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Why am I here?

- MIT alums wish they were better at scientific communication
  - To help with your summary essays
  - To contribute to your writing grade
What is Scientific Writing?

Precise, concise, objective report of research data collected according to the scientific method…

And an intellectual journey that takes time and patience.
Time to Convert…

…..ready for professional writing?
Old Habit

- Begin writing a paper at 2AM that’s due at 9AM
- Use language that sounds scholarly, serious, and smart
- Meet the page count

New Habit

- Write a first draft early, get feedback, and revise it more than once
- Use language that exactly suits your content
- Write to communicate
What are Some Methods for Good Scientific Writing?

**Model** your writing after someone in your field who is **an especially good writer**.

**Consult Texts** on Scientific Writing.


Develop an Outline

Outlines force you to:
- establish the scope of your document
- develop a point of view
- partition material
- sequence your topics
- develop a writing strategy (even if you don’t have an outline, you need a strategy).

Outline can be used to generate feedback, provide the subject headings and topic sentences for your paper.

Work out a general plan first, and then make the outline more specific.

The Mayfield Handbook: Section 1.5.1

http://web.mit.edu/writing/temp2/home.htm
When Publishing in a Peer-Reviewed Journal
Read the Guide to Authors
e.g., J. Bac., Materials and Methods

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Experienced Scientific Writers…

Seek Feedback
- peer-edit
- self-edit (after a long enough delay)
- expert-edit

Expect to learn by writing as well as to inform.

Revise, revise, revise, revise, revise, revise, revise, revise,
Consider Three Aspects of Writing Style

Figure 2-1. Aspects of style in professional writing.
Structure is Revealed in:

Organization (backbone)

- Headings, Subheadings, Topic sentences reflect your writing strategy
Performance of the Solar One Receiver

Introduction
Steady State Efficiency
Average Efficiency
Start-Up Time
Operation Time
Operation During Cloud Transients
Panel Mechanical Supports
Tube Leaks
Conclusion

Performance of the Solar One Receiver

Introduction
Receiver’s Efficiency
Steady State Efficiency
Average Efficiency
Receiver’s Operation Cycle
Start-Up Time
Operation Time
Operation During Cloud Transients
Receiver’s Mechanical Wear
Panel Mechanical Supports
Tube Leaks
Conclusion
Topic Sentences

They’re more important than you realize

Readers rely on a topic sentence as if it were a “title” for the paragraph
Structure is Revealed in:

Organization (backbone)

• Headings, Subheadings, Topic sentences reflect your writing strategy

Ordering / Depth

• Establish emphasis

Transitions

• Link ideas
Language: Needless Complexity

- Familiarization (n)
- Has the functionability (n)
- Utilization (n)
- Facilitate (v)
- Utilize (v)
- Aforementioned (adj)
- Firstly, secondly, thirdly (adv)
- Heretofore

- familiarity
- can function
- use
- cause
- use
- mentioned
- first, second, third
- previous
Language: Needless Words

- Already existing
- At the present time
- Basic fundamentals
- Completely eliminate
- Continue to remain
- Currently being
- Empty space
- Had done previously
- Introduced a new
- Mix together

- Existing
- At present
- Fundamentals
- Eliminate
- Remain
- Being
- Space
- Had done
- Introduced
- Mix
Language: Needless Words

- Never before
- None at all
- Now at this time
- Period of time
- Separate entities
- Start out
- Write out
- Still persists
- In order to

- Never
- None
- Now
- Period
- Entities
- Start
- Write
- Persists
Language: Weak Versus Strong Verbs

- Made the arrangement for
- Made the decision
- Made the measurement of
- Performed the development of

- Arranged
- Decided
- Measured
- Developed
Language: Passive Versus Active Voice

• The voltage was displayed by the oscilloscope.

• The feedthrough was composed of a sapphire optical fiber,

• which was pressed against the pyrotechnic

• that was used to confine the charge.

• The oscilloscope displayed the voltage.

• The feedthrough contained a sapphire optical fiber,

• which pressed against the pyrotechnic

• that contained the charge.
Vigorous Writing is Concise

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GOALS FOR SCIENTIFIC WRITING

Structure
• **Apparent**: Headings, subheadings, and topic sentences are easily identified and reflect your writing strategy.

• **Instructive**: The paper’s headings, subheadings, and topic sentences organizes the reader’s thinking (can serve as a summary of the content when converted to an outline).

• **Appropriate**: Structural complexity matches the complexity of the content.

Language
• **Concise**: Sentences are succinct, containing no extra words.

• **Precise**: Word choice reflects a thoughtful process.

• **Engaging**: Sentences are written in active voice with strong verbs and apt adjectives.
GOALS FOR SCIENTIFIC WRITING

• **Illustrations**
  – **Appropriate**: The choice of tables versus figures suits the data and would not be better expressed as text.
  – **Well designed**: Illustrations are readable and attractive.

• **Form**
  – Correct grammar, spelling, and punctuation.
  – Correct formatting.
Scoring System

+ Thoroughly superior work. A model of good scientific writing.

√+ Good work. Requires only minor improvements in any of the following areas: organization of ideas; economy of expression; diction (word choice); grammar/punctuation/spelling.

√ Acceptable work. Requires moderate revision in one or more of the areas above.

√- Acceptable but rough work. Requires substantial revision in all areas.

- Unacceptable work.

0 Assignment not handed in.
Please read

Writing Readable Prose

By

Amin S. Bredan & Frans van Roy
END