

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- Unpublished material — tech reports, workshop notes, ICS-198 Report, etc.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

- “The Elements of Style,” William Strunk, Jr., and E. B. White, MacMillan Publishing Co.
- “Style: Ten Lessons in Clarity & Grace,” Joseph M. Williams, HarperCollins Publishers.
- “How to Write and Publish a Scientific Paper,” Robert A. Day, ISI Press.

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

Also, have a dictionary and thesaurus handy.