How to Write a Successful Technical Paper

• Intro

• The Simple Story

• Mechanics of Writing Clearly

• Types of Papers

• The Publication Process

• Important Source Material
Technical speaking and writing share a common goal:

Express an idea clearly.

• The listener cannot re-read,  
  So the speaker must repeat creatively.

• The reader cannot ask questions,  
  So the writer must anticipate confusion.
Tell a Simple Story

“Veni, vidi, vici.”
⇒ “I came, I saw, I conquered.”
— Julius Caesar’s description of his expedition to England.

One common technical simple story:

X is an important problem because Y, and many people have worked on related topics [review literature]. We approached it by Z, with results P, Q, and R. The implications of these results are A, B, and C.
Tell a Simple Story

Another common technical simple story:

Progress in area X is blocked by Y, and many people have worked on this [review literature]. To address this, we built a system that did Z. Its major subsystems are P, Q, and R. Future work includes A, B, and C.
Mechanics of writing a paper — 1.

- Identify the idea you wish to express, and write it down.

- Write down the simple story that tells the idea.

- Start an outline with those main points as sections.

- Write a simple story for each section.

- Those main points are the subsections.

- Collect every minor point under its relevant subsection
  ⇒ group related things together.

- Organize minor points in each subsection into their logical order.

- Identify and fix points of possible confusion
  ⇒ Missing info, incorrect logical order, etc.
Mechanics of writing a paper — 2.

- Write (Very Approximately!!) a paragraph for each minor point.

- Add intro and summary paragraphs to each section.

- Write the abstract.

- Squeeze out excess words and sentences.

- Rewrite for clarity.

- Circulate to friends and colleagues.

- Rewrite (many times!) for clarity.
Writing Clearly — 7 Keys

• Omit needless words.

• Tell a simple story.

• Group related things together.

• Prominently elevate important things.

• Use short, simple, declarative sentences and common terms.

• A sentence’s major action = its verb; Its major actors = its subject and objects.

• A paragraph’s topic sentence announces or summarizes its content.

And edit, re-write, revise, clarify, condense many, many, many times.
Types of Papers

- Unpublished material — tech reports, workshop notes, ICS-198 Report, etc.

- Conference Proceedings paper — 
  Note page limit!
  **Space is always too short!**

- Journal — technical article.

- Journal — review article.

- Book Chapter.

- Thesis.
The Publication Process — Conference

- Write it.

- Circulate to colleagues and revise.

- Submit it. A cover letter may suggest referees (reviewers), and occasionally may request that it not be sent to someone (provide a brief reason).

- Reviews and decision come back. Accept or Reject.

- If reject, understand why. Revise and submit to another conference.

- If accept, prepare camera-ready copy of paper. Address reviewer’s comments as appropriate. Add any new data or new results.

- Return by deadline.
The Publication Process — Journal

- Write it.

- Circulate to colleagues and revise.

- Submit it. A cover letter may suggest referees (reviewers), and occasionally may request that it not be sent to someone (provide a brief reason).

- Reviews and decision come back.
  Accept with minor revisions, Accept with major revisions, Revise and resubmit, or Reject.

- If reject, understand why.
  Revise and resubmit to another journal.

- Else, revise in accord with reviewer’s comments.
  Accept reviewer’s suggestions unless clear reason not to.

- Prepare a BRIEF cover letter itemizing each reviewer point and how you revised the manuscript in response, or (rarely) the reasons not to accept that suggestion.
  Put these almost in “bullet” form.

- Send in again . . .
“Salami” (LPU) vs. Impact

- Salami strategy — slice publications as thinly as possible, attempt to maximize number. Reduce each result to the “Least Publishable Unit.”
  - Adds weight to resume, grant proposals. Quantity does count.
  - Gets material submitted quickly, less likely to get “scooped.”

- Impact strategy — strive for the most visible publications that will be regarded as important work by your peers.
  - More prestigious; more favorably regarded by your peers.
  - In general, the scientific and technical literature would be better off with half the quantity and twice the quality.

Strive for a balance.
Read Cover-to-Cover:


Buy these for your personal library and re-read them periodically.

Also, have a dictionary and thesaurus handy.