

## Writing, and Reading, Referee Reports

*Arend Bayer*

### Writing Referee Reports

You receive a referee request for the first time, and you are wondering what to do. Or you have written a few, or quite a few referee reports, and you are wondering whether your reports are actually useful. Here are some thoughts and opinions, based on my own experience as author, referee, and in the last few years as editor.

But first of all, please, please reply. I know of no editor who would get annoyed if you politely refuse a request, or if you slip the promised deadline for a report a little bit. But nothing is more detrimental to the process than not getting replies.

A referee report has various purposes. It is supposed to help the editors—some of them might be experts in the subjects, but others might not—to decide whether to accept the paper, it is supposed to verify correctness of the results and proofs, and it should point out necessary corrections or worthwhile improvements to the exposition. Last, and definitely not least, it should give feedback to the author. It should start with 1–2 paragraphs explaining the merits of the paper, and follow with detailed suggestions for corrections or improvements.

1. It is, these days, almost never good enough to write, “I recommend this article for publication in *Hilarious Mathematics*.” Many more papers are written now than five years ago, or 10 years ago; as a result, even journals well below the top rank receive many more submissions

than they can accept, and are forced to be selective in accepting papers. As a referee, you may have a view on the level of *Hilarious Mathematics*, but maybe the journal’s backlog has recently grown so fast that the editors finally decided to be much more selective from now on. So instead, you should try to help the editors genuinely understand how strong the paper is. How to do that? It helps to summarize the results in your own words (especially if the introduction does not do a very good job of that), and put them into context. What exactly does the result add to prior work? (A theorem about graphs with up to 21 vertices becomes less impressive when it was already known for 20 vertices.) What natural questions does the result fail to answer? Is this a result others were waiting for, or that others tried to prove? How novel are the methods? Will the methods, or the results, be used by others? Does this start a new development, or does this conclude a longer program by finally giving a complete answer? Which other journals would the paper deserve to be published in? In all that, remember that a paper can be strong for many different reasons: some introduce a new idea; others prove an important technical lemma that had withstood earlier attempts; yet another will point out a simple but new connection between two different fields within mathematics. Be open-minded.

2. In my view, you should write these comments to be read by both the editors and the authors, and with the expectation that the authors will find out your identity. I don’t mean this literally—authors will not normally find out the identity of referees, and guesses are wrong more often than not. And I don’t mean that you should be reluctant to criticize. Instead, I mean that you should be fair in describing both the strengths and the weaknesses of the paper. Most authors appreciate a report that values what the paper adds to the literature, even if the overall

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DOI: <https://dx.doi.org/10.1090/noti1817>

judgment leads to a rejection. Such detailed constructive feedback can even be more motivating than strong praise from a referee that seems to have barely read the paper.

3. So what is the purpose of the box labeled “Comments for the editors”? I would only use it for comments that could identify you, or that suggest additional referees.
4. Try to avoid biases. There’d be a lot to say, but let me keep it to “Always write as if you knew the authors well.” In my experience, there is no stronger bias than the one against authors we don’t know personally.
5. A report doesn’t have to be perfect. If you believe a proof of a lemma is wrong, you can just say so; if it turns out you misunderstood something, you probably won’t be the only reader who did. If you can’t understand an argument, ask the authors for clarification.
6. Restrict yourself to suggestions that can lead to clear, objective improvements. A referee report is not the place to advertise your view on the Oxford comma, whether to choose a basis, or the right way to prove a standard lemma.
7. To what extent is it your responsibility to check the correctness of the results and proofs? There are differing views on this—the ultimate responsibility for correctness is always with the authors. At the same time, referees should make an effort to convince themselves of the correctness, and to check for possible errors.
8. The paper is badly written? It certainly helps if you can make constructive suggestions for improvements, and editors and authors will appreciate your effort—especially if the author is fairly junior. But don’t hesitate to recommend rejection if the exposition would need major improvements. If it’s too hard to read for you, it’s probably too hard to read for many others, and the paper is less likely to be influential. Enforcing a standard of exposition is part of your role as referee.

### Reading Referee Reports

Let’s turn to the other side. You’ve finally received a reply to your submission. What now? First, nothing productive can come out of trying to guess the identity of the referee, and you’d be wrong more often than not (see 2.).

It is important to take every referee remark seriously. Quite a few times my own papers were improved by referee suggestions that I initially found unconvincing. A suggested correction to a lemma doesn’t make sense to you? Well, the referee has probably spent more time on this lemma than almost any other reader, so if they couldn’t make sense of it... Still, referees are allowed to be wrong (see 5.), and it is fine to politely explain that. However, it is usually best to also clarify the explanation in the paper. And always avoid arguing with the referee.

Maybe the editors reject the paper. Hopefully, they include a referee report (see 2.) that helps you understand the decision. Keep in mind that it’s an imperfect process—many journals have to be more selective than you might

know (see 1.), and aiming for perfection would require too many resources, and make the process even slower. But sometimes, the report is infuriating; perhaps the referee completely misunderstood the main results. Well, that is unfair! At the same time—maybe they would not be the only reader to misunderstand them? You should probably rewrite (at least) the introduction before resubmitting the paper elsewhere.

But, you object, the referee really got so much wrong that you want to send an angry reply to the editors? Don’t. Don’t! Don’t send that email!! A day or two later you still think that the referee has gotten many facts objectively wrong, and that they evidently did not give your paper a fair reading? In that hopefully exceptional case, it would certainly be fine to write a polite, friendly email (that you should ask a mentor or colleague to look at before sending) to the editors explaining your case.



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