

A PERSONAL VIEW

The thrill of the paper, the agony of the review

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Curran-Everett D. The thrill of the paper, the agony of the review. *Adv Physiol Educ* 41: 338–340, 2017; doi:10.1152/advan.00069.2017.—The process of first writing a scientific paper and then responding to reviewer comments can be challenging and sometimes—some might say often—frustrating. In this personal view, I recount some of my experiences as an author, and I offer some strategies to write a paper and to then respond to comments from the people who reviewed it.

peer review; publication; writing

AHA! After months of daily tedium, you have collected the last bit of data. You thought you'd never finish. Now all you have to do is analyze the data and write the paper. How hard can that be? The study went flawlessly. Besides, you like research, you love statistics, and you like to write. You chuckle. And you thought this science thing was going to be hard. You analyze the data. You write the paper. You send it to the journal. You celebrate. You can't wait to get the reviews. You are pumped.

You've got mail. It's the reviews. Your heart pounds. Your palms sweat. Should you read the reviews later? Are you kidding?! You'll never make it. You read the reviews now. You should have read them later. Your spirits plummet. The Associate Editor has rejected your paper. The reviewers didn't understand your analysis, and they challenged your conclusions. And there are pages and pages of comments. Your head spins. This science thing is harder than you ever imagined.

Before you abandon science in favor of your backup plan—that beer and pizza parlor in New Zealand—you need to know that most everyone suffers this kind of despair at one time or another. Regardless of your reaction to manuscript reviews, successful responses to reviewer comments require careful thought and hard work. If you remember that reviewers are people too, and if you think of the process of peer review as a game, then you can enjoy the thrill of the paper and escape the agony of the review.

My Experiences as an Author

I have been writing for more than 30 years, but I still get revved up when I read comments from the people who review my papers. Why? Because I know the careful thought and hard work that lie ahead of me.

If pressed, I would say the process of publication—writing the paper and satisfying the reviewers—gets easier as you gain

experience and build a reputation. But this is a simplistic generalization. In truth, it depends on the paper.

It was as a graduate student that I wrote my first scientific paper. Its publication was the proverbial piece of cake: the two reviewers offered helpful comments, I revised the paper in 2–3 days, and the Associate Editor accepted the revision (9). I felt pretty smug about the whole science thing.

Five years later, I thought my career in science was headed down the toilet. I was in the middle of a postdoctoral fellowship, and I had written my fifth paper. One journal had already rejected the manuscript because the reviewers were unimpressed. When I read the reviews from the second journal, I wondered why I had accepted the postdoc in the first place. One reviewer argued that the findings merely duplicated published results. The second reviewer, if nothing else, was thorough and creative: (s)he wrote three, single-spaced pages of trivial, misguided comments, and (s)he criticized the paper for advocating a concept it didn't even mention. In the end, the Associate Editor enlisted a third reviewer to arbitrate, and I revised the manuscript three times. At long last the paper was published (8).

In 1998, I wanted to describe how children had reacted to an opportunity I gave them to participate in the process of scientific inquiry and to discover the wonder of real hearts and lungs (3). Before I began the paper, I consulted with the Editor. She raved about the idea, and she encouraged me to proceed. The reviewers did not share her enthusiasm: they wanted a more formal educational study that was impractical. As a result, *Advances* published my manuscript, not as a regular paper, but as a Letter to the Editor (4).

In 2009, by which time I had written invited reviews on statistics (5, 10) and guidelines for reporting statistics (7), I was asked by the *Journal of Applied Physiology* to review a paper that explored the use of a ratio in cardiovascular physiology. That led me to propose to the *Journal of Applied Physiology* a review on the analysis of ratios. The Journal accepted my proposal. I wrote the review. The Journal rejected my review, in part on the grounds that two of the three reviewers believed the review had little information not already in the literature. I appealed the rejection without success. I repackaged that rejected invited review as part of my *Explorations in Statistics* series (6).

Without doubt, experience and reputation can facilitate your interactions with reviewers and Associate Editors: they know who you are. Although your exchanges with reviewers and Associate Editors may become collegial—perhaps quite familiar—it is still the caliber and sometimes the very nature of your paper that determine its fate in peer review.

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The Life of a Reviewer

As an author, it can be great sport to trash comments made by a reviewer. But believe it or not, the life of a reviewer is not all fun and games. Why not? Because it takes time and effort to do a thoughtful review (2, 12).¹

The Game of Publication

The publication of a scientific manuscript contributes to the accumulation of scientific knowledge. In reality, the process of publication is a game. A game of meaning to be sure, but a game nevertheless. Like other games, the game of publication comes with its own object, players, and rules:

- *Object.* A manuscript of valuable, credible, defensible, comprehensible science.
- *Players.* You, the reviewers, and the Associate Editor of the journal.
- *Rules.* You write the manuscript. The reviewers evaluate the research and the science in your paper. You address comments from the reviewers. The reviewers decide whether you have satisfied their concerns. The Associate Editor referees the process of review and determines the fate of your manuscript.

Typically, reviewers provide anonymous feedback to the Associate Editor. The reviewers recommend and must justify a decision about the fate of your manuscript: accept, major revision, minor revision, or reject. The reviewers also rank your manuscript, relative to papers in the same discipline, in categories similar to importance of the research, originality and importance of the results, and experimental design and quality of the data. Last, the reviewers relay to the Associate Editor any confidential comments they may wish to make.

Your odds of succeeding at the game of publication go up—your chances of getting your manuscript published—if you rely on trusted strategies.

Some Strategies to Try in the Game

It is from the perspectives of author, reviewer, Associate Editor, and Editor-in-Chief that I offer the following strategies.² If you adopt these strategies, I cannot guarantee you will always succeed, but I am willing to bet that you find the game of publication to be a whole lot more fun.

Write your manuscript as you would a story. The reviewers use a good deal of cognitive energy just reading your manuscript. You want them to read your manuscript using as little energy as possible. You can do this if you write your manuscript as you would a story. Imagine your manuscript is a trail through some forest. Organize the conceptual building blocks of your scientific story so the reviewers know where they are headed before they arrive: you want the trail to be marked clearly. If the reviewers lose the trail, they can find it again, but

they will have wasted valuable energy in so doing. And they are likely to ask that you rewrite the manuscript so the trail is obvious.

Address an issue before a reviewer can ask about it. In the initial submission of your manuscript, explain and support with references anything you suspect will draw the attention of a reviewer. You want to help a reviewer understand why you did what you did. And you want to anticipate and address an issue before it creates a question.

Be meticulous about the appearance of your manuscript. Attention to every detail of your manuscript is important: it reflects upon you. If your manuscript departs from journal style, if it contains spelling errors, or if it lists references in different formats, then the reviewers may think you are careless. They may next wonder about the care you used in the experiment. Follow journal style (1), and proof your manuscript. Yes, this is extra work. Yes, this extra work is worth it.

Simplify the life of the reviewer. If you are like most authors, you respond to each comment from a reviewer using a label, usually a number, that corresponds to the label used by the reviewer. Imagine, however, that you are the reviewer. What must you do to learn how the authors have addressed your comment? You must pull your review, locate the labeled comment, reread that comment, and verify that the authors' response corresponds to your comment. Only now can you evaluate how well the authors have satisfied your concerns. Not a friendly process, is it? Help the reviewer: before your response, repeat verbatim the essence of the comment; in your response, include the precise location of any change that resulted from the comment. Here is an example from our responses to one review of Ref. 10:

1. The authors should address ways of handling multiple comparisons. . . . [I] feel scientists should be made aware of its problems and given some approaches for dealing with it.

Response. We agree that a discussion of multiple comparisons is important, but we are concerned that more than a brief mention is beyond the scope of this [review]. We have added [comments] and provided references [manuscript location: page x, paragraph y, line z].

Focus on the scientific substance of a comment. Now and then, you may find a reviewer's comment to be snide or condescending. Sometimes, that's because the comment is snide or condescending. More often than not, however, it's because you have misinterpreted the comment. Even if you happen to be right, it will do you no good whatsoever to respond specifically to the tone of a comment. Ignore the tone, and focus instead on the substance.

Use reviewer comments to improve your manuscript. Even well-meaning comments from the reviewers may prompt you to wail, "What?!" But remember the object of the game: a published manuscript. Consider comments from the reviewers to be red flags that show you need to fix a problem of some kind. With this philosophy, you can use even the most remarkable comment to improve your manuscript.

Argue for what you believe in. A reviewer makes a comment for some reason, but not all comments obligate you to revise your manuscript. Most reviewers realize that disagreements are part of science. If you disagree with a reviewer, then justify your stance.

¹ The American Physiological Society has developed a primer on reviewing for scientific journals. The primer is available at <http://www.the-aps.org/mm/Publications/Journals/Reviewer-Guidelines.html>, bottom [13 June 2017].

² These strategies do not include more obvious strategies such as *avoid plagiarism* and *use best practices if you adjust a digital image*. The American Physiological Society has developed guides that address these kinds of strategies. The guides are available at <http://www.the-aps.org/mm/Publications/Info-For-Authors/Ethics-Posters> [13 June 2017].

If a reviewer is intractable or unreasonable, involve the Associate Editor. Most reviewers comment or question to help you justify something or to help you improve your paper. Some reviewers, however, may be unwilling to listen to your considered responses. If you present evidence and references that support your case, but a reviewer refuses to hear the evidence, then summarize the facts of the case to the Associate Editor. It is the responsibility of the Associate Editor and—if necessary—the Editor to supervise the process of review and to arbitrate disputes.

Remember that this is a game at which you want to succeed. It is difficult to respond to comments made by the reviewers. Not only is it difficult scientifically, but it can be difficult emotionally. You invested a huge amount of effort to write the paper. In private, vent your reactions however you like. Ranting and raving does wonders for one's soul. Respond to the reviewers, however, in a manner that is objective and geared to help you succeed at the game. Ask yourself this basic question: will this response help get my paper published?

Here is an example from a methodology paper of mine (11):

2. The authors have been unwilling to deal with the basic remarks in my reports. To put things as briefly as I can, the authors have simply not dealt with [matter k]. They have not treated this matter in the paper at all nor with sufficient attention in their responses to my question.

Response. We have added a section to the appendix that details [matter k] [manuscript location: page a, paragraph b, line c].

In fact, I was quite willing to address the reviewer's statistical remarks. I thought I had. I must admit my first impulse was to tell this reviewer that (s)he should have written more clearly because I was unable to read minds. My subsequent addition to the manuscript satisfied the reviewer.

When You're an Expert at the Game

As you gain experience at writing and publishing, you will become more adept at responding to comments from reviewers. Keep in mind, however, that the game of publication is like other games: it gets easier the more you play, but it can still drive you crazy. Regardless, as you become more expert, you are more likely to truly enjoy the game of publication.

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AUTHOR CONTRIBUTIONS

D.C.-E. drafted manuscript; edited and revised manuscript; approved final version of manuscript.

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