



# The Art of Scientific Writing



Technical writing workshop  
Based on *Style: Lessons in  
Clarity and Grace* by Joseph  
Williams

“Write unto  
others as you  
would they write  
unto you”

November 23, 2020

# Writing is a craft

- Purpose: to persuade
- Prerequisite: take the reader by the hand, take them from what they know to what you want them to know
- Writing with clarity and style takes a LOT of practice

*“Have something to say, and say it as clearly as you can, That is the only secret of style”*

-Matthew Arnold

# Exercise: rewrite this sentence

- “An understanding of the causal factors involved in excessive drinking by students could lead to their more effective treatment.”
- “We could more effectively treat students who drink excessively if we understand why they do”
- Much scientific writing is needlessly complex and obscures rather than illuminates meaning
- Don’t be that person!

# Principles of drafting and editing

- The first draft of an idea WILL be badly written! Rejoice in producing crappy prose.
- As you revise it, you will make it clearer, and in the process will understand the ideas better yourself.
- First, organize your ideas to the extent that is currently possible. Then start drafting.
- Separate drafting from editing.

# Ten Principles for Writing Clearly

1. Distinguish real grammatical rules from folklore
2. Use subjects to name characters in your story
3. Use verbs to name important actions
4. Open your sentences with familiar information
5. Get to the main verb quickly
6. Push new, complex information to the end of the sentence
7. Begin sentences constituting a paragraph with consistent topics/subjects
8. Be concise
9. Control sprawl
10. Above all, write to others as you would have others write to you.

# Tell stories about characters and their actions

- “Once upon a time, as a walk through the woods was taking place on the part of Little Red Riding Hood, the Wolf’s jump out from behind a tree occurred, causing her fright”
- What is wrong here? Rewrite it.

# Tell stories about characters and their actions

- Main characters should be subjects of verbs
  - Once upon a time, as a **walk** through the woods was taking place on the part of Little Red Riding Hood, the Wolf's **jump** out from behind a tree occurred, causing her fright
  - Once upon a time, **Little Red Riding Hood** was walking through the woods, when **the Wolf** jumped out from behind a tree and frightened her

# Tell stories about characters and their actions

- Make important actions verbs
  - Once upon a time, as a **walk** through the woods was taking place on the part of Little Red Riding Hood, the Wolf's **jump** out from behind a tree occurred, causing her **fright**
  - Once upon a time, Little Red Riding Hood **was walking** through the woods, when the Wolf **jumped** out from behind a tree and **frightened** her
- In the first version, the characters are not subjects and their actions are not verbs. That's why we prefer the second version.





Nouns	Verbs
Intention	Intend
Intervention	Intervene
Distortion	Distort
Evolution	Evolve
Interference	Interfere
Discrimination	Discriminate
Decision	Decide
Assumption	Assume
Collection	Collect
Investigation	Investigate
Expansion	Expand
Disagreement	Disagree
Discussion	Discuss
Argument	Argue
Failure	Fail

## Nominalizations

- Characterize obscure, dense writing
- Learn how to identify these and avoid using them (exercises in Williams book)
- Use the verb instead, make the actor the subject

# Summary

Subject	Verb
Character	Action

**Express actions as verbs:**

Bad: The intention of the committee is to improve morale

Good: The committee intends to improve morale

**Make the subjects of those verbs, the characters associated with the actions:**

Bad: A decision by the dean in regard to the funding of the program by the department is necessary for adequate staff preparation

Good: The staff can prepare adequately, only after the dean decides whether the department will fund the program.

# Characters

- Look for your subjects
- They may be hidden or absent
- E.g. A decision was made in favor of doing a study of the disagreements (very unclear)
- Make subject (character) explicit
- I/we/ the researchers decided...
- Active voice usually preferable, unless we don't know or reader doesn't care who is performing the action

# Avoid noun strings

- Early childhood thought disorder misdiagnosis often results from...
- Reverse order of words and find prepositions to connect them

Add  
character!

Physicians

early	childhood	thought	disorder	misdiagnosis
misdiagnose	disordered	thought	in early	childhood

# Practice rewriting

- “The outsourcing of high-tech work to Asia by corporations results in the loss of many jobs for American workers”
- Underline nouns, find main characters, look for actions they perform, rewrite nominalizations as verbs, rewrite using subordinating conjunctions (*because, when, although, why, how, whether, that*)

# Cohesion

- Cohesive writing: last words of one sentence appear at beginning of next sentence
- Use of passive can help here
- Begin sentences with familiar information, end with information readers cannot anticipate
- In sequences of sentences, clarity must be balanced with cohesion

# Coherence: a sense of the whole

- Cohesion is the way the sentences add up to the whole picture
- Consistent ideas towards beginning of sentences, coherent subjects
- Paragraphs focus on a narrow set of related ideas
- Don't use "throat clearing" – starting sentences with lots of qualifiers
- Use the end of your sentences to communicate long complex phrases, new information, and technical terms

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# Editing exercise

Swap your writing sample with someone else. Underline subjects and circle/highlight verbs of each sentence. Assess the cohesion and coherence of the sample as a whole. Choose one sentence and edit to improve clarity. Make some suggestions for improving cohesion or coherence.

# Group exercise (20 min)

- Swap writing pieces with a group mate. Find three instances where a key principle of writing clearly has been violated (don't worry, we all violate these principles!), and identify which principle was violated. (5 mins)
- Communicate these areas to the author (2 mins)
- Revise your own writing for enhanced clarity (5 mins)
- Return work to same reviewer and assess effectiveness of changes (1 min)
- Debrief on what worked well (2 min)