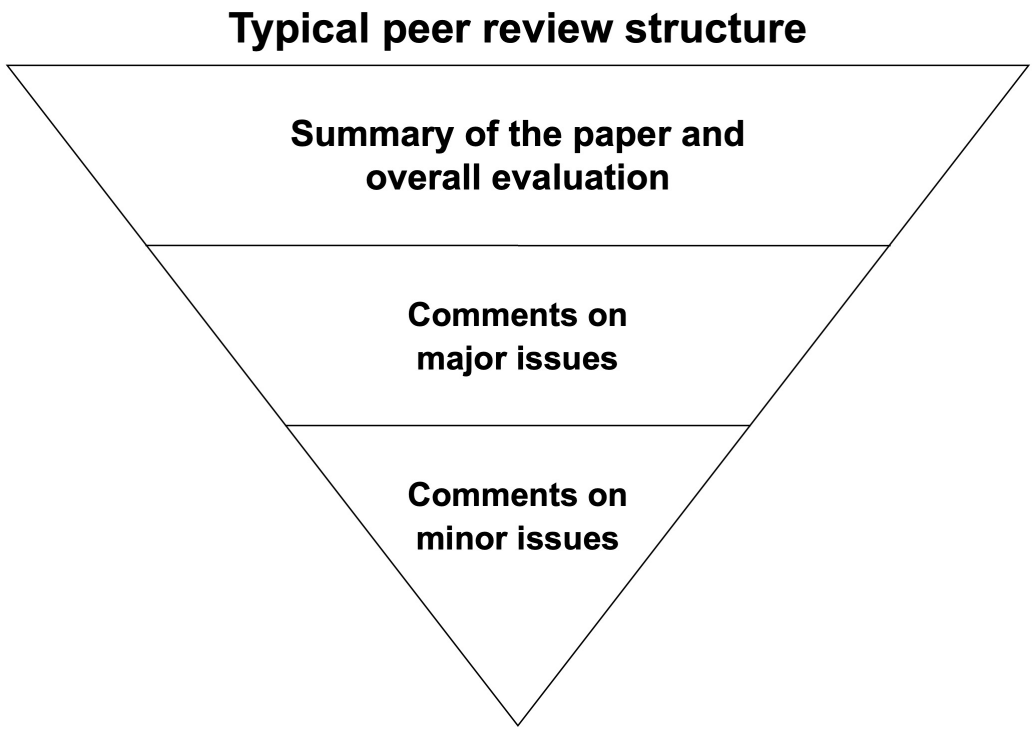
In the *SAVOY*,
Printed by *T. N.* for *John Martyn* at the Bell, a little without *Temple-Bar*, and *James Allestry* in *Duck-Lane*,
Printers to the *Royal Society*.
Presented by the Author May. 30th. 1667.

Henry Oldenburg (1618–1677) and the first issue of the Philosophical Transaction of the Royal Society

Form and structure of a peer review

Peer review can take many forms: single anonymous review, double anonymous review, or open review.

A full peer review is usually comprised of three sections: summary of the research and overall evaluation, major and minor issues of the paper, and detailed line-to-line comments.



What do you evaluate?

When reviewing a manuscript, you usually review three aspects:

- Scientific merit and significance;
- Technical soundness;
- Clarity of the presentation.

Journals may have specific guidelines for reviewers. Make sure you follow the journal's guideline when performing the review. For example, many open access journals ask the reviewers to only evaluate the technical soundness and not the scientific significance.

An example of peer review

The reviewer starts the review with a summary of the manuscript.

> The authors use an inverse modeling approach to estimate the temperature sensitivity of whole-ecosystem GPP and ER from a large and diverse set of streams. Daily estimates of activation energies varied widely, but the median values were consistent with estimates based on bottle incubations and temperature gradients. The differential sensitivity of GPP and ER varied with both temperature and GPP/ER. Using daily metabolism estimates from published studies, the authors show that stream metabolic balance is likely to converge with increasing temperature, and that this warming effect will be stronger in productive, warm streams.

An example of peer review

The reviewer then presents the overall evaluation of the manuscript, particularly its scientific significance in this case.

> Metabolic balance is an important determinant of the ecological function of streams and their role in the global carbon cycle. The temperature sensitivity of those estimates is potentially important for understanding how stream ecosystems will respond to climate change. Because of the novelty of the approach and the scope of the data, the findings of this paper would be of wide and significant interest in the limnological and global change communities.

An example of peer review

Next, the reviewer presents major concerns of the manuscript.

> The authors use GPP/ER as their measure of metabolic balance, and I understand the rationale for this in terms of its analytical tractability. But the actual exchange of CO_2 with the atmosphere depends on NEP. I suggest the authors 1) evaluate the co-variation of GPP and ER within and across their streams; 2) include the absolute as well as relative rates of GPP and ER in their analysis of what influences temperature sensitivity, and 3) consider revising their analysis of convergence to account for effects of rates, if any.

The reviewer then proceeds with detailed comments.

> In section E, I suggest discussion of plausible mechanism that would create the observed patterns, and discussion of how other global change response could counteract these patterns.

Use constructive language

Peer review is a professional activity. Use professional language in the review. Impolite or insulting words should not appear in the review.

× The manuscript is fatally flawed.
✓ This study does not appear to be technically sound.

× The technical details don't make any sense.
✓ The technical details should be expanded and clarified to ensure that readers understand exactly what the researchers studied.

Give concrete suggestions

One goal of peer review is to help the authors improve their manuscript. Thus, reviewers should strive to point out what the problem is and give concrete suggestions.

× The writing is not adequate and contains many grammatical errors. The authors should work with a native English speaker or a editing service to improve writing.

✓ There are many grammatical errors. For example, the use of articles in lines 35, 76, and 351 is wrong. Uppercase letter should be used at the beginning of the sentence (lines 40, 56, 76, and 234). I suggest the authors check through the manuscript to correct similar mistakes.

× The measurements are repeated measure of the same experimental plots. Using ANOVA here is inappropriate.

✓ Using ANOVA to analyze data from repeated measurement is inappropriate. I suggest using a linear mixed model here to analyze the data.

When do you accept review request?

Only accept a review request if

- you have appropriate expertise;
- you have no conflict of interests
- you are able to finish the review in time.

How many reviews should I do? Peer review is a voluntary service. My opinion is that we should perform two peer reviews for every manuscript we submit.

Ethics as a reviewer

Peer review is confidential. You should not disclose the manuscript under review to other people.

You should not ask others to write the review comments for you without consent from the handling editor.

Do not steal ideas from the manuscripts you review.

Do not use the review opportunity to promote your own work, e.g., suggest authors citing your own paper excessively.

Decisions on the manuscript

After receiving the reviewers' comments and evaluate the manuscript himself, the editor typically makes one of the following decisions about the manuscript: **accept, minor revision, major revision, reject and resubmit, reject.**

A few notes on editorial decision:

- Direct acceptance after one round of review is extremely rare;
- "Reject and resubmit" for some journals is the same as major revision. Journals do this to improve their manuscript handling time;
- If you get a major revision, the manuscript has a good chance to be eventually accepted. Minor revision usually applies to manuscript that only needs minor editorial changes.
- It is possible to appeal the editorial decision, but the chance of success is usually low.

Respond to reviewers' comments

When the editor decides that your paper needs revision before it can be published, you receive the editor's decision letter and the reviewers' comments.

You need to respond to each and every reviewers' comment and revise the manuscript accordingly.

When submit the revised manuscript, you need to enclose the revised manuscript as well as a responses to reviewers' comments. The purpose of the response is to tell the reviewers how you addressed their comments.

Respond to reviewers' comments

Very few manuscript gets accepted directly upon first submission. Getting rejected is common for academic research. Thus, the first thing to do is not to get angry or frustrated when responding to reviewers' comments.

Format of the response

The response to reviewers' comments start with a brief opening.

> We appreciate the insightful comments from the two reviewers. We have thoroughly considered the comments and revised manuscript accordingly. Below are the detailed responses to the reviewers' comments.

The body of the response letter lists each comment and your response to it.

> **Comment**: We recommended the authors use "aquatic" instead of "stream" throughout the paper. This information is useful to the lake and estuary folks. Also bring in lake citations.
>
> **Response**: We revised the manuscript to include works on metabolisms in lakes and estuaries and pitched this manuscript as a general discussion of computation methods for aquatic metabolism modeling.

Respond to positive evaluation

When the reviewer provide a positive evaluation of the manuscript or summarize its findings. You can skip the response or provide a very concise response.

Comment: This paper examined three solution methods for the differential equations used in metabolism modeling. The authors find that an exact method is more or less the best, but strongly depends on the interpolation of physcial data. That is interesting and maybe a bit unsettling for users of those models...The paper is easy to read and well presented. Because I am currently devoting huge amount of time to calculating metabolism, we read this paper with great interest and had a lot to say.

Response: We appreciate your thorough comments to our manuscript. We have carefully considered all of the comments and revised the manuscript accordingly.

Provide direct response to comments

We need to directly and explicitly address the reviewers' comments and point out where the revisions are made.

Comment: Why log-response ratio? Maybe worth justifying, possibly because it is arguably the most frequently used in ecological meta-analyses.

Response: We agree. We now point out that log-response ratio was used because it is the most frequently used metric in ecological meta-analyses (lines 116–118).

Provide concrete evidence

You should provide concrete evidence to back up your statement in the response. Empty statement without evidence is not convincing.

Comment: Do the data meet the assumption of t-test? Have the authors considered transformation of the data?.

× **Response**: The data meet the assumption of the t-test. We thus did not perform any data transformation.

✓ **Response**: We checked the normality of the data using a Shapiro-Wilk test and did not find significant deviation from normal distributions ($p = 0.32$). We thus did not transform the data prior to analyses.

Avoid verbosity

Response to comments should be concise and directly to the point.

Comment: is it possible to conduct the measurements with no disturbance, likely using other portable analyzers? This type of measurements shall offer insights for your comparison of methods with varying degree of disturbance.

× **Response**: Your consideration are exactly what all those involved in soil respiration research are looking for. Soil respiration methods have evolved rapidly over the decades and the latest instrument have enabled fully automated high-frequency measurements. At present, no instrument has yet been developed to enable accurate measurements to be made without disturbance. To be clear, we explained this in the revised manuscript as follows...

✓ **Response**: We are not aware of any instrument that measures soil respiration without disturbance to soil. We clarified this point the in the revised manuscript (lines 35–41).

You can disagree with the reviewer

You do not have agree with every suggestions the reviewer made. When you do not agree with the reviewer, explain why in your response.

Comment: I suggest the authors changing the title to "Long-term collar deployment leads to bias in soil respiration measurements in relation to soil physical, chemical, and biological properties".

Response: We believe the original title summarize the key findings of the paper concisely. Although we discussed how changes in soil physical, chemical, and biological properties may be responsible for the collar effects, they are speculated and not the direct finding of the paper. We thus decided not to change the title as the reviewer suggested.

Cover letter

When you first submit a manuscript or submit a revision, you usually include a cover letter in the submission. This is an opportunity to sell you manuscript to the editor.

Tip 11 - Submitting a paper: write a convincing cover letter!

What is in a cover letter?

Journals usually have specific guidelines for what should be included in the cover letter. In general, you can use the cover letter to

- express you belief that the paper is within the scope of the journal and will contribute to meeting its aims;
- state the title of the manuscript and authors' names;
- state that the research is original and has not been submitted or published elsewhere;
- highlight specific points that reinforce the novelty and significance of the research;
- highlight points about the paper that many raise questions for the editors;
- express hope that the paper is satisfactory
- say that you look forward to heard back from the editor and reviwers;
- highlight major revisions you did to the paper if it is a submission of revised manuscript.

Example

The cover letter starts with a brief statement of intention, followed by a concise summary of the paper's findings and significance.

Dear Editor,

We are submitting a manuscript entitled "An Assessment of Statistical Methods for Non-independent Data in Ecological Meta-analysis" for your consideration as a Statistical Report in Ecology

This paper presents a comprehensive assessment of statistical methods for non-independent data in the context of ecological meta-analysis. Through simulation experiments, we identified methods that perform consistently well in scenarios of non-independence commonly observed in ecological meta-analysis. We also discovered important shortcomings of using hierarchical models for non-independence and provided suggestions for improvements. Since many ecological meta-analyses do not control for non-independence and thus likely lead to faulty inferences, we believe this work will be a useful and timely guide for meta-analysts and a valuable contribution to facilitate more rigorous research synthesis in ecology.

Example

The cover then expresses the belief that the paper fits the scope of the journal and will appeal to its readership.

> Ecology has a long history of promoting rigorous statistical methodology and has played a key role in advancing the methods of meta-analysis in ecology. Over the years, many papers on the meta-analytical methods published in ecology, such as the development of response ratio as an effect size metric (Hedges et al 1999, Lajeunesse 2015), the synthesis of statistical issues in meta-analysis (Gurevitch et al 1999), the analysis for choosing proper effect size metric (Osenberg et al 1999), and the characterization of heterogeneity in ecological meta-analyses (Senior et al 2016), has become the foundation for ecological meta-analyses. Therefore, we believe this manuscript fits the tradition and scope of the journal and will appeal to the general readership of Ecology.

Example

Finally, the cover letter ends with statements about originality, conflict of interests and future correspondence.

> This manuscript is not currently under consideration or published elsewhere. We declare no conflict of interests. Please address all future correspondence to me (chaosong@msu.edu). Thank you for your consideration of this manuscript. We look forward to hearing back from you in the near future.

Example

This concise cover letter contains the basic elements of a cover letter.

Dear Editor,

Please find attached the manuscript "Arbuscular mycorrhizal associations of the southern Simpson Desert". This manuscript examines the mycorrhizal status of plants growing on the different soils of the dune-swale systems of the Simpson Desert. There have been few studies of the ecology of plants in this desert and little is known about how mycorrhizal associations are distributed amongst the sesert plants of Australia. We report the arbuscular mycorrhizal status of 47 plant species for the first time. The manuscript has been prepared according to the journal's Instructions for Authors. We believe that this new work is within the scope of your journal and hope that you will consider this manuscript for publication in the Australian Journal of Botany.

We await your response and the comments of reviewers.

Yours sincerely,
P. J. O'Connor

Tips for effective cover letter

A few tips for writing an effective and convincing cover letter:

- Some journals have specific instructions for what should be included in the cover letter. Follow them when writing the cover letter;
- Do not repeat the content of the abstract. The editor will read your abstract, so there is no need to be repetitive. Use the cover letter to say things that you did not have the chance to say in the abstract;
- Cover letter should be short and concise. Avoid overly long cover letters.