

# Why (and How to) Get Published: Wisdom from a Former Journal Editor

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# Something About Me and Getting Published

- 36 years as Professor of Electrical Engineering at MIT
- 17 years as Associate Editor of two journals
  - IEEE Transactions on Electron Devices
  - ASME/IEEE Journal of Microelectromechanical Systems
- 94 papers in refereed journals
- 174 conference papers
- 31 PhD theses supervised
- 50 Master's theses supervised
- ...

# Why Publish?

- This is not a silly question
- The idealistic answer: to contribute to knowledge
  - Be part of an international community of researchers working together at the forefront of science and technology
  - Make the world a better place through our contributions
- Is that it? REALLY?

# What About Something Called Competition?

- Research is an intensively competitive activity
  - Competition for resources (the grant game)
  - Competition for recognition (the prestige game)
  - Competition for jobs (the tenure game)
- Ask again: Why publish?
  - To support my promotion or tenure
  - To justify continued funding from my sponsor
  - To beat a competitor to the punch (avoiding a scoop)
  - To get me to a higher place in the scientific pecking order
  - To gratify my ego regarding the length of my publist (size matters)

# Let's Allow Both Types of Motivations

- You and your students/colleagues/collaborators have a new result and you want to publish it for some combination of the reasons already stated, some noble, some competitive.
- We assume that you are honest – the research is neither fraudulent nor plagiarized
- In selecting a strategy for publication, there are many things to consider
  - Visibility
  - Timeliness
  - Rigor of the review process
  - Prestige

# A Key Question

- How IMPORTANT is your result?
- Is it an incremental contribution or a ground-breaking bombshell, possibly opening up a whole new area?
- Incremental results can be published in many different ways, but bombshells require special handling: speed, high visibility, rigorous review. These are not always mutually compatible.

# Why are Speed and Visibility Important?

- The idealistic answer:
  - To notify co-workers of new results and/or a new promising pathway to explore
- The more down-to-earth answer:
  - To get credit for the contribution, however large or small
- Speed and visibility matter most when the stakes are highest
  - A rapidly developing field
  - A competitive grant environment
  - A need to support an academic promotion

# Where/How Should You Publish?

- On your personal website?
- On a non-refereed website?
- At a conference, whether oral or poster?
- In a rapid-publication archival letter?
- In an archival journal?
- In a super-prestigious archival journal (e.g., *Nature* or *Science*)?



# Picking a Strategy

- How necessary is the validation of peer review?
  - For junior faculty, this is paramount
  - It is the only path into archival journals
  - But it can be horribly slow – many months, often with revisions required
    - Letters might be faster
    - Some high-prestige journals offer fast reviews
- How about a refereed conference?
  - Typically, only the abstract is peer-reviewed; not the final paper
  - Brings the work to the attention of peers in timely fashion
  - Might have stringent length restrictions

# Reasons for Preferring Conferences

- Conferences are where reputations get made. The visibility from an oral (or even poster) presentation to the right audience is unmatched.
- Your peer group is there, in person, and the timeline between submission and presentation is typically only a few months
- Your friends (even your long-distance lovers) might be there, too...

# But ...

- Promotion committees have difficulty evaluating a conference presentation
  - How careful is the peer review of abstracts?
  - How selective is the conference?
  - Was the full paper reviewed at some point?
- The gold standard for peer review is practiced in high-quality journals
  - Promotion committees really like archival journal publications

# A Practical Strategy

- To avoid being scooped, consider putting a “working paper” on a website (this is already a common practice in some fields)
- Go for a conference presentation, and then follow up with submissions to peer-reviewed archival journals
- This brings us to the problem of peer review ... [“How to Avoid the Reviewer’s Axe”](#)

# Structure of a Scientific Paper

- A well-organized scientific paper has a structure
  - Statement of the problem being addressed in the context of prior and related work
  - Description of methods in sufficient detail to permit replication
  - Delineation of results
  - Interpretation of results
  - Discussion in light of prior and related work, thereby establishing what has been added to the literature by this paper

# Senturia's Maxims for Surviving Peer Review

- (Almost) nothing is new
- Rely on the Believability Index
- Watch for gambling words
- Don't be a Longfellow
- Don't pull rabbits out of hats
- Mine all the gold
- Remember: Reviewers are (sometimes) inarticulate and Authors are (somewhat) paranoid

# (Almost) Nothing is New

- You have a candidate “contribution to knowledge” and you wish to publish it
- How do you know it’s a “contribution”?
  - You know the state of knowledge before your work
  - You understand exactly what your work adds to that state of knowledge
- Therefore, you must do two things:
  - An HONEST LITERATURE SEARCH before the work is done and another one AFTER the work is done !!!
  - As I always told my students:  
“Figure out what you have done, then go to the library to find it.”
  - Be fully informed (and not too self-aggrandizing) about your contribution

# Literature Searches Can Be Difficult

- Much work is first presented at conferences, but many conference proceedings are not widely indexed.
- When someone publishes on a website, finding indexed references to that work may be impossible.
- As an editor, one of the most common complaints I had was about inadequate citations and discussion of related work.



# Assume Success. You've Done Your Searches

- You have identified exactly what your contribution is
- You have selected a publication target that is appropriate for the importance and timeliness of your result
- You are now ready to write the paper to be submitted to peer review
- How can you write the paper so as to minimize the risk of being beheaded by the reviewer's axe?

# Do Not Start With an Attack

- One often reads in the opening paragraphs of a scientific paper how totally inadequate were all past attempts to solve this particular problem. That's ridiculous (usually).
- Be courteous in describing prior work. After all, the person doing the review is probably one of the authors you cite.
- Let your new work speak for itself.
  - In the introduction, make clear what you intend to show in your paper
  - Place it in context with the prior work
  - And – very important – be prepared to return at the end of your paper to a discussion, now that the details are presented, of how your work compares to and/or adds to what has gone before.

# The Believability Index

- Your goal is to bring your reader (i.e., your reviewer) along a pathway that leads inexorably to her saying: “Well done. Publish as submitted.”
- In order to reach that goal, you have to start from a position that the reviewer will accept and understand.
- Start with high-believability items:
  - Description and citation of prior work
  - Identification of non-controversial concepts to be used to interpret results
  - Methods used
- Then present the rest in decreasing order of believability.
  - What does that mean?

# Assigning Believability

- You want the reviewer to BELIEVE your results
- Therefore – show, carefully, exactly how you got one typical result
- Then, the rest of your results can be presented in summary form
- This will give all your results the same Believability as the one you showed with details present – so far so good
- Only then should you proceed to the next lower-believability step, the interpretation of your results

# Avoid Gambling Words

- Words like “surely,” “undoubtedly”, and “probably” have NO PLACE IN SCIENTIFIC WRITING
- If you find yourself wanting to use these words, it means you are trying to persuade with emotion rather than with demonstrable fact, and this means you are standing on unsteady legs
- My reaction as reviewer and editor is to downgrade any and all papers that rely on gambling words when making their case
- It is perfectly okay to speculate, but you cannot assign a probability to the correctness of a speculation. Call a speculation by its right name.

# Don't Be a Longfellow

- It is very tempting to roll out a result, then tell an interpretative story, like Longfellow sitting around the fire at the Wayside Inn, then move on to the next result
- This is very bad practice. It mixes lower-believability material (your interpretation) with higher-believability material (your well-explained results)
- Get ALL your results out before indulging in story-telling.

# Don't Pull Rabbits Out of Hats

- A particularly egregious version of the “Longfellow” problem is to hold back one particular result until most of the interpretation of results is complete, then – wham – present one more experiment that supposedly nails down your interpretation
- This violates the descending order of Believability, seducing the reviewer into thinking up challenges to the work before seeing all the higher-believability results
- Reviewers HATE being jerked around like this, and Authors might HATE the consequences that result

# Mine All the Gold

- It's expensive to get results
- Time and grant money are too precious to waste
- You would not ever stake out a gold mine, collect a few of the nuggets, then abandon the claim. You would want to mine ALL of the gold within your claim.
- Research results are like gold – be diligent about extracting as much interpretation as your results will support
- It is even perfectly acceptable, at this point, to speculate freely about what the results might suggest, identifying directions for further exploration. Just be clear when you are “suggesting” rather than “claiming.”



# Connect to Previous Work

- Your manuscript is almost complete, but there is one more task
- Loop back to that opening paragraph where you cited all the prior work
- How does your new work support, or not, or add to prior work?
- Those references at the beginning were not merely window dressing
- The connection to previous work and the clear identification of what your paper has added to the field will make reviewers very happy.

# The Review is in: And it is NEGATIVE

- Now what?
- Senturia's view:
  - If a reviewer is unhappy with your paper, there is always a reason
  - It might not be a good reason, but there is always a reason
- With the exception of a few citable cases of bad behavior, most reviewers are not trying to wreck your career
  - But reviewers are busy, and often inarticulate.
  - They don't like some aspect of your work, but aren't precise about why
- Swallow your paranoia and get to work
  - You need to figure out the reason for each and every criticism

# Sometimes It's Trivial. Sometimes It's Not

- If you followed the Believability Index rule, it should be clear exactly where the reviewer and you parted ways.
- Perhaps, just adding a sentence of clarification or changing the order in which certain parts of the presentation appear can address the reviewer's concern.
- If the reviewer found an error in your work, you can fix it and be thankful that it never made it into print
- Sometimes, however, the reviewer has made an error either in reading the paper or understanding what you actually did. Ugh!!!

# The Author's Responsibility

- Don't pick a fight
- Respond in a cover letter to the editor to each and every criticism posed by a reviewer.
  - Demonstrate through your attitude that you welcome the criticism (even if you don't) and that you have responded in good faith
  - Highlight the changes you made to address the comments, when appropriate
  - Identify where the reviewer may have incorrectly understood something
    - It's okay to disagree with a reviewer as long as you are calm and polite
- If you do this carefully enough, you might avoid the need for a re-review, saving perhaps several months of waiting time.

# Congratulations

- Your well-written paper, now revised, has passed muster
- The editor sends you a note of acceptance
- You smile for a few minutes, then go on to the next paper....

For additional Senturia articles on academic survival, go to:  
<https://www.stephendsenturia.com/articles.html>