

Why bother about communicating?

- Communicating your work is THE most important task in your career
- This is not about being funny and/or artistic, and definitely not about making me happy 😊
 - Correlation #1: The higher your GRE, MCAT, GMAT the better you will do
 - **maybe not in psychology but you are engineers**
 - Correlation #2: The better your writing and/or your presentation is the stronger your technical content will be
 - **the most critical part of an interview is the seminar**
 - Enough experiential evidence exists to make BOTH these statements true
- It is not just about having an idea. It is about convincing your peers and your community that your idea matters. You do this through your publications, reports and presentations.
 - **In science the credit goes to the man who convinces the world, not to the man to whom the idea first occurs** - Sir Francis Darwin
- By the way ... it's not just me ...

Scientific writing DIY



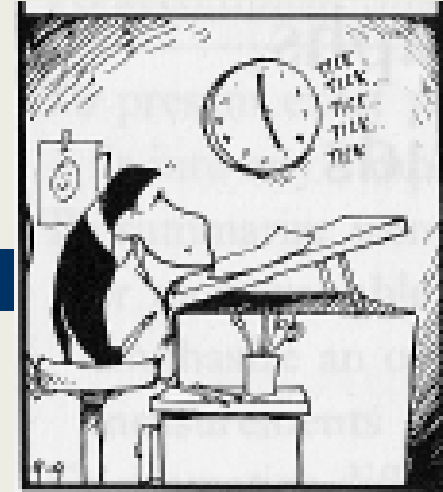
BIO 300 Autumn 2003
Vigdis Vandvik

*The man of science
appears to be the only
person who has something
to say just now, and the
only man who does not
know how to say it.*

–Sir James Barrie



Write your thesis as a scientific paper



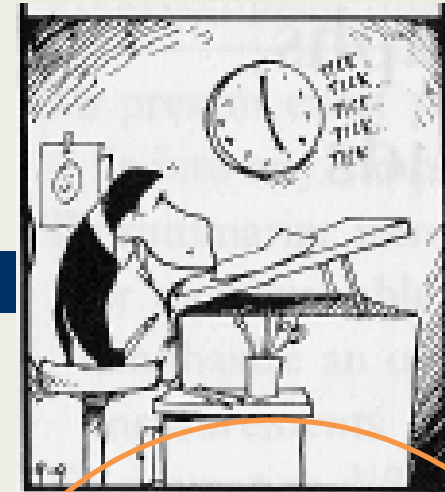
IMRAD

*Without publication,
science is dead.*

—Gerard Piel

Write your thesis as a scientific paper

Introduction
Methods
Results
...And....
Discussion



For what science tries to eliminate, art seeks to provoke – mystery, which is lethal to the one, and vital to the other.

–John Fowles

Technical writing is not MYSTERY

I for Introduction

What is your question?

- ✓ **The review**

What do we know already?

- ✓ **The claim**

What knowledge is lacking?

- ✓ **The agenda**

How do you intend to bridge this gap in knowledge?



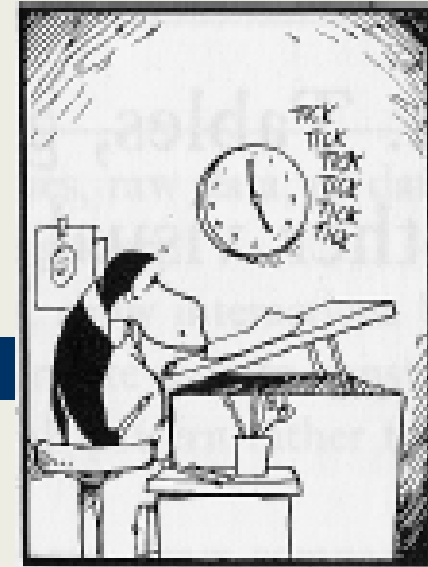
A bad beginning makes a bad ending.

– Euphrodites

M for Methods

How did you address your question?

- ✓ Provide all the information needed for someone else to repeat everything you have done.



There is a certain method in the madness.

–Horace

R for Results

What was the answer?

- ✓ Give the facts
- ✓ Summarise, explain, and visualise these results for your reader



*The great tragedy
of Science –
the slaying of a
beautiful hypothesis
by an ugly fact.*

–T. H. Huxley

D for Discussion

What does your work mean?

- ✓ Are your results reliable?
- ✓ How do they relate to what others have done or found before?
- ✓ Does your work extend our knowledge ?
- ✓ Does your work provide new hypotheses, new directions, for future studies?



[Science is] to challenge the validity and interpretation of evidence; hence the name research.

–Wayne G. Watson

But how does it happen in real life?

slow...

difficult.....

iterative.....

fun...

frustrating....

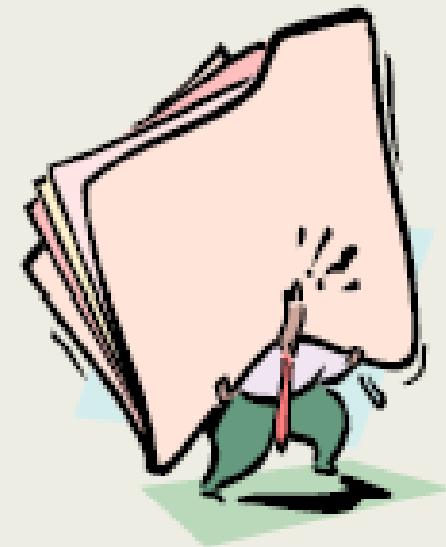
boring...

fascinating....



Start before you start.....

- ✓ Make folders for the different parts of your thesis (IMRAD)
- ✓ Fill them up with notes of
 - ✓ What you have done
 - ✓ Why you did it
 - ✓ (References to) relevant literature
 - ✓ All your ideas
- ✓ Start this soon... today!



A B S T R A C T

The abstract is of utmost importance for it is read by 10 to 500 times more people than hear or read the entire article. It should not be a mere recital of the subjects covered, replete with such expressions as "is discussed" and "is described." It should be a condensation and concentration of the essential qualities of the paper.

SCRUTINY OF THE ABSTRACT

Bootleg copy from GEOPHYSICS, Vol. 17, No. 3 (July 1952), 645. Previously in AAPG Bull., Vol. 35, No. 7 (July 1951), 1660. Html by JFC.

<http://sepwww.stanford.edu/sep/prof/>

Introduction

Why should I waste my time?

Abstract:

The introduction to a technical paper should be an invitation to readers to invest their time reading it. Typically this invitation has three parts (1) the review, (2) the claim, and (3) the agenda. In the *claim* the author should say why the paper's *agenda* is a worthwhile extension of its historical *review*. Personal pronouns should be used in the claim and anywhere else the author expresses judgement, opinion, or choice.

Introduction: **Review**, Claim, Agenda

The review

Pick out about 3-10 papers providing a background to your research and say something about each of them. You could paraphrase a sentence or two from each abstract. The review is not intended to be a historical review going back to Newton or Descartes. Try to find a few papers by your office mates, your advisor, your predecessors, or other associates. That way you might find somebody to give you helpful criticism!

Anyone can follow these instructions and write a review that *looks* presentable. Where intelligence and skill are required is in organizing the review so that it leads up to something, namely, to your *claim*.

There needs to be a point to all your work!

Introduction: Review, Claim, Agenda

The claim

The most important part of the introduction is buried in the middle. It is the *claim*. The claim is where you claim your work is a worthwhile extension of the review you just wrote. If someone says your writing is "unmotivated," they are not insulting your humanity; it just means they can't find your claim.

In your claim you should use the personal pronoun "I" (or "we" if you aren't the sole author). The word "I" tells people where common knowledge runs out and your ideas begin. ~~If you are writing a doctoral dissertation or an article for a refereed journal, then you should be making a new contribution to existing knowledge. Your paper is *not acceptable* without an identifiable claim.~~

You do not do things just for the heck of it!

Introduction: Review, Claim, Agenda

The agenda

An agenda is found at the end of many introductions. It summarizes what you will show the reader as your paper progresses. Your agenda will be dull if it is merely a recital of the topics you will cover. Your agenda should tell how your paper works to fulfill your claim. In this way your agenda should clarify your claim.

The agenda is not as important as the review and the claim. Keep it short.

The first chapter to start: the Methods

How did you address your question?

- ✓ Provide all the information needed for someone else to repeat everything you have done.



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certain method in
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–Horace

List all the information :

I went into the field

- ✓ Where?
- ✓ Why there?

I collected samples

- ✓ How were they selected?
- ✓ How many?
- ✓ What data did I record?

I processed the data

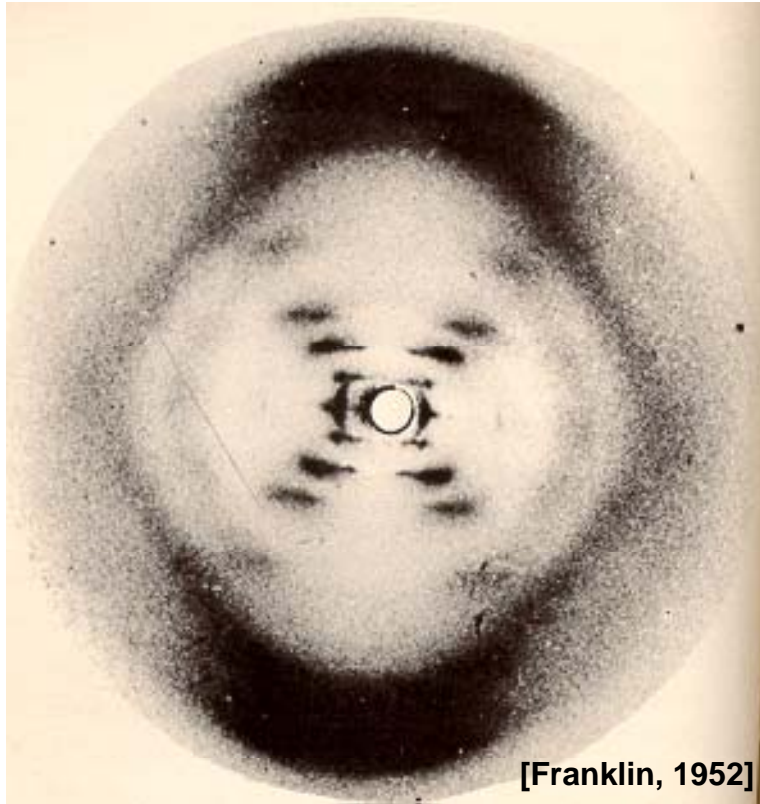
- ✓ What statistical methods



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Failing to cite the contribution of others can be a fatal flaw in your career

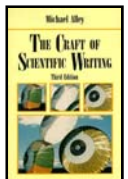


James Watson surreptitiously looked at Rosalind Franklin's work



Watson did not give enough credit to Franklin

If you leave something out and I notice, how do I know that the rest is yours?



Methods (Walter A. Zin, MD, DSc)

- Enough information for an experienced investigator to repeat your work
- Avoid tiresome detail
- Cut-and-paste from previous work of the author(s), not somebody else's

Note

The mathematical models described here have been submitted to the Online Cellular Systems Modelling Database and can be accessed free of charge at <http://jij.biochem.sun.ac.za/database/hynne/index.html>, <http://jij.biochem.sun.ac.za/database/dano1/index.html>, <http://jij.biochem.sun.ac.za/database/dano2/index.html> and <http://jij.biochem.sun.ac.za/database/dano3/index.html>

The second chapter: the Results

What was the answer?

- ✓ Give the facts
- ✓ Summarise, explain, and visualise these results for your reader



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...and most importantly: keep going!
You will get there in the end.....

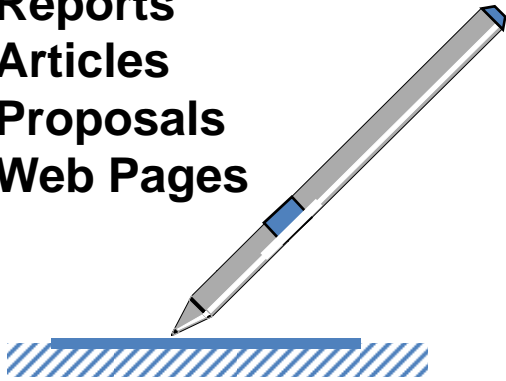
BLOOM COUNTY

by Berke Breathed

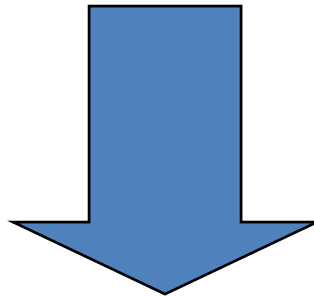


KNOW YOUR AUDIENCE!!!

Reports
Articles
Proposals
Web Pages



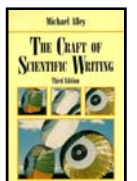
Conferences
Lectures
Meetings
Posters



specific
technical
audiences

general
technical
audiences

non-technical
audiences



Remember

- **A good article has a definite structure, makes its point, and does not waste space and time**
- **There are NO RULES. You just have to practice, read and observe**
- **If your presentation does not convey the message then your audience or reviewer needs to be willing to try and find something interesting**
 - **Same with low GRE, GMAT, MCAT ... We start looking for excuses to eliminate low scores and support high scores!**
 - **Same comments in a letter can be used both ways ...**