NEUROPHOTONICS

EDITORIAL

On the Power of Constructive Criticism

As we approach the end of 2024, we thank our reviewers who take time away from their jobs, family, and friends to support non-profit publishing and ensure that novel, rigorous and impactful research appears in every issue of *Neurophotonics*. On that note, we often get inquiries from junior scientists about how to become a *Neurophotonics* reviewer and what are the criteria for good reviews. The answer to the first question is simple—publish in *Neurophotonics*! To answer the second question, let's talk about the practice of peer review.

You, our reader, probably know that academic publishers differ in their perspectives on the anonymity of peer review. Some (e.g., *eLife*) not only reveal the reviewer identity but also publish review reports together with research articles. Others (e.g., *Frontiers*) reveal reviewers' identity but do not publish the reports. At SPIE journals, peer review is single anonymous, i.e., the reviewer identity remains confidential.

Those in favor of full disclosure often say that it increases the quality and transparency of peer review. The reason that it works, in many cases, is that if the paper is good, reviewers' comments would be supportive and helpful for the authors to generate a better paper. So, everyone wins. If the paper is bad, it would be rejected, and the names of reviewers would not be released, so, no harm done.

In addition, a reviewer may offer an insight that would be credited to them if the comment is published with a paper. So, it can be argued that co-publishing reviews encourages reviewers not to hold back creative ideas and interpretations.

However, those in favor of keeping confidentiality rightly point out that open criticism—fair or not—can have adverse effects on the scientific community triggering hostility, skepticism, etc. These negatives defeat the purpose, i.e., increasing the integrity of peer review.

At *Neurophotonics*, we realize this complexity and are not taking sides. As an SPIE journal, *Neurophotonics* does not reveal reviewers. Nevertheless, when you sit down to write your report, try to imagine that it would be released. Let us explain why.

Let's say that a paper that you are reviewing is interesting and has a kind of innovation in methodology or application that you expect from *Neurophotonics* papers. You start by focusing on the big picture and summarize the strengths and weaknesses. Then, you describe what it would take, in your opinion, to address the weaknesses and make it useful for the community. How should you phrase your criticism?

In general, your role as a reviewer is to be both critical and supportive. If you place yourself on the receiving end, you as an author would like to believe that if you put in additional work that a reviewer is asking for to resolve certain issues, the reviewer would be likely to appreciate the improvement. So, when you write your review, ask yourself whether there is a path to significant improvement. If the answer is "yes," this is where a mental exercise of imagining your report being released comes in. Do not hesitate to communicate to the authors that you support this line of research and are excited about the study. Then, encourage the authors to take a deep breath and invest more time and effort to make the best version of the paper they can. To this end, concrete guidelines to where the problems are and what can be done to strengthen the study are very helpful...when delivered without sounding dismissive or argumentative. Think of this experience as a collaboration, not a fight.

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What if, in your opinion, there's no path forward, and resolving the weaknesses would be equivalent to writing a whole new paper? In this case, this is a reject. However, do not discard your empathy tool at the door. As a reviewer, you can be equally gracious and thoughtful. Who knows, constructive criticism presented in a friendly voice may find fertile soil. Following your advice, the authors may rethink the paradigm, perform a whole new study, and then come up with an important discovery! You weren't blamed for the reject, and it was the power of your constructive criticism that made this happen—this is a win! You won't be credited for the discovery, either. This is a loss, but such is the duality of anonymous peer review!

Happy Holidays and Happy New Year to our authors, reviewers, readers, and SPIE friends!
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