

fun math exercises to work on instead. I can come back to the research problem once I feel engaged again.

I graduated almost seven years ago, but I still reach out to Benson when I need career advice. Last week Benson wrote to me to make sure I was applying for a particular scholarship (in an email he signed “Your nagging granny”). Benson is an advisor just as he is a mathematician: fiercely dedicated, and always accessible.

### Credits

Figure 1 is courtesy of Benson Farb.

## Thinking About Abstracts

### Asher Auel

Whether for an article, talk, or grant application, abstracts are an important part of the way we communicate our work. As with any form of writing, the most important issue to consider is your audience: who will be reading this abstract and what purpose should it serve? If it’s for a conference talk, it might be the only piece of information, besides the title and your name, to help a participant decide to attend, so you might consider focusing on selling your talk as broadly as possible. If it’s for a research seminar talk, including more detail and background might help local participants get excited about your work and maybe organize a pretalk for graduate students. If it’s for a grant application, the abstract might be the only part of the proposal that is publically viewable, so you’ll want to make it broadly accessible to a general scientifically literate audience. While seemingly everything you write or present needs an abstract these days, a quick historical tour through abstracts in scientific publishing, and how they have changed, may provide some context to help you get the most out of your abstracts.

While the notion of an abstract—a small piece of text summarizing a larger work—has been around since the beginning of writing and record keeping, its use in scientific publishing arose in the 18th century in conjunction with the editorial process. For example, a paper’s consideration for publication in the Royal Society of London’s journal *Philosophical Transactions* was based on an abstract prepared by the Society’s secretaries after notes taken for the minute book during a reading of the paper at one of the Fellows’ weekly meetings; see [5, p. 871], [4, p. 13], [2, p. 13]. In particular, these abstracts were far from being written by the paper’s author. They would later (starting in 1830) be bound together and published in the journal *Proceedings of the Royal Society* (whose early volumes were entitled

*Abstracts of the papers printed in the Philosophical Transactions*), which allowed for quicker dissemination of the latest scientific advances than the full publication of manuscripts; see [5, p. 877] and [2, p. 4]. For more on the history of abstracts, especially in the context of the Royal Society, see [3]. As the number of scientific journals increased, scholarly indexing and abstracting services continued the practice of publishing article abstracts to help researchers keep up with the literature in their field. In mathematics, the first such service was *Jahrbuchüber die Fortschritte der Mathematik*, established in 1868, which sought to publish a complete index, with abstracts (or reviews) written by the editors, for every work of mathematics published in Europe during a given year; see [1, p. 10]. In the 1930s, *Zentralblatt für Mathematik und ihre Grenzgebiete*, now *zbMATH*, aimed for a broader reach and quicker turnaround in publishing its indexes and reviews. When the Nazis pressured the *Zentralblatt* founder and chief editor Otto Neugebauer, who was Jewish, to resign, he eventually fled to the US and founded *Mathematical Reviews*, now *MathSciNet*, in 1940; see [1, p. 14]. The current practice of authors writing their own abstracts printed atop articles did not seem to take hold until later in the 20th century; it provided authors with much more control in crafting how their work was perceived by others.

Common advice for writing an article abstract these days include: don’t make it too long (e.g., multiple paragraphs) or too short (e.g., one or two sentences), try to use a minimum of technical language, don’t include formal references or displayed equations (and generally try to avoid typeset symbols when possible), and don’t mention special programs or REUs or your PhD advisor. Most importantly, make it self-contained: don’t assume that the reader has already read the paper, internalized the motivation, and kept track of the notation. As for the purpose of an article abstract, the traditional wisdom breaks into two camps: selling your work versus helpfully summarizing it.

In light of this contrast, no discussion of contemporary abstracts would be complete without considering the arXiv, whose open access research-sharing platform has become an indispensable venue for mathematicians to quickly learn about each others’ work. Each day, thousands of people check the daily postings; they scan each posting’s title and list of authors, and if interested, read the abstract; if further interested, they open the full text and scan the introduction. I would advocate for thinking of your arXiv posting’s abstract more akin to a talk abstract than an article abstract. Since one of the primary goals of the arXiv abstract is to entice people to open your full text, you may want to make it more zippy, more broadly understandable, and more concise, leaving the reader with a feeling that they want to find out more. This is your article’s elevator pitch moment! Later on, when your article is accepted in a journal, you can retool your abstract a bit with a view toward the permanent public record: consider making it slightly more informative

Asher Auel is a professor of mathematics at Dartmouth College. His email address is [asher.ael@dartmouth.edu](mailto:asher.ael@dartmouth.edu).

DOI: <https://dx.doi.org/10.1090/noti2372>

(given the publication venue), include more details about your specific results and your main techniques, and include many searchable keywords and phrases. This can help ensure the robustness of the search, retrieval, and citation afterlife of your article; you can even update the abstract of your article's final arXiv revision.

Asking around, you will get lots of opinions about abstracts. Since writing an abstract is an art form, critically reading many of them—both within and outside of your specialty—can help you to discover your own style.

ACKNOWLEDGMENT. The author would like to thank Aileen Fyfe for helpful discussions about the history of publishing at the Royal Society.

### References

- [1] *A Focus on Mathematics: Knowledge Management in Mathematics—140 Years of Information on World-Wide Literature*, FIZ Karlsruhe brochure, Bernd Wegner (ed.), 2008. <https://www.zentralblatt-math.org/year-of-mathematics/year-of-mathematics.pdf>
- [2] *Philosophical Transactions: 350 Years of Publishing at the Royal Society (1665–2015), exhibition catalogue for 350 Years of Scientific Publishing*, Royal Society, curated by Julie McDougall-Waters, Noah Moxham, and Aileen Fyfe, 2015. <https://royalsociety.org/~media/publishing350/publishing350-exhibition-catalogue.pdf>
- [3] Aileen Fyfe, *Where did the practice of abstracts come from?*, blog post from *The History of the Scientific Journal project*, July 8, 2021. <https://arts.st-andrews.ac.uk/philosophicaltransactions/where-did-the-practice-of-abstracts-come-from/>
- [4] Aileen Fyfe and Anna Gielas, *Introduction: Editorship and the editing of scientific journals, 1750–1950*, *Centaurus* 62 (2020), no. 1, 5–20.
- [5] Noah Moxham and Aileen Fyfe, *The Royal Society and the prehistory of peer review, 1665–1965*, *The Historical Journal* 61 (2018), no. 4, 863–889.



Asher Auel

### Credits

Photo of Asher Auel taken by Joe Rabinoff, July 2015.

## What Happens to Your Paper, After It Is Submitted?

*Chuck Weibel*

If you are early in your career, and are just submitting a paper, you might find the process unnecessarily slow. For example, you may want to update your CV as soon as possible with the magical adjective “Accepted.” This is especially true if you are applying for jobs, or up for promotion, when you want your CV to be as strong as possible.

Once you’ve submitted your paper, the process may seem mysterious. I would like to draw back the curtain a bit and explain the steps your paper will likely go through.

**The corresponding editor.** The first step is matching your submission with an editor; this step varies from journal to journal. It is automatic if you have submitted your paper directly to an editor; other websites will ask for your preference of editor, defaulting to having an Editor-in-Chief select the editor. Either way, all your correspondence should be with that editor.

Most journals now use an editorial system such as *Editorial Manager* (e.g., most Elsevier and Springer journals) or *Editflow* (e.g., journals operated by societies like the AMS, CMS, and European societies). If possible, your communication with the editor should go through such a system. Avoid using a publisher’s “send-a-message” website to contact editors if possible, as it usually delays your getting a useful response.

**Quick decisions.** The first thing your editor does is make a “quick” decision as to whether your paper is appropriate for their journal. This can happen immediately if the editor is enough of an expert in your field that they can decide quickly and directly. (Your choice of editor matters here!)

If not, the editor usually asks an expert for their quick opinion. In this case, the quickness of the opinion depends on the expert and their free time. The “quick opinion” can take two weeks or so, but during the pandemic this has sometimes taken slightly longer.

If the quick opinion is negative, most journals will send you a rejection within a couple of weeks. Again, this varies with the journal; some journals require a consensus decision by the entire Board, which happens once a month, and other journals require a two-week reflection period, when all editors can voice their opinions, before rejection.

If your paper survives this first obstacle, it is ready to be technically evaluated, i.e., sent to a referee. Some journals use two or even three referees.

---

*Chuck Weibel is a distinguished professor at Rutgers University. His email address is [weibel@math.rutgers.edu](mailto:weibel@math.rutgers.edu).*

DOI: <https://dx.doi.org/10.1090/noti2368>