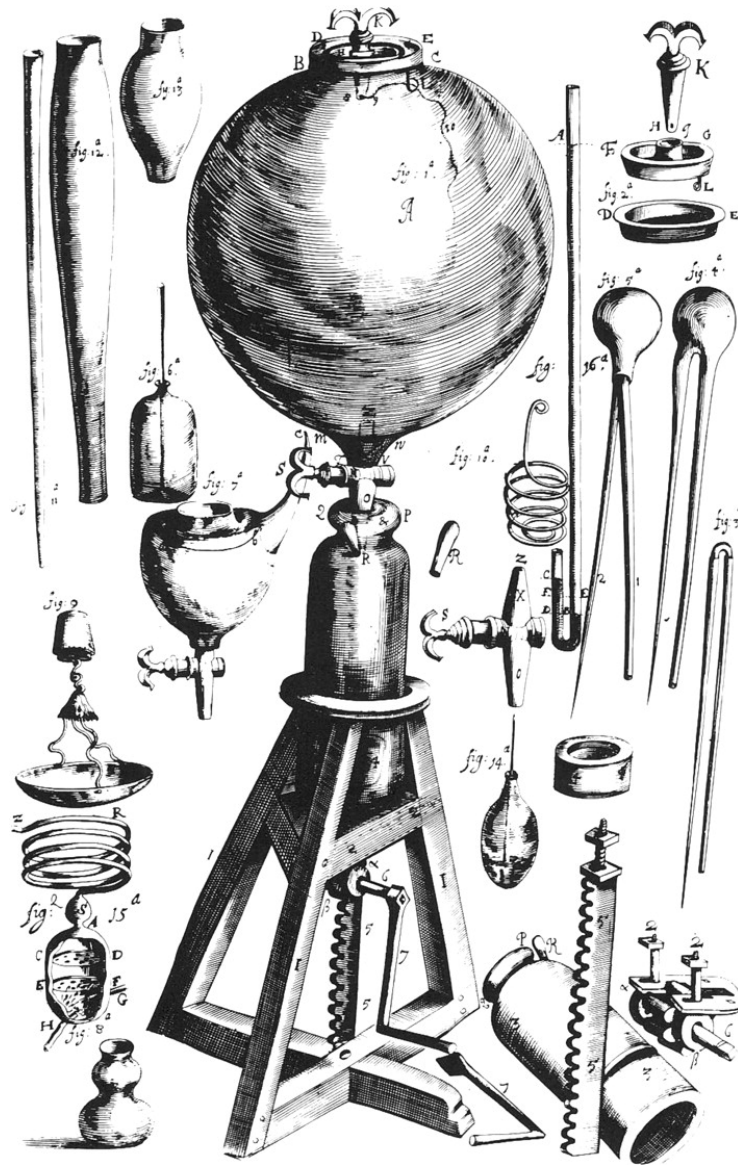


Methods



Methods: basics

- What you studied, how you studied it, and how you analyzed the data
 - Materials, field sites, etc.
 - Experimental/observational methods
 - Data analysis (statistics)
- More complex papers may involve multiple experiments, and may therefore repeat the materials-experiment-analysis structure
- Model/theory papers can just systematically go through the equations/derivations and assumptions being made

Active and passive voice

Active voice: *“We extend the optimal rotation model above...to include punctuated storm events.”*

Passive voice: *“The optimal rotation model above was extended to include punctuated storm events.”*

- Students are often told to write in the passive voice and to avoid using “I” and “we”.

This is terrible advice. Do not follow it.

- Active voice is shorter, simpler, more engaging, and more honest.
- Active voice was standard until the mid-19th century; then use of the passive voice became widespread because it projected objectivity.
- In the last 20 years, journals have shifted their preference back to active. However, teaching has not caught up.

Active and passive voice (continued)

- There are reasons to retain *some* use of passive voice.

- 1) Vary voice to vary rhythm.

- 2) Occasional passive can call attention to something..

“Beetles were identified to species, but other taxa only to genus.”

- 3) Passive can obscure an irrelevant actor

“Non-parametric methods are preferred when data violate assumptions of ANOVA.”

- 4) Passive can help avoid need for a complex subject.

“Buprestid and cerambycid beetles, woodwasps, and several other taxa that damage trees or that vector pathogenic fungi attacked the wounded trees.”

versus

“The wounded trees were attacked by buprestid and cerambycid beetles, woodwasps, and several other taxa that damage trees or that vector pathogenic fungi.”

Detail

What goes into a Methods section?

- Enough detail to allow a reader to repeat your work?
- Enough detail to allow a reader to understand your Results?
- Enough detail to establish your credibility as a scientist?

A controversial recommendation: a detail goes in if it:

- establishes your credibility as a researcher
shows you know how to use standard methods appropriately
- establishes plausibility of your approach to the problem
shows you are gathering relevant data and analyzing it to shed light on the research problem
- establishes your sequence of investigative steps
lets reader understand claims to come in Results and Discussion

Include a detail only if it could influence reader's interpretation of Results.

Detail

What goes into a Methods section?

- Enough detail to allow a reader to repeat your work?
- Enough detail to allow a reader to understand your Results?
- Enough detail to establish your credibility as a scientist?

These questions are less of an issue for modeling. Mainly need to distinguish between reproducibility and replicability.

Detail

What about detailed methods for replication?

- Certainly matters in Methods papers.
- Otherwise, true replications are very, very rare.
- Detail harasses the 99% of readers who do not want to repeat your experiment!
- If you're philosophically devoted to replicability, consider a "Methods details" online supplement.

Self-plagiarism

- When you use the same methods twice, you shouldn't cut-and-paste
Methods text
 - Reuse may not be legal – often, the journal owns the copyright
 - Even if reuse *is* legal, rephrasing keeps writing fresh and ensures a good fit to the problem at hand.
- English is a rich language. There is never just one way to write something!
- See a blog by American Naturalist editor Dan Bolnick:
<http://ecoevoevoeco.blogspot.ca/2018/01/i-cant-steal-text-from-myself-can-i.html>
(or <http://bit.ly/2E2oRgi>)

Today's workshop

Methods

- Read the methods of the paper provided to you. List as many things as possible that you would not know how to do should you attempt to repeat this experiment (do not read the Appendices).
- Write a methods section for how you made breakfast this morning that is reproducible for another person attempting to repeat your breakfast making experiment.