Effective Written Communication: Storyboarding a Technical Report

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The goal of oral presentations and written reports is to explain a technical finding . . .

BUT . . . they're not the same. . .

Written Reports ⟷ **Oral Presentations**

- Random reading (re-reference text)
- Reader controls pace
- Message is archival
- Reader must actively read
- Feedback not possible

- Linear (cannot "go back")
- Speaker controls pace
- Message presented in the moment
- Audience can be passive
- Feedback possible (questions)

The form of scientific communication follows its function

- Forms of technical reports:
  conceptual, **empirical**, observational, methodological, review

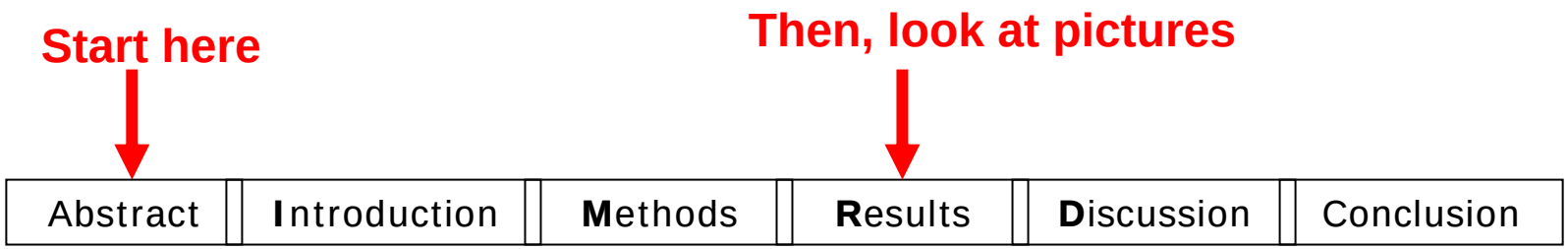
  convey the **values** of science
  - Contextualizes research in the field
  - Provides a repeatable methodology
  - Forces writer to speak from the data
  - Forces writer to separate results from opinions

The form also conveys function needed by readership

- Scientific readers maximize potential of the form when they read.
- Makes it is easy to locate data & compare experiments (methods, etc.)

- Easy to write? No
- Easy to read? Yes. Optimized for reading

- Document design and use of figures conveys ethos of scientist.



Known as the IMRaD Format

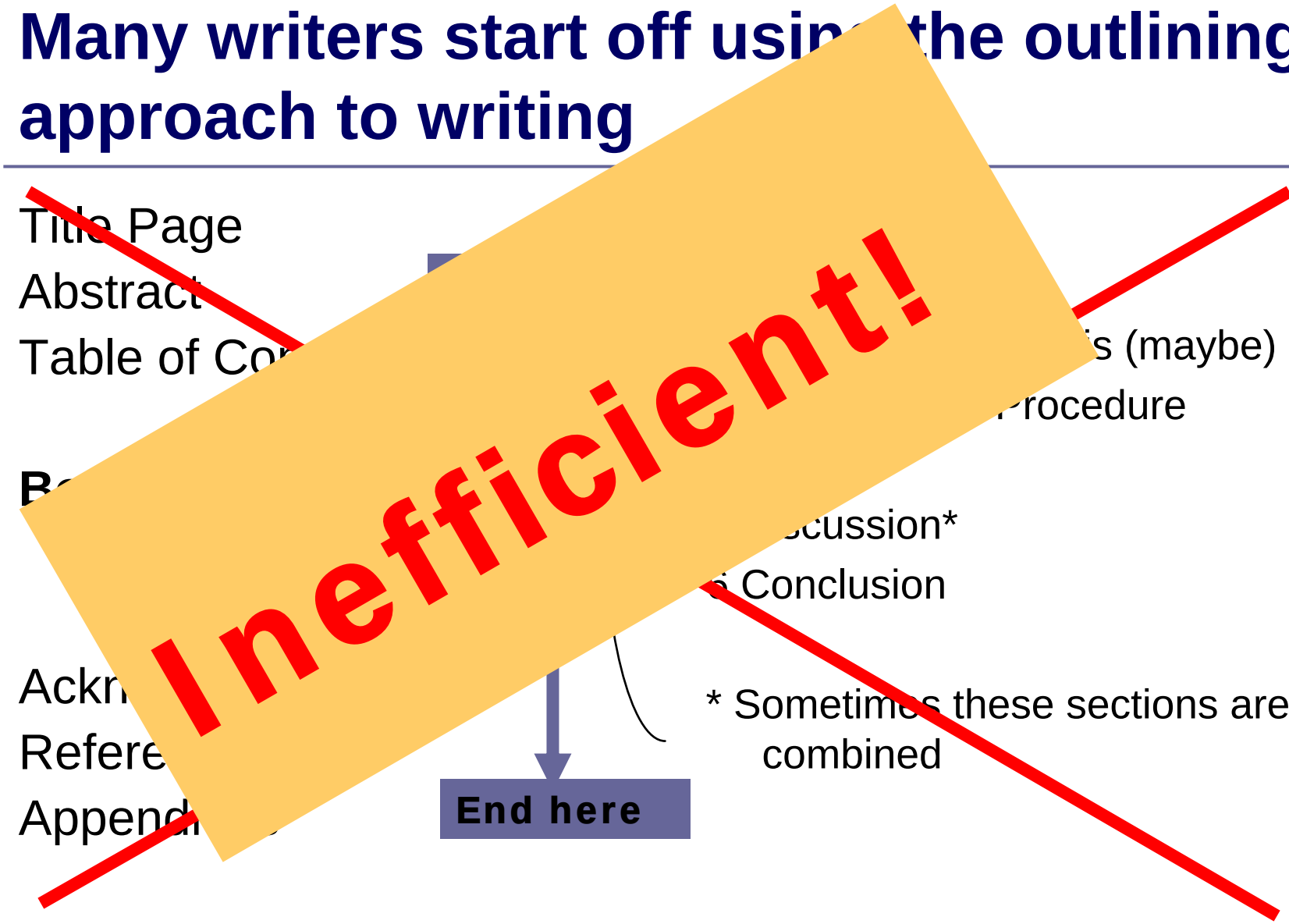
The grammar of scientific communication also follows its function

Because science readers do not read chronologically and skim, the grammar of science is:

- Prose that is not laden with jargon or vague expressions
- Simple sentence structure S – V – O
- Provides links between text and visuals
  e.g., “As shown in Figure 2 . ..”
- Provides time reference (e.g., Methods – past tense)
- Distances subjectivity of the researcher (e.g., passive voice)
- Unambiguous prose It = ??, This = ??

See “The Science of Scientific Writing” By Gopen and Swan

Many writers start off using the outlining approach to writing



Try the storyboarding approach instead

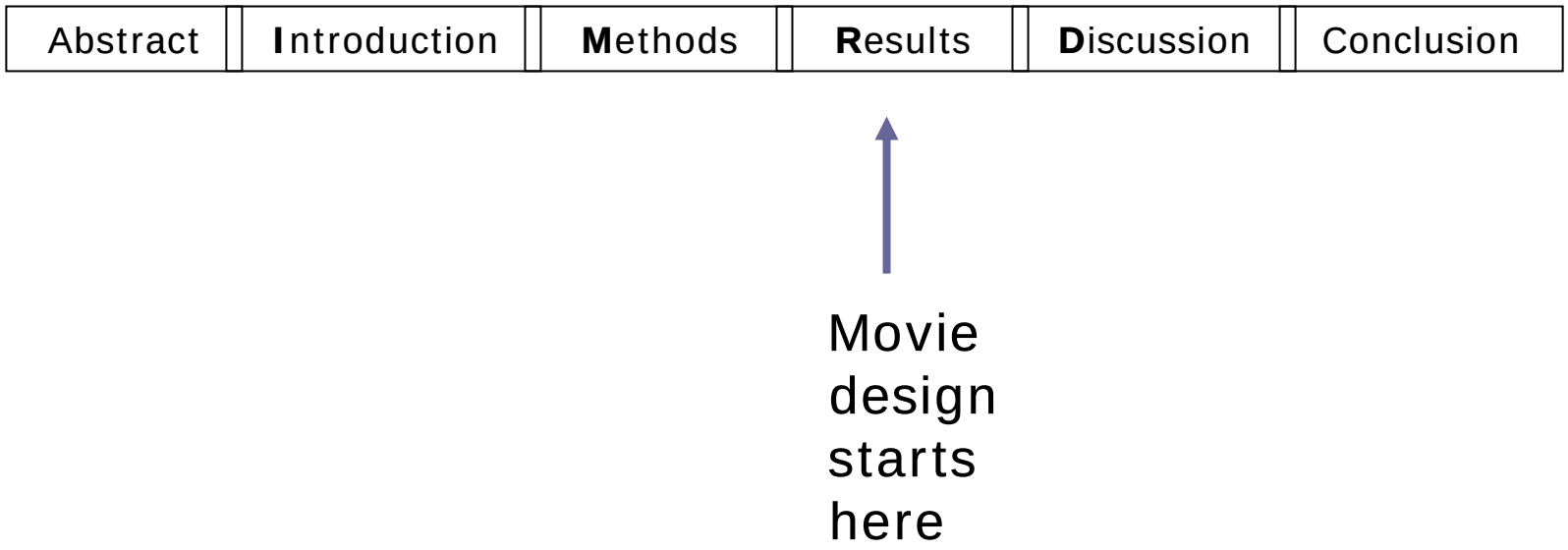
A “movie-making” approach to writing

Each section of report is a “scene”

Abstract	**I**ntroduction	**M**ethods	**R**esults	**D**iscussion	Conclusion

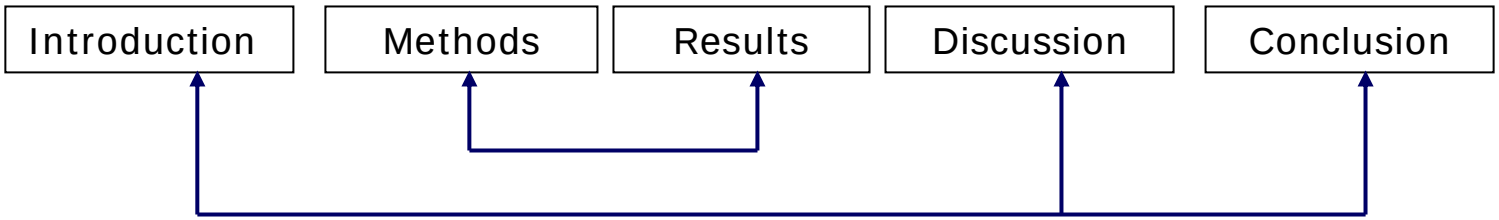
Try the storyboarding approach instead

A “movie-making” approach to writing



Try the storyboarding approach instead

A “movie-making” approach to writing



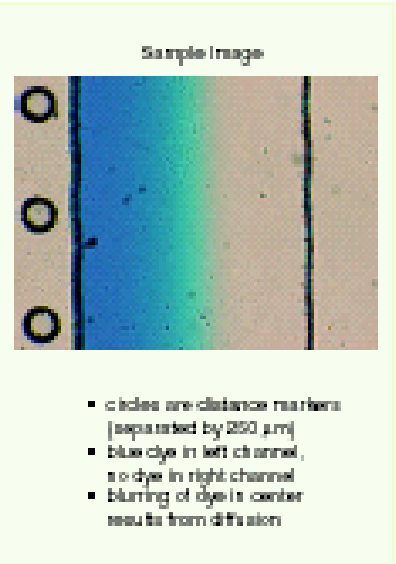
Lab report is built around **Results** data

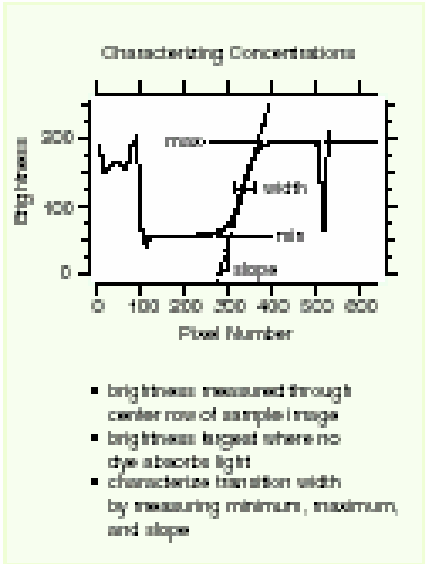
How do you make a movie of your data?

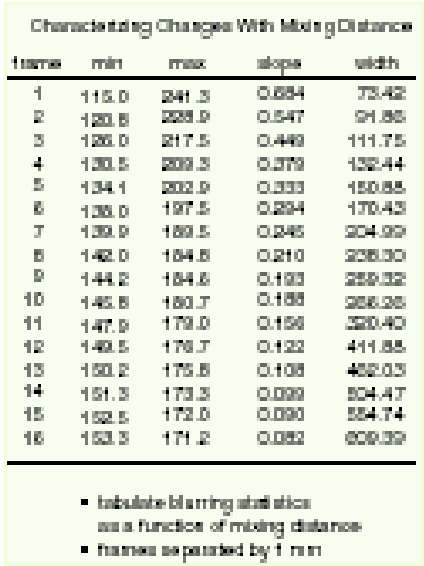
Step 1: Organize your data

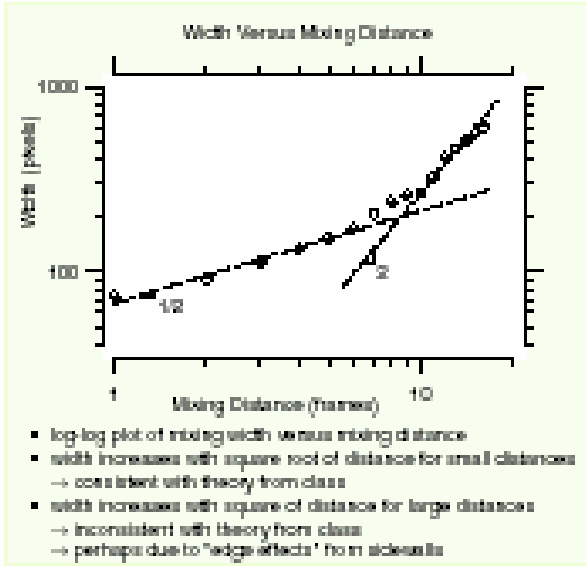
Start with figures:

- Assemble hard copies of your figures in a “storyboard”
- Figure out the major technical theme of the report
- Assess how each figure contributes to the major theme
- REVISE figures to focus on the major theme
  (develop figures that summarize that major theme)









Step 2: Plan the report

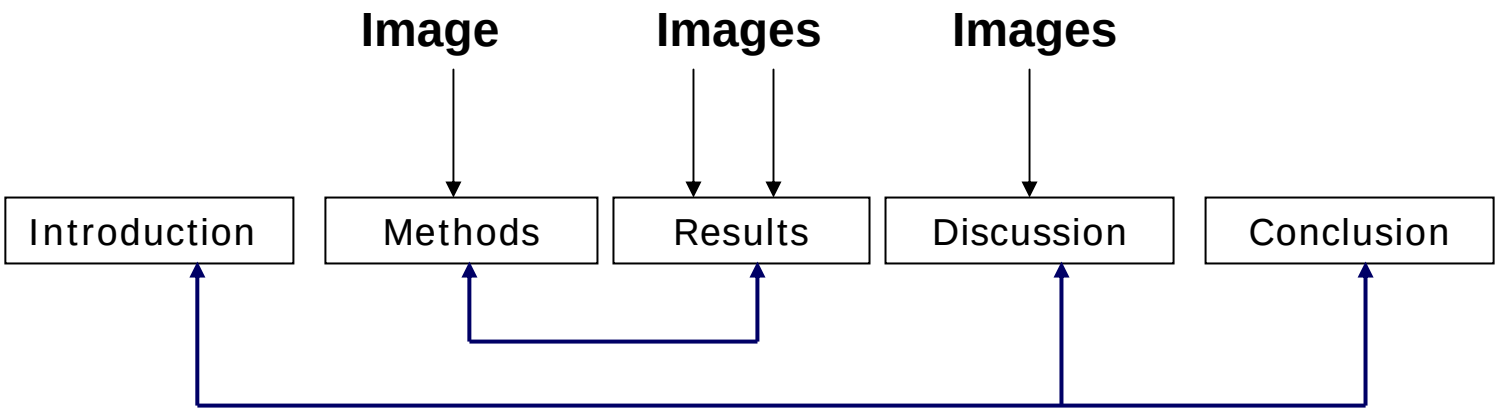
After you've got your data, consider if it's appropriate "screenplay" for your audience and venue:

- Who is the audience?
  - technical expertise
  - level of interest
  - personal familiarity

- How much space do you have?
  - 2-3 pages? 10 pages?
  - Can Results be combined with Discussion?
  - Do I need a Theory section?
  - How much background information to motivate study?

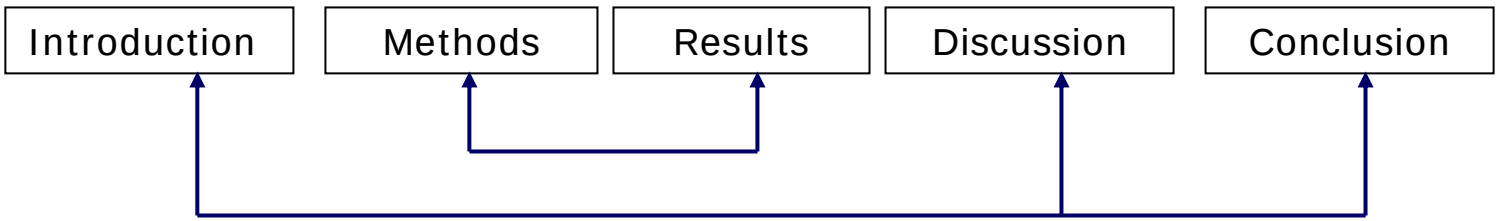
Step 3: Write in non-linear sequence

- What was the purpose of the project? What were the Results?
- Readers read Results first, so start there.
- “plug and play” other sections.
- Make sure you have accurate lab notebook



Use storyboard as the “backbone” of your report / presentation

Step 4: Continue building the report



Add Discussion, Introduction, & Conclusion around the Methods and Results

Check for coherence between and across sections

Step 5: Add End/Front Matter

Title

Abstract

Table of Contents

Acknowledgements

References

Appendices

Step 6: All the Good Stuff: Edit, Peer Review, Bake, Edit, & Proofread

and . . . Submit!

Check the figures!

1. Edit for **completeness**
   - Is all relevant information included?
   - Where might readers have questions?

2. Edit for **organization and document design**
   - Is each section divided logically using subheadings?
   - Does the information link clearly across sections?
   - Do the figures support the text?

3. Edit for **prose style**
   - Are there irrelevant sentences, sections, plots?
   - Can you read the report aloud without verbally stumbling?