Reviewing and Teaching How to Review

Michael Goesele

Facebook Reality Labs
(formerly professor at TU Darmstadt, Germany)

CVPR 2020 Tutorial “How to write a good review?“

Some Thoughts

- reviewing as fundamental component of the scientific process
- typically “learning by doing”, not systematically taught
- presentation content based on grad-level seminar courses taught at TU Darmstadt
- systematic way to teach reviewing plus personal thoughts on reviewing

Setting

- grad-level seminar course with a broad focus
  - e.g., recent publications at top vision and graphics conferences

- 2 lectures and 1 assignment dedicated to reviewing:
  - Lecture 1: foundations of reviewing
  - Practical assignment: review 1-3 papers
  - Lecture 2: simulated PC meeting

Why and How?

- For a good introduction see:
  K. A. Nicholas, W. Gordon: A Quick Guide to Writing a Solid Peer Review. Eos, Vol. 92, No. 28, 12 July 2011
  http://onlinelibrary.wiley.com/doi/10.1029/2011EO280001/full

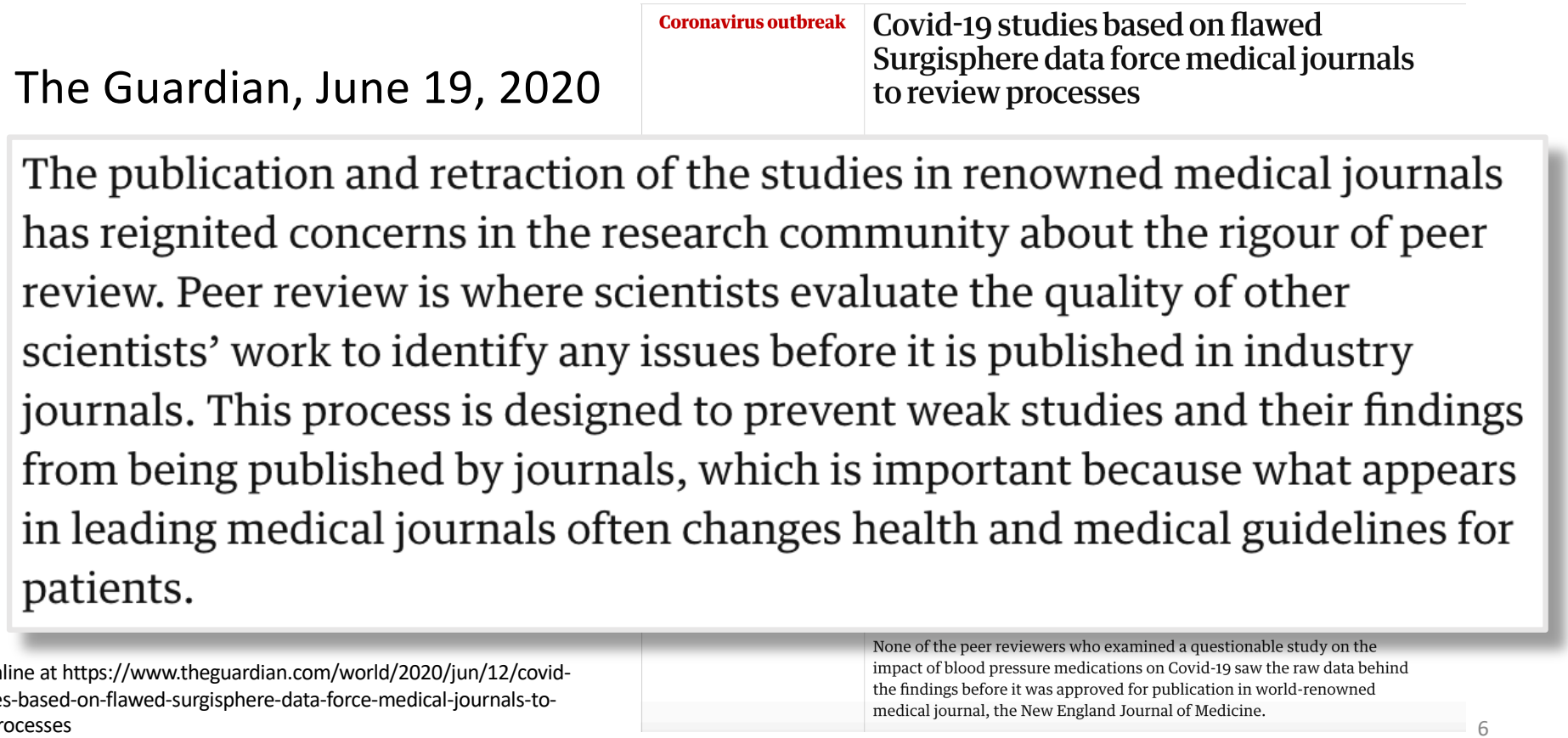
- Quote:
  "[…] the goals of peer review are crystal clear: to ensure the accuracy and improve the quality of published literature through constructive criticism."

Why and How? – Quality Control

- so many things can be wrong
  - content
  - organization
  - spelling errors
  - non-English text in English papers
  - …

Why and How? – Corona Virus Study Retraction

The Guardian, June 19, 2020



Coronavirus outbreak

Covid-19 studies based on flawed Surgisphere data force medical journals to review processes

The publication and retraction of the studies in renowned medical journals has reignited concerns in the research community about the rigour of peer review. Peer review is where scientists evaluate the quality of other scientists' work to identify any issues before it is published in industry journals. This process is designed to prevent weak studies and their findings from being published by journals, which is important because what appears in leading medical journals often changes health and medical guidelines for patients.

None of the peer reviewers who examined a questionable study on the impact of blood pressure medications on Covid-19 saw the raw data behind the findings before it was approved for publication in world-renowned medical journal, the New England Journal of Medicine.

Found online at https://www.theguardian.com/world/2020/jun/12/covid-19-studies-based-on-flawed-surgisphere-data-force-medical-journals-to-review-processes

Why and How? – Plagiarism

- paper used for simulated review didn't seem to be right
- plagiarism checker: taken from somebody else's PhD thesis

It is in fact the work I performed during my PhD. The tracking algorithm has been published at the […] conference in 2011.

[link to paper]

I do not have any connection with: [authors of plagiarizing paper]

And all the images in the paper have been produced by my developments there is no improvements nor reference to my work. […]

Why and How? – Plagiarism

WSCG 2015

Posters Proceedings

Contents

Paper Reviewing Process Example (3DV 2015 Timeline, simplified)

June 7	Paper Submissions
June 18	Reviewers receive paper assignments
July 16	Reviews are due
July 16-20	Area Chairs (ACs) check quality of reviews, chase late reviewers
July 21	Reviews released to authors
July 25	Author rebuttal due
July 26-July 31	ACs + reviewers discuss rebuttal, see if any reviewers change their opinion
Aug 1-6	ACs write consolidation reports and make accept/reject recommendations
Aug 6-9	PCs consider recommendations decide oral/poster
Aug 10	Final decision released to authors

Helpful Guidelines for Reviewing

- often available in the community

- How to Review HCI/Visualization Papers by Niklas Elmqvist, University of Maryland, College Park
  https://sites.umiacs.umd.edu/elm/2015/12/19/how-to-review-hcivisualization-papers/

- Mistakes Reviewers Make by Niklas Elmqvist, University of Maryland, College Park
  https://sites.umiacs.umd.edu/elm/2016/02/01/mistakes-reviewers-make/

Review Form (Questions)

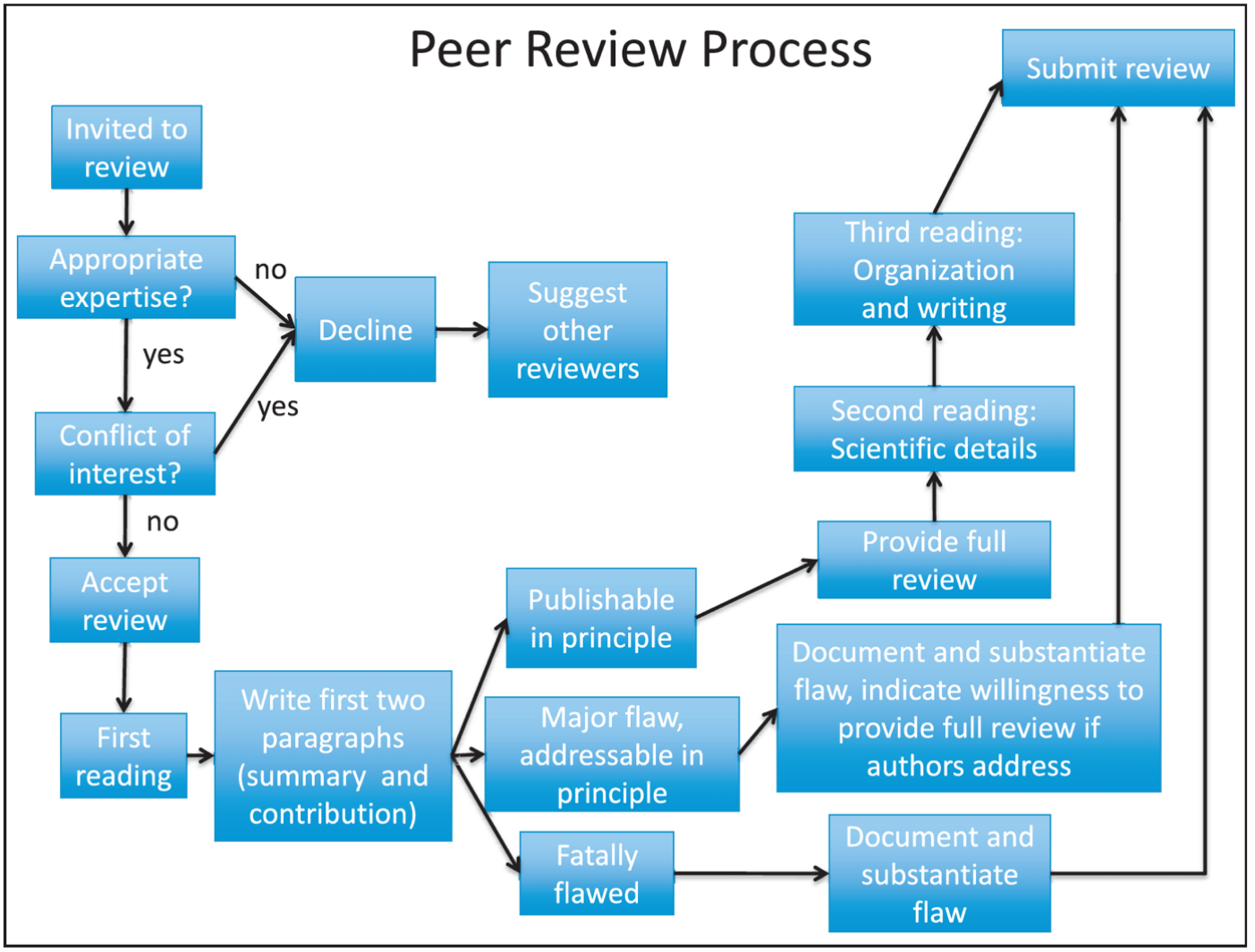
- shortened version inspired by SIGGRAPH review form
- Review Form:
  - Description (Brief paper description, contribution to the field, scope)
  - Clarity of Exposition (Is the exposition clear? How could it be improved?)
  - Quality of References (Are the references adequate? List additional refs)
  - Reproducibility (Is the work reproducible from the info in the paper)
  - Rating (1 – 5 = strong reject – definitely accept)
  - Explanation of Rating (Strengths and weaknesses of the paper)

  - [Reviewer Expertise (1 – 3 = Beginner - Expert)]
  - [Private Comments]

Reviewing Criteria

- defined by the venue
  - see information provided by the venue
  - ideally spelled out in the review form
- objective quality
  - correctness, readability, …
- depend on paper type, expectation of the venue
  - e.g., novelty expectation for original research paper, journal version of prior submission, review paper, …
- lots of special cases
  - document them, if needed ask for advice
  - review only makes recommendation, decision by ACs or editors

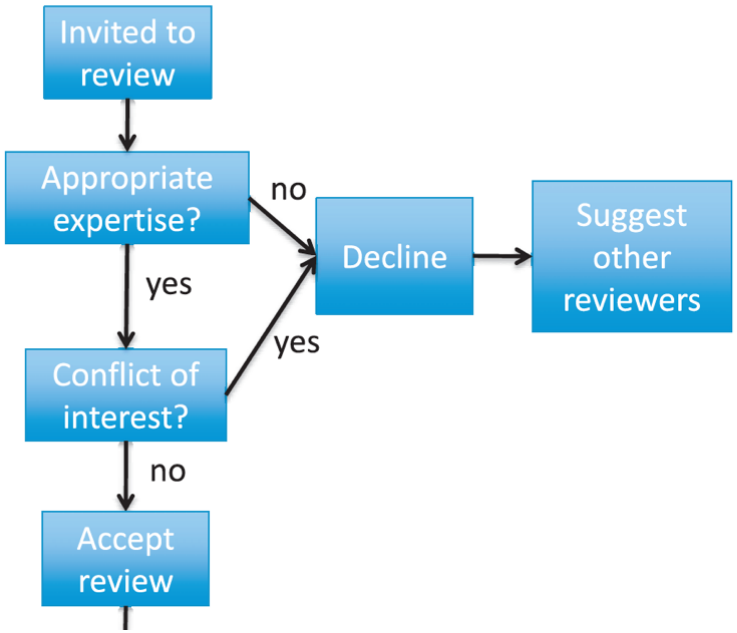
Possible Workflow



Taken from: K. A. Nicholas, W. Gordon: A Quick Guide to Writing a Solid Peer Review. Eos, Vol. 92, No. 28, 12 July 2011

“To accept or not to accept, that is the question”

- Do you have the right expertise?
- Are you unbiased?
  - check also the official conflict of interest rules of the publication venue
- Do you have time?



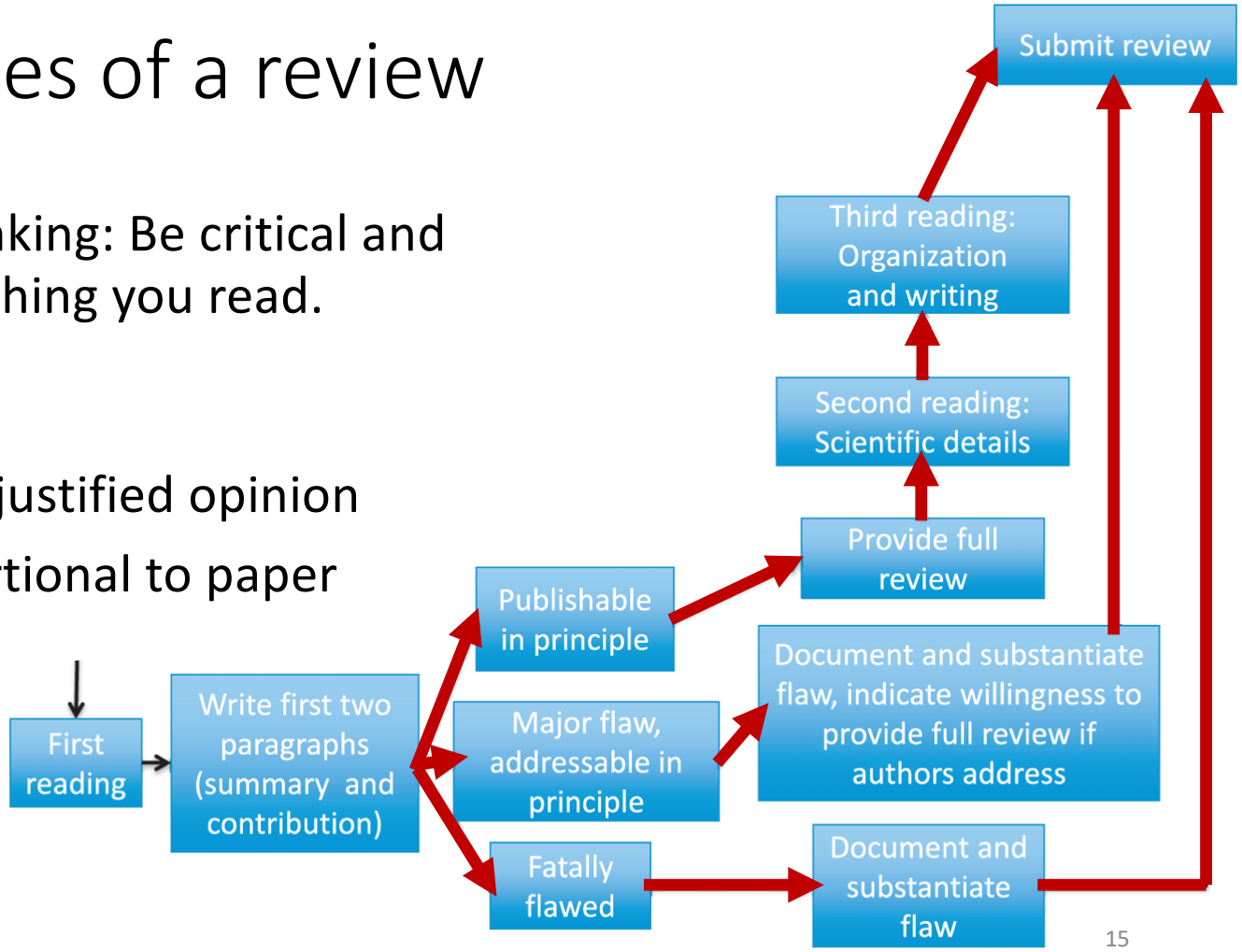
Taken and modified from: K. A. Nicholas, W. Gordon: A Quick Guide to Writing a Solid Peer Review. Eos, Vol. 92, No. 28, 12 July 2011

Three outcomes of a review

Important shift in thinking: Be critical and doubt absolutely anything you read.

Practical tips:

- aim for strong, well justified opinion
- review effort proportional to paper quality



Taken and modified from: K. A. Nicholas, W. Gordon: A Quick Guide to Writing a Solid Peer Review. Eos, Vol. 92, No. 28, 12 July 2011

Simulated PC Meeting

- treat reviews anonymously
- provide feedback
  - quality will be mixed
  - recommendation: add high quality reviews from experienced reviewers to the mix
- discuss accept/reject outcome for each paper given the reviews

Practical Issue: Sourcing Papers for Review

- need good and bad papers “as submitted” to show both sides of reviewing
- technical level appropriate to student audience
  - understanding the technical paper content should not be the challenge
- useful source: mid- to low-rank conferences in the field

Summary

- A plea for teaching good reviewing!
- very useful methodology
  K. A. Nicholas, W. Gordon: A Quick Guide to Writing a Solid Peer Review. Eos, Vol. 92, No. 28, 12 July 2011
  http://onlinelibrary.wiley.com/doi/10.1029/2011EO280001/full
- ideas for how to approach this in practice

Reviewing and Teaching How to Review

Michael Goesele

Facebook Reality Labs
(formerly professor at TU Darmstadt, Germany)

CVPR 2020 Tutorial “How to write a good review?“