Scientific Publishing

2. Peer Review

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Outline

1. Review process in a nutshell
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13. Highlighting papers
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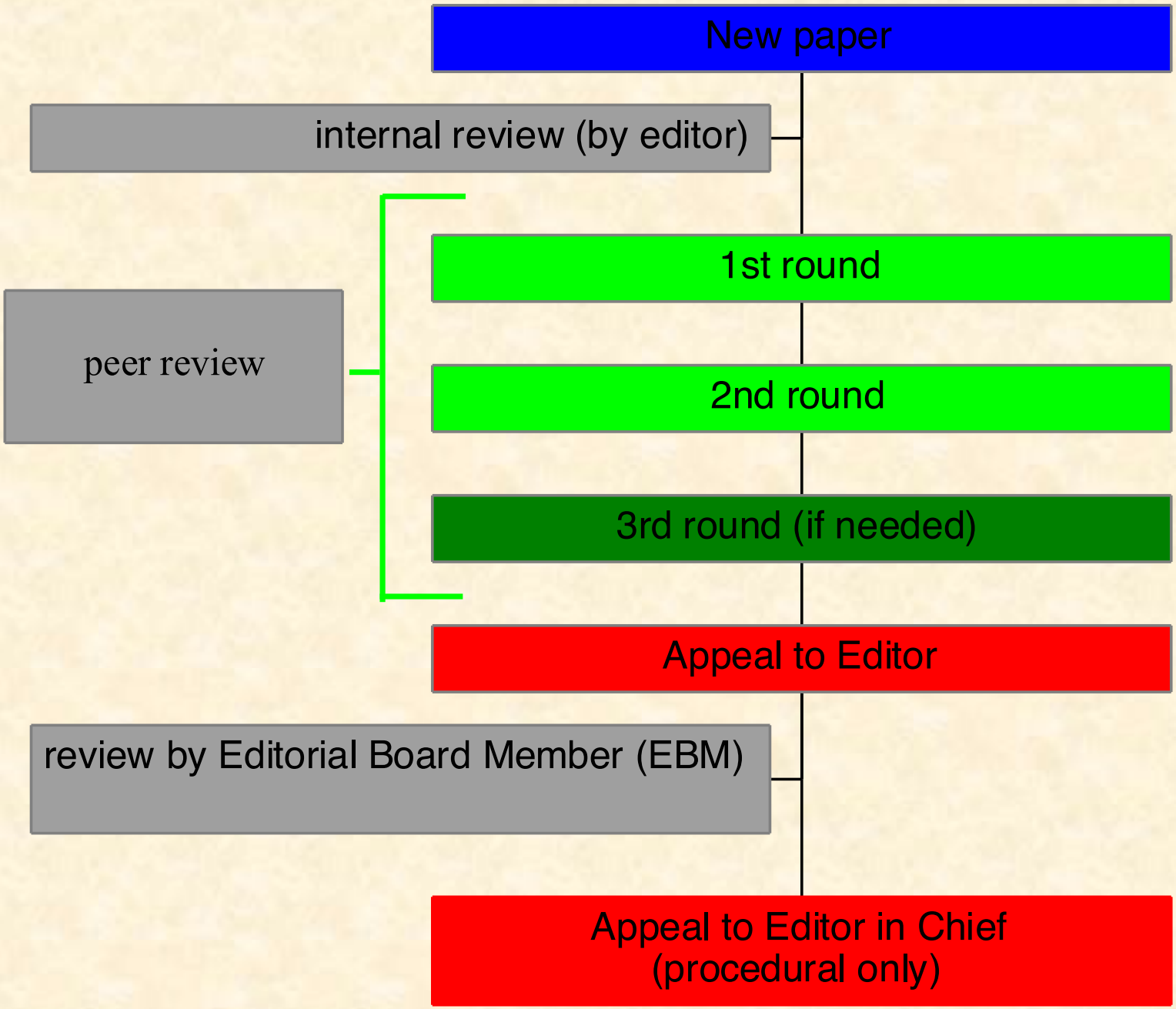
Review Process in a nutshell



Presubmission Inquiry

WHAT IS IT, AND HOW DOES IT WORK?

- An email query to the editor, with an advanced draft—or the final draft—of the paper, and a cover letter explaining briefly why the paper is important
- Asking editors:
  - If they are interested
  - If they are likely to have the paper reviewed
  - If they have changes to suggest
- Implicit message: This is a special paper

WHEN DOES IT MAKES SENSE?

- For selective journals (acceptance rate < 30%, say)
- For time-sensitive results, where priority and speed is key
- For highly unusual papers (e.g., a paper in Phys Rev criticizing a *Nature Physics* paper)
- Authors: Use sparingly. Not every paper is special

ADVANTAGES

- Saves authors time & effort if editors are clearly uninterested
- Allows authors a "zero-round" of editorial review
- Engages editors

CAVEATS

- Practice differs by journal and editor: Some journals encourage it, others allow it, others discourage it. Even within journals, some editors can be more open to a presubmission inquiry than others
- For journals w/o a formal policy best when you have met the editor

Internal Review

WHAT IS IT?

- Editors assess paper and decide whether to Reject Without External Review (RWER)
- If external review is needed, editors select referees
- Typically, handling editor makes decision on her own; on occasion, she consults editorial colleagues, an Editorial Board Member, or a trusted expert for a quick yes/no opinion on whether paper merits external review

WHAT DO EDITORS LOOK FOR?

- Focus on Abstract, Introduction, Conclusions
- Quality of writing
- Is paper suitable for journal (subject, etc.)
- References
- Overall quality & importance
- Punch line, interest, appeal

Remember: poor writing ⇔ poor paper

WHY DO YOU CARE?

- Your paper needs to pass through the editor to be reviewed by experts
- Not just black & white: Editors form an impression about paper, which can affect the review process later on (e.g., when referees disagree about importance, editor can weigh in)

CAVEAT

Highly selective journals (acc rate <= 10%):

Once you get past the editor, you have ~35%-50% chance to make it

JOURNAL	ACCEPTANCE RATE	RWER RATE
Nature, Science, Nature Phys/Mater/Nano/Phot.	~5-10%	85%-90%
PRL	~20%	30%
PRX	10%	70%
PRA/B/C/D/E/Applied/Fluids	50%-65%	5%-25%

Rejection Without External Review (RWER)

WHAT IS IT?

- An editorial rejection letter, upon initial receipt, with editors' judgment of impact / innovation / interest / significance / importance

WHY?

- To preserve time[*] & effort of referees (our most precious resource)…
- … and help authors find a better-suited journal with minimal delay

[*] Time effectiveness is key

HOW DO EDITORS DECIDE? RED FLAGS:

- Obvious marginal extension or incremental advance; too specialized
- Subject matter or readership does not fit
- Sloppy presentation, opaque writing
- Introduction: lacks clarity, no context, poorly describes prior work, no broad picture, too many technical details, no motivation
- Referencing: too many old / specialized / self- / 'confined' references
- no punch-line in conclusions:
  - what is the main message of the paper?
  - why is it important?
  - how does it advance the field?

RECALL ELEVATOR PITCH metaphor? (Seminar 1)

- Do not waste your readers' time
- Guide your readers
- Explain clearly and early in the paper what you have done, and why they should care

Editors: Role & Challenges

EDITORS' ROLE

- Select & promote quality research through rigorous peer review
- Help good papers get published as quickly as possible
- Filter out unsuitable papers by editorial rejection & peer review
- Add value to papers:
  - Improve papers via editorial & peer review
  - Select the best papers to highlight
- Help researchers become skilled referees

CHALLENGES FOR EDITORS

- Influential papers are often controversial
- Experts' judgment not always faultless
- Editors' knowledge of field & people is limited
- Editors' time constraints (3-4 NEW papers daily/editor)
- Selective journals are subjective by definition: 41st chair effect
- Social, cultural factors affect behavior of authors & referees and can thereby affect the fate of papers
- Responsive, conscientious, knowledgeable referees are hard to find

EDITORS – DESIRED TRAITS

Integrity

Service-oriented

Critical thinking

Emotional intelligence (maturity, humility,…)

Common sense

Research background in at least one field

Willingness to learn about physics & people

Communication skills

Sense of humor

External review

MAIN PLAYERS

Referees

- Spend their time to review your paper. Even when you disagree with them, appreciate this fact.

Editors

- Act in interest of journal & readership. They have no stake on particular authors, referees, fields…

Authors

- Have influence over peer review of their paper, by:
- How they write up paper
- How they argue during review

Referees

- How long to review? Ideally 1-2 weeks, typically 3-4 weeks, occasionally 5-7 weeks
- What to expect: Scrutiny of results, presentation, validity, novelty, importance; common sense
- OK: feedback, critique, humor (on occasion)
- Not OK: sarcasm, belittling comments, personal attacks, conflict of interest
- Constructive or destructive? Often, in the eye of the beholder

Editors

- How long to act on paper? Ideally within 1-2 days, typically 5-10 days, on occasion 11-20 days
- What to expect: Impartial & thorough peer review, selected referees are experts, no conflict of interest, timeliness, converging review to yes/no, anonymity of referees protected, authors protected from unfair & unreasonable demands, common sense
- What not to expect: While PhD scientists, editors cannot have expertise in all areas they handle

Authors

- What to expect: Respond professionally to all concerns and comments by referees & editors, common sense
- OK: Passionate about their own work, “healthy dose of paranoia” (Sam Goudsmit)
- Not OK: Attacks on referees, editors, board members
- Conspiracy scenarios are almost always wrong

A healthy touch of paranoia!

EDITORIAL

Bias

There are still authors who believe that referees and editors are biased against them. We doubt that they can be convinced that this is not so. A necessary condition for being a successful research worker is a touch of paranoia. This was pointed out by the eminent psychiatrist Nathan S. Kline,[1] who is himself a very successful researcher—twice recipient of the coveted Lasker award—thus he ought to know the characteristics well. A good researcher must fear that others are trying to pirate his ideas, to delay his experiments, and to scoop him.

I have known a few physicists who lack this essential trait. When someone publishes their results, they take it as proof that their work was worthwhile and they are happy to start on something else. They are the kind of people who read other people's articles carefully and rejoice in the success of others. They are usually excellent teachers and talent scouts. They do not get the recognition they deserve except from their own pupils, and any recognition comes late in their career.

Editorial: Bias, S. A. Goudsmit, PRL **25**, 419 (1970)

Suggested / undesirable referees

KEEP IT SHORT

- 5—10 names (with affiliations and email addresses, please)
- Mix of senior & junior—but not below postdoc—researchers

KEEP IT SIMPLE

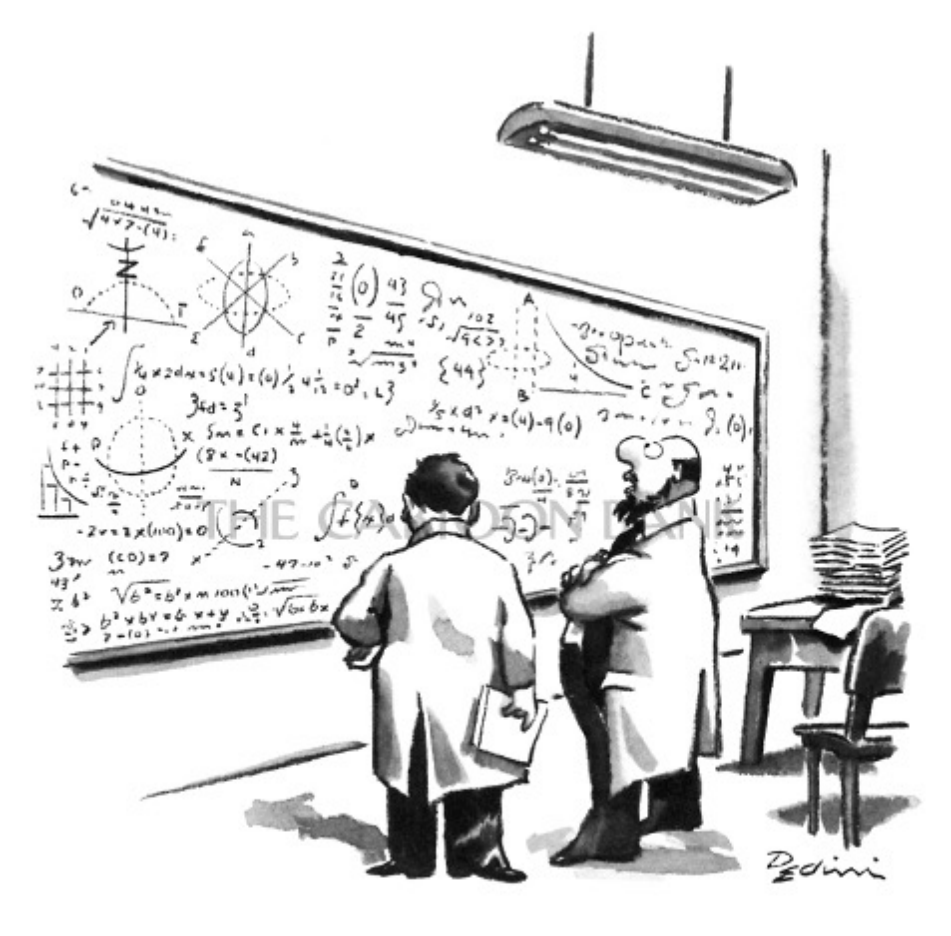
- Suggest referees who are knowledgeable in the paper's subject (theory, experiment, computational, or appropriate combination); typically, they will have written some of the papers in your references
- Suggest people whose scientific merits you respect and whose character you trust (or have no reason to suspect)

KEEP IT REASONABLE

- Do not suggest your buddies/recent collaborators/group members
- Do not just suggest the top 3 scientists in the field; chances are they will be too busy to review
- Do not exclude whole groups of people (e.g., from X university, Y ethnicity, Z community of researchers)
- OK to exclude:

- Your direct competitors: Researchers who are actively working on same system/problem/etc., and who may have an unfair advantage if privy to your results
- People you have had conflict with (e.g., former collaborators who became your adversaries)
- Personal enemies (sadly, they exist)

How do the editors find referees for a paper?



"This is fine as far as it goes. From here on, it's who you know."

How do the editors find referees?

WE LOOK FOR POTENTIAL REFEREREES IN:

- **References** (authors of, referees of)
- **Related papers** in Web of Science, Google Scholar, SPIN, NASA, APS database (authors, citing papers)
- **Suggested referees**
- **Referee expertise** in APS database (>60,000 referees)
- **Mental database**

WE GENERALLY AVOID:

- **Undesirable** referees
- **Coauthors** (current or previous)
- Referees **at same institution** as authors
- **Acknowledged** persons
- Direct **competitors** (if known)
- **Busy** referees (currently reviewing for PR/PRL)
- **Overburdened** referees (> 15 mss/past year)
- **Consistently slow** referees (>8 weeks to review)
- Referees who **consistently provide poor reports**

Revise, Respond & Resubmit (RRR): An almost[*] universal 1st-round remedy

AS SEEN FROM THE AUTHORS' PERSPECTIVE

- Referee comments wrong / unjustified? → RRR
- Referee does not understand my paper? → RRR
- Referee biased / unfair / has competing interest? → RRR
- Editor wrongly sides with the critical referee? → RRR
- Referee asks me to cite irrelevant papers? → RRR
- Editor does not provide clear yes/no decision? → RRR
- Editor does not firmly reject my paper? → RRR

[*] BUT KEEP IN MIND THAT EDITORS NEED A CLEAR REASON TO PUBLISH

- Try to be a stricter judge for your paper than referees & editors would be
- Ask yourself (honestly): Would it be a mistake for the editors NOT to publish your paper?

Revise, Respond & Resubmit (RRR):

Anecdote # 1

After receiving 1st decision letter from editor:

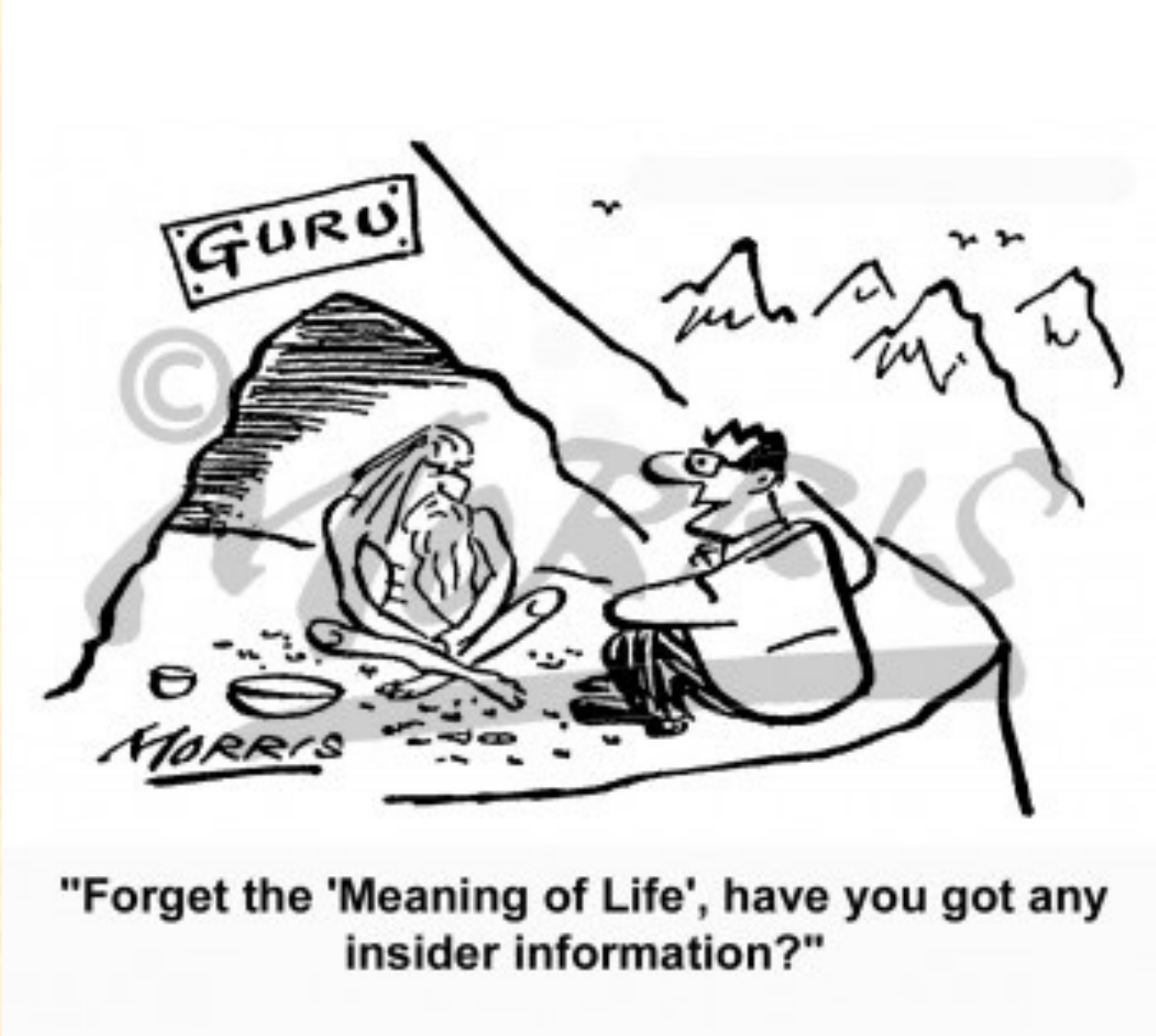
"The above manuscript has been reviewed by our referees.

The resulting reports include a critique which is sufficiently adverse that we cannot accept your paper on the basis of material now at hand. We append pertinent comments.

If you feel that you can overcome or refute the criticism, you may resubmit to Physical Review Letters. With any resubmittal, please include a summary of changes made and a brief response to all recommendations and criticisms."

Graduate Student: I guess we should submit this elsewhere ☹
PhD Advisor: We are almost "in"! ☺

How *not* to argue for your paper: An insider's view



"Forget the 'Meaning of Life', have you got any insider information?"

Typical misunderstandings & faulty arguments

I am *entitled* to two rounds of review and expect the editor to have another two referees look at my paper

Although two rounds of review are common, they are not guaranteed.

I have published 104 papers and have an h-index of 42. How can the editor reject my paper?

We are mindful of the authors' prior record, especially in borderline cases. But we focus on the paper at hand.

The editor has no research experience in this field. How can they reject my paper without external review?

The editor approaches the paper as a general reader, and over time, builds considerable experience. Also, she may have discussed the paper with (a) other editorial colleagues, or (b) with an Editorial Board Member.

You published that *prior* paper which is clearly less sophisticated than ours

Peer review is a complex & imperfect process. Journals are 'distributions': some papers clearly deserved publication, others barely made it. Maybe the prior paper was in a field that was hot at the time, and the bar was lower. Etc.

To resubmit or not? That is the question…

Anecdote # 2

Referee C, acting as adjudicator, is critical & wants substantive changes.

A few weeks after reviewing the paper, Referee C moves at authors' institution as a visiting scholar. He happens to share an office with the grad student who wrote the paper. He is present when the student receives the editorial decision with the referee report. The student is devastated.

Graduate Student: Oh no! The referee is trashing my paper. He says it is not suitable for Physical Review B. ☹

Referee C (concealing his identity): Let's read more into this report. Is it really that negative? ☺

Appealing a rejection

WHAT IT IS

- Once a paper has been *terminally*[*] rejected by the editors, authors request further scientific consideration by Editorial Board and/or Editor-in-Chief
- [*] What is terminal rejection? A rejection letter stating categorically that anonymous review has been concluded, or that editors are not willing to provide further consideration

WHEN TO DO IT

- First, wait some time after rejection, so you can reach your "ground state!"
- Only when you truly feel that you are making the editor a favor by insisting that your paper belongs to the journal
- Only when you feel that the rejection of your paper is a gross injustice [*]
  - [*] What is a gross injustice?
  - Not when a *similar* paper was published in journal
  - Not when your paper is a *little better* than most papers in journal
  - Not when journal has published *some* papers inferior to your paper

HOW TO DO IT

- Write an impassionate letter, addressed to the Editors, where you explain calmly and succinctly the reasons why the referees have misunderstood your paper, and why it deserves another look
- OK to write confidential notes to the editors about referees
- Remember: The editor is your ally, not your enemy (take the long-term view: the point is not to tuck another paper under your belt but to make an important contribution)

Deciding when to submit elsewhere

WHY

- To save time & effort when further rebuttal & review will only delay—in all likelihood—the publication of these results in another journal

BOTTOM LINE

- No use in beating a dead horse. Even if you do not agree with rejection, sometimes the most clever thing to do is move on.
- Like much else…. Common sense!

WHEN

- Option 1: Wait until paper is terminally rejected by editors—or Editorial Board upon appeal… But by then, several months have gone…
- Option 2: (especially for time-sensitive results): Did editors/referees identify a key weakness of the paper? Examples:

- Editors want experimental confirmation of predicted result
- Referees found previous paper that reports similar results in different frequency range
- Referees identify approximation made in paper that limits potential for key applications

Sometimes, a rejection is a blessing in disguise…

Highlighting papers: What & Why

What is it?

Editor-provided lists of *select* papers (highlights) that are deemed to be of higher quality, importance, or interest than average paper in source journals

Intra-highlights: Publishers select from own journals (benefit of peer review)

Inter-highlights: Publishers select from other journals

Selected papers get a marker, editor' summary, or expert's commentary

Sliding scale of importance

Why?

Global research output growing exponentially

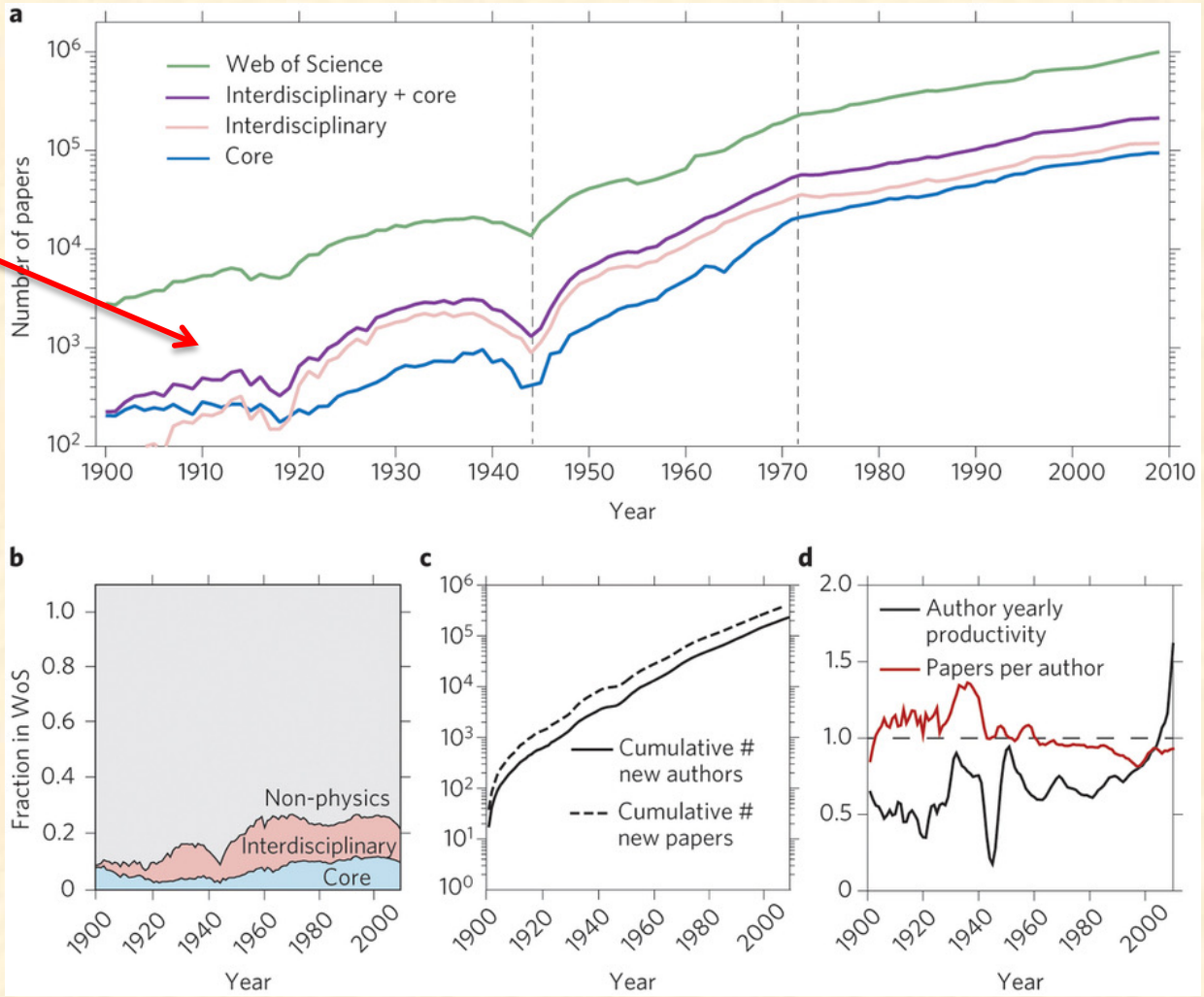
- ➔ New challenges for publishers, authors, and readers: tsunami of information, fragmentation, interdisciplinarity
- ➔ To assist readers navigating to papers of interest & relevance
- ➔ To reward authors of excellent papers by providing visibility & publicity
- ➔ To remain competitive

What are select papers called?

News & Views, Research Highlights, Perspectives, Editors' Choice, IOP Select, Editors' Summary, Spotlight on Optics, Editors' Picks, Viewpoint, Synopsis, Editors' Suggestion, etc.

Growth of research papers

Exponential!



A century of physics

Roberta Sinatra, Pierre Deville, Michael Szell, Dashun Wang & Albert-László Barabási

Nature Physics **11**, 791–796 (2015) doi:10.1038/nphys3494

Highlighting papers: When & How

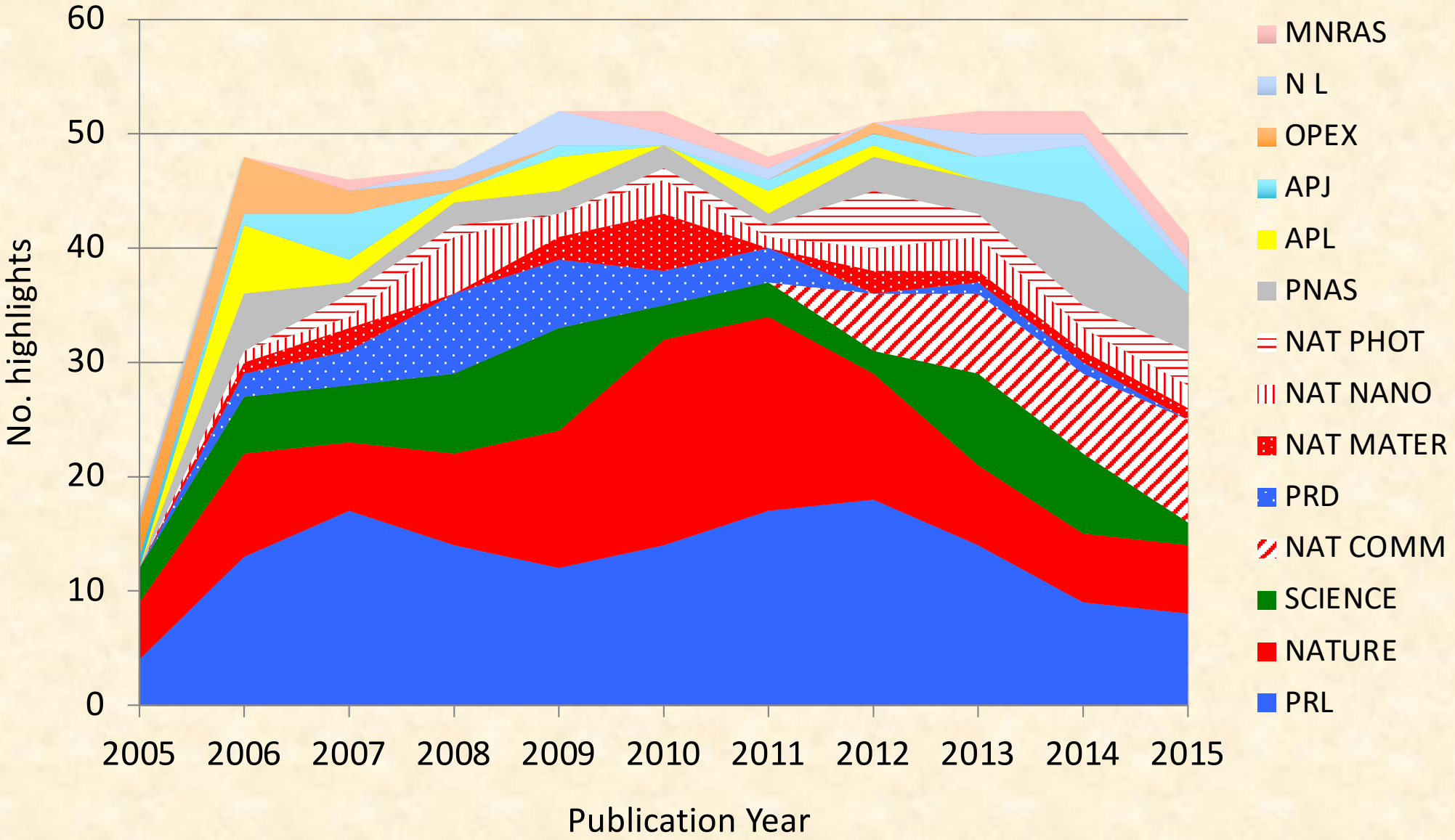
Publisher	Year highlighting started
NPG	1967
AAAS	1985
IOP	2001
JPS	2003
APS	2007
OSA	2009
AIP	2012
ACS	2014

How is it marketed?

- "novelty, significance and potential impact on future research" (IOP Select)
- "remarkable papers" (JPS)
- "interesting papers" (This week in science, AAAS)
- "key research" (OSA)
- "research of importance" (ACS)
- "high-interest" (IOP, featured articles)
- "best papers" (EPL)
- "broad interest", "experimental breakthroughs, theories that inspire a new perspective, applications-oriented research and physics of the everyday" (APS Physics)
- Brochures, websites

Research Highlights @ Nature Physics

Source journals



What can I do for my paper to be highlighted?

- It helps to start with tackling an important problem!
- Quality writing cannot be overemphasized

  (main text, logical cohesion, presentation of the problem and its context; but also title, abstract, introduction, conclusions, references, figures)
- Look at previously highlighted papers & their descriptions (Viewpoints, Synopses, Suggestions) to get an idea of which papers are selected
- @ selection process, editors scrutinize paper, its potential impact, advance and applicability, the referee comments, etc.

New models of peer review

OPEN

- Reports made public (upon author consent)
- Reviewer names made public (upon referee consent)
- Journals offering: Nature Communications, BMJ, PeerJ, F1000Research, etc.

DOUBLE BLIND

- Author names are not disclosed to reviewers

➔ Neither the referees nor the authors know each other's identity

POST-PUBLICATION

Two kinds:

- Highlights (e.g., News & Views in *Nature*, Perspectives in *Science*, Viewpoint in *Physics*)
- More experimental: F1000Research (publishes everything immediately), 3rd-party platforms such as PubPeer, OpenReview (ResearchGate), etc.

REFERENCES

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- What is open peer review?, Blog by Eva Amsen, 2014, http://blog.f1000research.com/2014/05/21/what-is-open-peer-review/
- Overview: *Nature*'s peer review trial, *Nature* 2006 (DOI: 10.1038/nature05535) http://www.nature.com/nature/peerreview/debate/nature05535.html

Thank you, and good luck!

Next seminar in SCIENTIFIC PUBLISHING series

Seminar 3: **Citation Analysis & Performance Metrics**

February 2017

Exact date & venue: TBD

Questions? Feedback?

Contact me!

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www.bibliostatistics.org

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