

# Technical writing

- “The purpose of writing is to inflate weak ideas, obscure pure reasoning, and inhibit clarity. With a little practice, writing can be an intimidating and impenetrable fog!”
  - Bill Watterson, *Calvin and Hobbes*

# Journal style

- Headings
  - 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> order, etc.
- Numbers
  - Spell out or use numerals
  - Ordinal?
  - Commas?
- Abbreviations
- Literature cited

# The Elements of Style

Strunk and White

## Rules of usage

- Possessives
  - Add “s” no matter what the ending letter
  - Avoid if at all possible
- Use commas after 2<sup>nd</sup>-to-last item in lists
- Enclose parenthetical phrases between commas
- Place a comma before a conjunction (and, but) introducing an independent clause

- Do not join independent clauses by a comma
  - Use a semicolon instead
- Do not break sentences in two
- A participial phrase at the beginning of a sentence must refer to the subject.
- Divide words at line ends according to their formation and pronunciation

# A bad construction of a participial phrase

- “The radio-collar newly fastened around her neck, the biologist watched as the moose recovered from the drug and staggered away.”
- To whose neck was the radio-collar attached?

## Rules of composition (after Strunk and White)

- Make the paragraph the unit of composition, one topic to a paragraph
- Begin paragraph with a topic sentence and end in conformity to beginning
- Use active voice
- Put statements in positive form
- Omit needless words

- Avoid a succession of loose sentences
- Express coordinate ideas in similar form
- Keep related words together
- In summaries, keep to one tense
- Place emphatic words at the end of a sentence

- Freight-train wording
  - “Estimates of some attributes of a population of Nuttall’s cottontails in central Oregon”
  - “Nuttall’s cottontail population attributes in central Oregon”
- Jargon
- “Get ready, I’m going to tell you something”

# Items of confusion

- Between vs among
- That vs which
- e.g. vs i.e.
- Farther vs further
- Since vs because
- However at beginning of sentence (depends on meaning)
- Affect vs effect
- It's vs its
- As instead of because
- These/those this/that
- Utilize vs use

# Superfluous words

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Replace:

With:

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At this moment in time

now

Due to the fact that

because

Black in color

black

In spite of the fact that

although

Large in size

large

On two separate occasions

twice

Take into consideration

consider

Rectangular in shape

rectangular

Tract of land

tract

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# Punctuation, etc.

- Comma, semicolon, colon
- Symbols
- Hyphens
  - Adjectival modifiers
    - ‘A study of small mammals’ or ‘a small-mammal study’
  - Modifier containing a number
    - 3-yr-old moose
  - Adverb modifiers ending in ‘ly’ are not hyphenated
  - NEVER hyphenate a word at the end of a line
    - Non-breaking hyphen: <ctrl-shift-hyphen>

# Other common mistakes

- “Data” – singular or plural?
- above: “as I mentioned above...”
- comprise/contain
  - the whole comprises the parts, the parts compose the whole
- either...or; neither...nor
- estrous/estrus
- Fall/Autumn

# More common mistakes

- irregardless
- mass/weight
  - bodies have mass, gravitational force is measured as weight
- who/which
- acknowledgments/acknowledgements

# Structure of scientific papers

- Title
  - most important part to get right
  - should convey what, where, when and on what group/species
  - “The role of rabbits in sylvatic plague epidemiology, with special attention to human cases in New Mexico and use of the fluorescent antibody technique for detection of *Pasteurella pestis* in field specimens”

- Abstract

- a summary (usually <250 words or 3% manuscript length) that conveys everything presented in the manuscript
- no figures, tables or citations
- should be able to stand alone

- Introduction
  - explanation of why research was done
  - review relevant literature
  - state your objective and hypothesis

- Study area
  - optional section
  - good to include if the description of the study area is long
  - includes:
    - where
    - habitat (vegetation, topography, etc.)
    - climate (if appropriate)
    - land-use designation (refuge, management area, etc.)

- **Methods**
  - sometimes called ‘Materials and Methods’
  - describe study area here if you did not use a separate section
  - describe all methods used to collect and analyze data

- Results

- contains results of data collection and analysis—not raw data, but statistics directed at testing hypotheses
- no literature citations
- usually shortest section
- report all findings, not just those that support your position

- Discussion

- place results in context, i.e., tell a story
- this is where you state your conclusions
- often the longest section
- cite literature in support of, or in contrast to, your conclusions
- sometimes, this and the abstract are the only sections read so they need to tell a complete story

- Acknowledgments
  - list funding agencies!!!
  - volunteers, technicians, etc., who helped

- Literature cited
  - all literature that you referred to in the manuscript
  - this is where most mistakes are made
  - each journal has its own style
  - attention to detail required

- Appendices
  - supplementary material
  - trend toward electronic appendices