Writing about Data for Publication

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What makes scientific writing difficult?

1. being unsure of approach/direction

2. making & keeping it a priority

3. incorporating it into lab life

educational writing

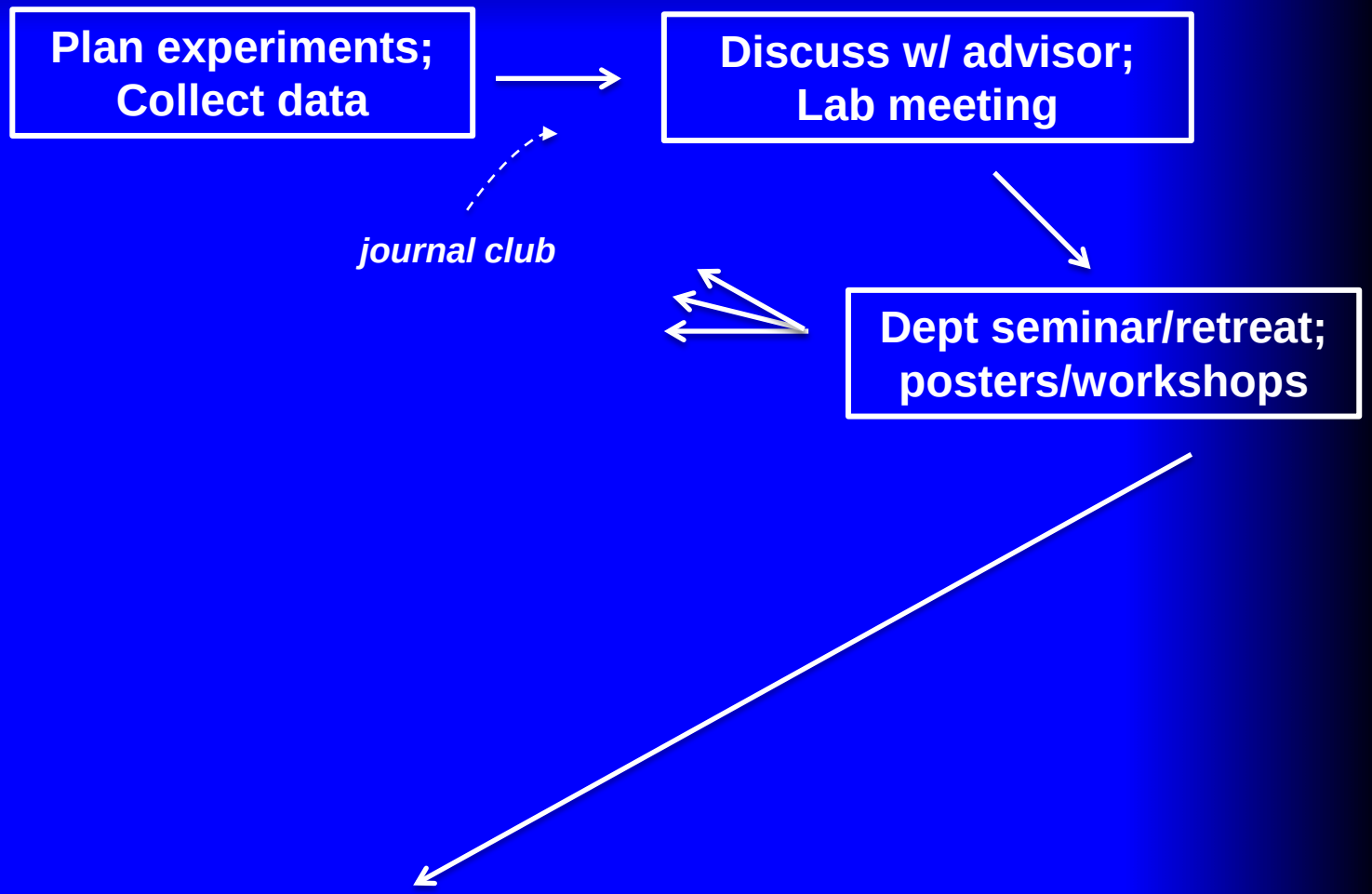
high school, undergraduate

- To inform, describe, entertain, argue, etc
- Mostly secondary information
- Deadlines; immediate consequences
- Work through incremental projects

science writing

graduate, post-doc, faculty

- To inform and argue
- Emphasis on primary information
- Few deadlines; takes time for consequences to materialize
- Each paper is a big project


Plan experiments;
Collect data
Discuss w/ advisor;
Lab meeting
journal club
Dept seminar/retreat;
posters/workshops
Write a paper

Does oral communication help us publish scientific papers?

Oral communication can be *really* helpful, but is no substitute for writing itself

We need to experiment to know which writing strategies work.

Feedback on a written document can be more specific & thorough than comments from a seminar.

Internal Peer Review Network

1. **Make time to write.**
   (e.g., when summer lab meetings are sporadic).

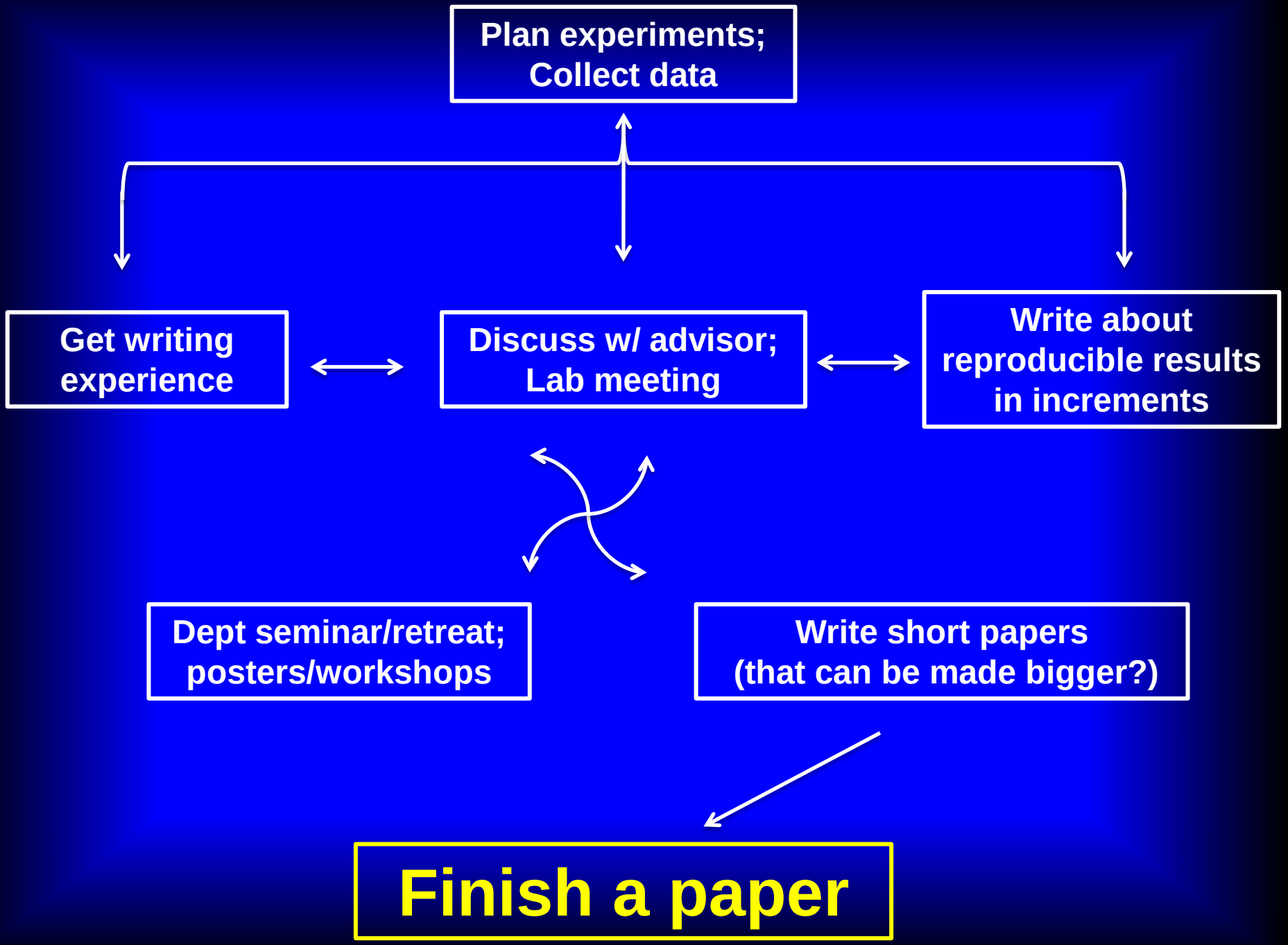
2. **Keep it short.**
   (e.g., critical analysis of one result/figure).

3. **Get feedback.**

4. **Revise & merge with writing about newer data.**

Work with your mentor to get writing experience by:

- asking about the process & his/her experience
- asking to read a work in-progress
- offering to help
- ***follow-through on any offers


Plan experiments;
Collect data
Get writing experience
Discuss w/ advisor;
Lab meeting
Write about reproducible results in increments
Dept seminar/retreat;
posters/workshops
Write short papers
(that can be made bigger?)
Finish a paper

Any of us could get scooped tomorrow

Your story needs to fill a gap in knowledge.

“Big” gap ~ important problem

This gap gets “smaller” over time.

An incremental writing process can catalyze publication of a story that is more than “incremental”.

Scenario:

At a national conference, you see results that will likely be submitted in 1-2 months and, if published first, will reduce the importance of your own results.

What if:

A) you have no writing done?

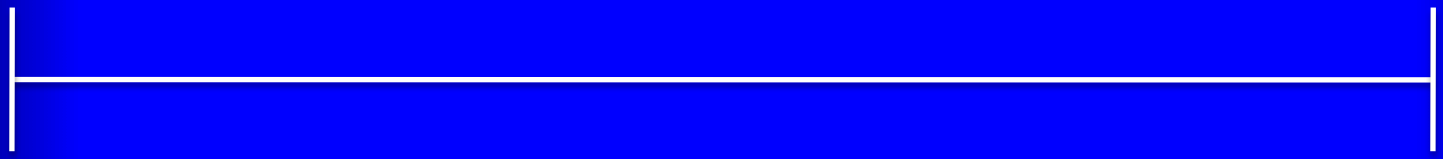
B) you have some writing done?

C) you have 80-90% of the paper written?

Where do you rank yourself on the following continuum?

I enjoy ambiguous wonderment

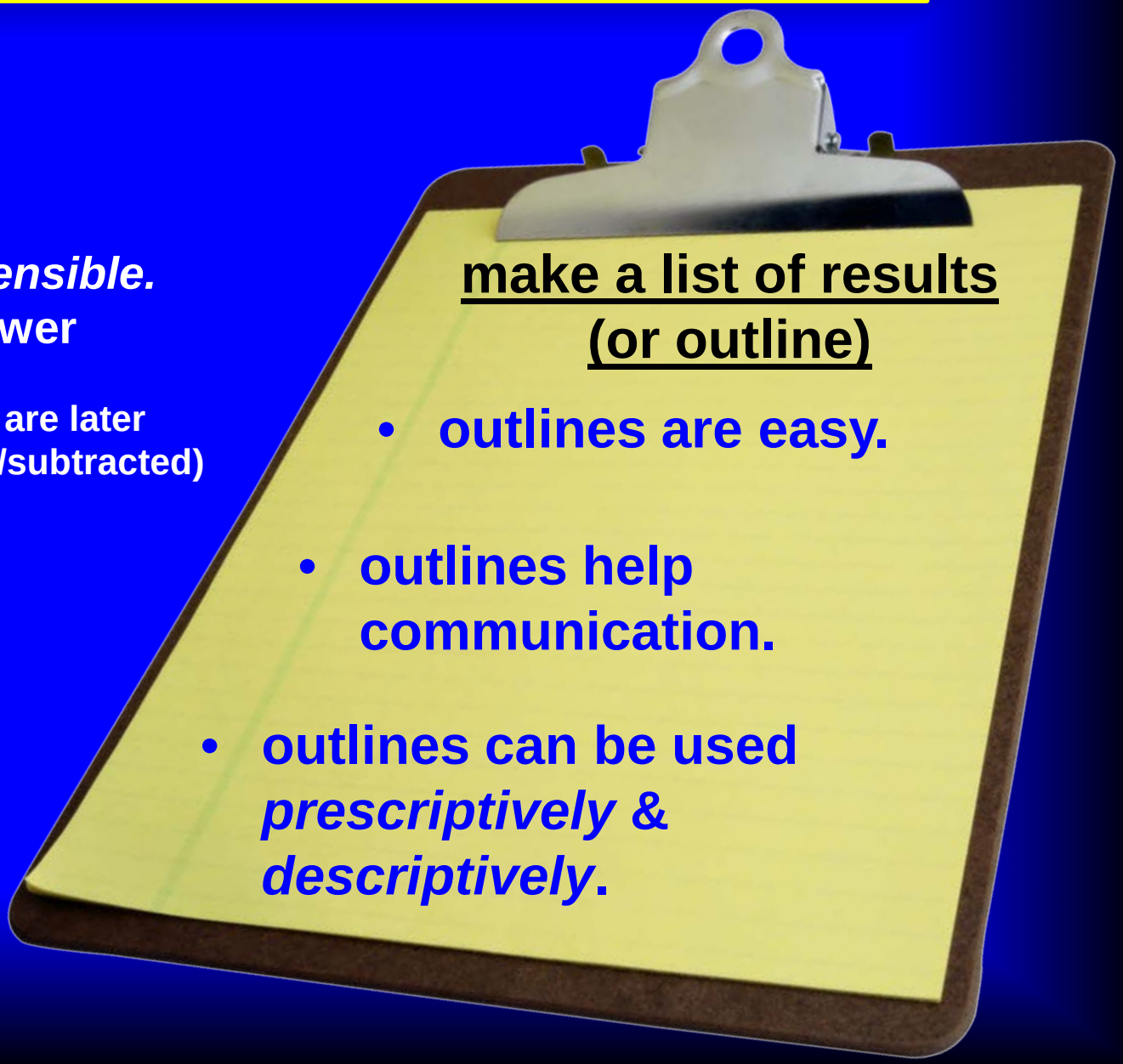
I enjoy drawing conclusions



Ways to get started (or to progress further)

Plans are useless.
Planning is indispensible.
D. Eisenhower

(it is ok if figures are later moved/added/subtracted)



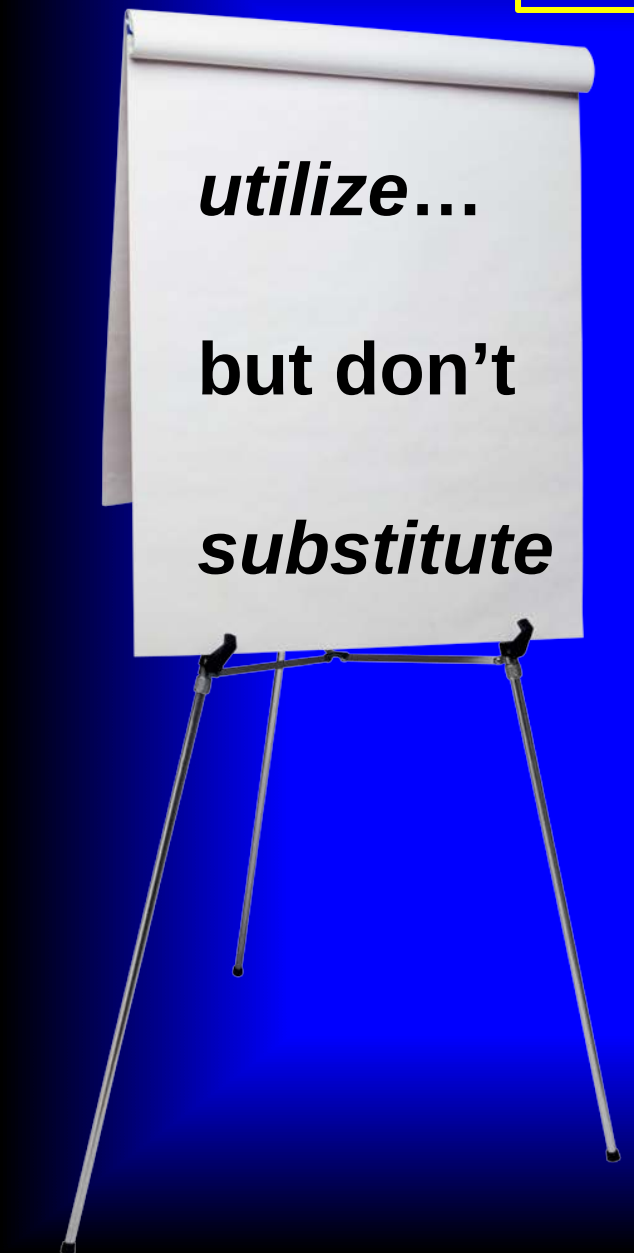
make a list of results (or outline)

- **outlines are easy.**
- **outlines help communication.**
- **outlines can be used *prescriptively* & *descriptively*.**

Ways to get started (or to progress further)

- Make an appointment to walk through preliminary figures with someone (tell a story)

Oral Communication



Prepare for the meeting:

- Try some writing first
- Present both the rationale and conclusion for each figure
- Present a central question with its centralized response

Parts of a manuscript

Introduction

- defines the central question & its importance
- does not have to be too long
- does not have to be written first

Materials and Methods

- clear enough for reader to repeat the experiments
- reviewer critiques on M&M are usually minor points

Parts of a manuscript

Results

1. Rationale
2. Experiment design
3. Observation
4. This observation indicates…
5. [the observation suggests…]

per ¶
x N results

- The first figure/paragraph addresses a simple question unanswered in the literature
- Each figure/paragraph should address a question raised by the previous result
- Brief conclusion that alludes to its importance

Parts of a manuscript

Discussion

1. Summarize the findings

2. Elaborate interpretations on each finding
   - Each observation has at least 2 possible explanations
   - Address all possible counterarguments
   - Why are your arguments are stronger than the counterarguments?
   - Discuss how the findings intersect with each other & with what's in the literature

3. Draw a final conclusion, closing the circle explaining how you filled the original gap & its importance

Parts of a manuscript

Discussion

- Re-emphasize the story's *centrality* throughout
  - It should be conclusive despite opening new doors
  - Provide a centralized response to your central question

- If all of the experiments are finished, do NOT let the Discussion hold-up manuscript submission. Get help. Get it out.

  Descriptive outlining can be very helpful here.
  Use temporary subheadings.

consulting etiquette

Author:

- send a brief message beforehand
  - describe the document (content, length)
  - target date (*not* tomorrow)
  - how valuable their help will be
  - ask when a good time to send it will be

- and also
  - offer to reciprocate
  - cast a wide net & don't wait too long for one person

consulting etiquette

In-house reader:

- Look at your task-list before agreeing
- Let the requester know if you cannot get to it right away
- Set-aside an available time
- If you have let it slide, ask for an up-dated version
- Read as a reviewer…focus on arguments

Submission & peer-review

- many reviews consist of:

    1. brief summary (recommendation)
    2. major points (reason for recommendation)
    3. minor points (unlikely change conclusions)

- many reactions consist of the same stages as dealing with tragic loss:

    1. denial
    2. anger
    3. bargaining
    4. acceptance

- rationally choose which points to refute and which to utilize

Reflection questions:

- What is the date?
- What is your next paper about, and what is its status?
- What is the projected timeline for your next 1-2 papers?
- What kinds of things hold-up progress?
- What do you do to be pro-active while one aspect is being held-up?
- Who are you writing for?
- What do you expect the reader to do with the new information?

- **What is the date?**
- **What is “plan B” for a paper missing data?**
- **How does one determine when plan B should be implemented?**
- **Have you discussed the proposed figures with someone?**
- **What will you have more time to do once the paper is submitted?**

What makes scientific writing difficult?

1. being unsure of approach/direction

   Experiment & start early

2. making & keeping it a priority

   Keep looking at the calendar; set deadlines;
   Find a reason to finish

3. incorporating it into lab life

   Find ways to write short documents and build as you go; set-up a peer-review network