

# The Peer Review Process

**John Stockie**

CFD Group Meeting

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# Motivation

- Many of you will eventually publish your research results in an academic journal.
- This paper will go through a peer review process.
- Once published, you will eventually be asked to review journal papers yourself.
- It is your professional obligation to say “yes” . . . eventually.

# Outline

- 1 What is Peer Review?
- 2 The Process
- 3 Reviewing How-To

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# What is the Purpose of Peer Review?

- To determine whether a scientific work:
  - is “suitable” for publication,
  - is original (not plagiarized, not previously published),
  - is correct (free of faults).
- To give constructive feedback to the author(s).

# Where is it Needed?

- Journal articles
- Conference papers
- Thesis external examination
- Grant proposal: as a referee or selection panel member
- Departmental review panel
- *Mathematical Reviews*: very brief reviews
- Textbook review
- Journal editors
- Informal feedback
- Comments on blogs or other social media

# Types of Review

- **Single-blind:**
  - author is known to reviewer
  - reviewer names are not revealed to author
  - almost always used in math journals
- **Double-blind:**
  - neither author nor reviewer names are revealed
  - concerns about “impartiality” of the review
- **Open:**
  - everyone knows about everybody
- **Post-publication:**
  - paper is published without review
  - comments are solicited in some form of open forum (web page)
  - may become more common with the growth of “open access”

# What is Peer Review NOT?

- It does not guarantee correctness.
- Cannot expect consistency of opinion between multiple reviewers.



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# How Does the Process Work?

- Do research.
- Write paper in journal format.
- Submit to online system and (sometimes) suggest reviewers and editor.
  - [ Editorial staff check format and assign editor ]
- Editor filters out clearly inappropriate papers and assigns 3–4 reviewers
  - [ Waiting period of  $\approx$  3-6 mos. (math) and 1-2 mos. (many other fields) ]
- Reports communicated to author with recommendation:
  - Accept as is (almost never happens).
  - Accept subject to minor revisions.
  - Major revisions, and re-review.
  - Reject.
- Within 1 month, resubmit modified manuscript with a response letter.
- Editor approves (or not), sometimes requiring re-review by referees.
- Accepted and passed on to editorial staff. Peer review complete.

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# What Can Go Wrong?

- Errors in published results leading to:
  - corrigenda/errata
  - retractions
  - no action, with mistakes never explicitly addressed
- Plagiarism or falsification of results: can be a career killer if discovered
- Editorial misconduct: gaming journal rankings, nepotism/cronyism

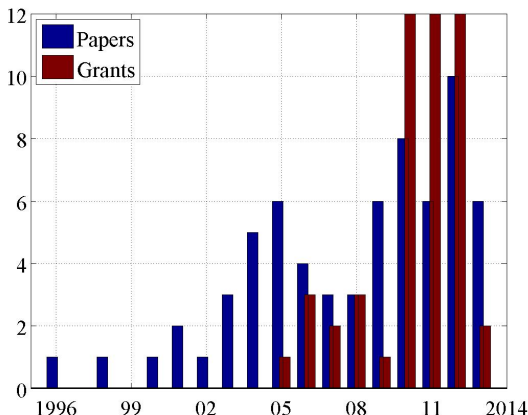
The last two are very uncommon!

# Refereeing is an Obligation

- If you publish journal papers or submit grant proposals, then you should also referee.
- **How much?** Agree to write as many referee reports as are required for your own papers/grants (approx. 2-3 reports each).
- How bad can it get?
  - Each year I currently review about 10 journal papers, 5 grant proposals, one tenure/promotion case, and a few doctoral theses outside SFU. I turn down about half that number.
  - More high-profile scientists can receive many more requests . . . and have to be very selective!

# John's Work Load

Don't feel "left out" if you don't get many review requests at the start:



Note that the number of grants reviews in 2010–2012 was effectively  $\infty$  while I was on the NSERC Math/Stat Discovery Grant Committee.

# When to Not Review

- You lack the needed expertise.
- You have a conflict of interest: personal relationship, co-author or collaborator, working at same institution, etc.
- You are in direct competition, working or publishing on exactly the same problem (this is more subtle).
- You honestly do not have the time.

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# Purpose of a Journal Report

- 1 To verify that the introduction adequately explains and places the work in its historical and scientific context – **literature review**.
- 2 To verify that the methods used are sound and to identify any erroneous or suspicious/fraudulent work.
- 3 To ensure that results are presented clearly, are complete, answer the original questions posed, and are **reproducible**.
- 4 To ensure that conclusions are justified based on a combination of previous work **and** the results in the paper.

**Note:** Most rejected papers are not rejected because of incorrectness, but rather a failure to clearly communicate results.

# How to Undertake a Review

- Read through the paper several times and wait at least a few days **before** writing anything.
- If you're not already familiar with the key reference(s) on which this work is based, then scan through them as well.
- Avoid **bias**:
  - Do not look up any personal/professional information about the authors.
  - Base your review on the paper, references and your knowledge of the area.
  - It is OK to look up other related papers/reports/etc. to ensure that the literature review is complete.
- Try to balance the positive and negative, and make at least one positive comment.
- Do not communicate any information related to the review to anyone else, especially the authors. This material is **confidential** information.
- Complete the review on time, early if possible, **never late!**



# Contents of a Review

- ① Summary of the paper and its significance, in your own words – convince the editor that you really read and understood it.
- ② Recommendation for/against acceptance
- ③ Examination of technical content:
  - relevance to journal
  - validity of questions, methodology, results
  - awareness and understanding of related work
  - degree of significance
  - validity of conclusions
- ④ Assessment of writing and presentation:
  - grammar and spelling (overall readability)
  - title and abstract (clear and concise)
  - introduction and conclusions (must tell a coherent story)
  - format and length
  - diagrams and figures
  - references and citations
- ⑤ Detailed list of typos

# Concluding Remarks

- Critically reviewing other peoples' work will improve your own ability to communicate scientific results.
- It can be a big benefit to get an early view of “hot” new results well in advance of publication.
- Writing high quality referee reports will enhance your reputation.

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