Scientific Communication

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One language to rule us all
One language to rule us all

English
One language to rule us all

English

How many native speakers here?
Recommendation

Improve your English ASAP:

- the spoken word (ear, mouth);
- the written word (eyes, pen / keyboard).
Homework (1/2)

• View your DVDs in English with subtitles in English.

• See some TV series in full (Firefly, ...), and then see the best episodes again without the subtitles.

• Read some audio books (Percy Jackson, ...).
Homework (1/2)

• View your DVDs in English with subtitles in English.

• See some TV series in full (Firefly, ...), and then see the best episodes again without the subtitles. (Yes, that means: all of them for Firefly.)

• Read some audio books (Percy Jackson, ...).
Homework (2/2)

Read books about technical writing:

- The Elements of Style (Strunk and White)
- A Handbook for Scholars (Van Leunen)
- Towards Clarity and Grace (Williams)
- How to Write Mathematics (Steenrod)
- Lessons from a Lifetime of Writing (Morrell)
Homework (3/2)

Heck, also read books about writing from your favorite author:

- **On Cooper’s Writing** (Twain)
- **Writing Magic** (Levine)
- **How to Write Science Fiction & Fantasy** (Card)
- **The Craft of Writing** (King)
- **Why I Write** (Orwell)
Your overall goal

To move on with a PhD degree.
Your intermediate goal

To acquire your PhD degree.
Your likely milieu: a PhD school

The scientific analogue of

• a plant nursery, and

• a training ground for the Olympic Games.
On the one hand

Generically:

• Clear rules
  (number of ECTS points, etc.).

• Clear milestones
  (qual exam, stay abroad, etc.).
On the other hand

Specifically:

• Original work
  (including peer-reviewed publications).

• Specialized supervision
  (therein lies the rub).
Your PhD supervisor and you

- He is *shaping you* (positively or negatively).
- He will *manage your discontinuity from student to researcher*.
- He will *follow your career*.
Example: managing the discontinuity

A natural transition point: a stay abroad.

Before the stay abroad: a student.

After the stay abroad: a researcher.
Example: following you

- Reference letters.
- Career opportunities.
Example: following you

- Reference letters.
- Career opportunities.

And one day, you will outgrow him.
In Denmark

- The person in charge of a PhD student has to be a **permanent** employee.
- There can be two PhD supervisors.
In France

- PhD: habilitation to do research;
- and then: habilitation to direct research
In France

- PhD: habilitation to do research;
- and then: habilitation to direct research (though not necessarily like a GPS).
Terminology

- PhD supervisor (or advisor)
- PhD vejleder
- Doktorvater
- Directeur de thèse
Varieties galore

• A variety of topics.

• A variety of students.

• A variety of supervisors.

To say nothing of gender.
The variety of topics (1/2)

• foundational
• theoretical
• applied
• experimental
• developmental
• etc.
The variety of topics (2/2)

- Pre-determined or open-ended?
- If pre-determined:
  the 80%/20% Google model?
The variety of students

- young / older
- local / national / international
- isolated / among others
The variety of supervisors

- inexperienced / experienced
- local / national / international
- only expert / in a group of experts
A common point

One day,
maybe not so long ago,
your PhD supervisor
was a PhD student.
A common point

One day,
maybe not so long ago,
your PhD supervisor
was a PhD student.

(“not so long ago” is a very subjective measure)
Communication

- How you may see your PhD supervisor.
- How he may see you.
Communication

- How you may see your PhD supervisor.
- How he may see you.

(Yes, it sounds like whining.
But it is sincerely felt.)
View from the student (yin)

- Why does he not listen to me?
- Why does he not support me?
- Why does he not help me?
View from the student (yang)

- Can’t he just tell me what to do?
- What I do is never good enough.
- He expects too much of me.
- I would like to do more.
More of the same

phdcomics.com
View from the supervisor (yin)

- He never does what I want.
- What he does is nowhere near perfect, ever.
- He never takes an initiative.
- He is so slow and he stops too soon.
View from the supervisor (yang)

- I managed OK without supervision, why can’t he?
View from the supervisor (yang)

- I managed OK without supervision, why can’t he?

(sigh)
Heard at a seminar for supervisors

“He only comes to see me at 16h00 when I have to leave to get my kid at the day care.”
Heard at a seminar for supervisors

“He only comes to see me at 16h00 when I have to leave to get my kid at the day care.”

But a PhD student should not be supernumerary in the PhD supervisor’s calendar.
The essence of the problem

- Egos get in the way ("me, me, me").
The essence of the problem

- Egos get in the way ("me, me, me").
- Ask not what the other can do for you.
The essence of the problem

- Egos get in the way ("me, me, me").
- Ask not what the other can do for you.
- Ask not what you can do for the other either.
Antoine de Saint-Exupéry in ‘Citadel’

Look in the same direction.
Learn to know each other

Criteria:

• respect;

• esteem.
Learn to know each other

Criteria:

- respect;
- esteem.

Empathy helps too.
Empathy

Example:

The sight of a PhD supervisor attending a talk given by his PhD student.
Empathy

Example:

The sight of a PhD supervisor attending a talk given by his PhD student.

• From reading his e-mail
Empathy

Example:

The sight of a PhD supervisor attending a talk given by his PhD student.

- From reading his e-mail
- to taking notes.
Understand why he is weird

Your PhD supervisor is subjected to:
Understand why he is weird

Your PhD supervisor is subjected to:

• management duties,
Understand why he is weird

Your PhD supervisor is subjected to:

- management duties,
- funding pressure,
Understand why he is weird

Your PhD supervisor is subjected to:

- management duties,
- funding pressure, and
- peer reviewing.
Establish an intellectual communion

- Share the same culture
  (be it technical or non-technical).
Establish an intellectual communion

• Share the same culture
  (be it technical or non-technical).

• Read what he wrote.
Establish an intellectual communion

- Share the same culture
  (be it technical or non-technical).

- Read what he wrote.

- Join his endeavors.
Establish an intellectual communion

• Share the same culture
  (be it technical or non-technical).

• **Read what he wrote.**

• Join his endeavors.

(Communion helps communication.)
Empathy test

- Can he be happy for you?
- Can you be happy for him?
So, you and your PhD supervisor

- Learn to know each other.
- Learn to cooperate.
- Remember that in the end, the message is more important than the messenger(s).
PhD studies: a transmogrification

From studying known things...
PhD studies: a transmogrification

From studying known things...

...to researching new things.
Fact: You will change

Your first research paper will mobilize all your intellectual resources.

It will be exhausting.

Yet by the end of your PhD studies you will have all your papers in mind.
Fact: You will change

Your first research paper will mobilize all your intellectual resources. It will be exhausting.

Yet by the end of your PhD studies you will have all your papers in mind, plus your entire domain of research.
Fact: You will change

Your first research paper will mobilize all your intellectual resources. It will be exhausting.

Yet by the end of your PhD studies you will have all your papers in mind, plus your entire domain of research. And you will make it.
Fact: You will change

Your first research paper will mobilize all your intellectual resources.
It will be exhausting.

Yet by the end of your PhD studies you will have all your papers in mind, plus your entire domain of research.
And you will make it.

PhD studies: a genuine mind expansion.
About this mind expansion

An expanded mind
is precisely what is expected
from someone with a PhD degree.
Things are different doing research

• A researcher is more on his/her own than a student.

• New results are not presented like known ones.
Things are different doing research

- A researcher is more on his/her own than a student.
- New results are not presented like known ones.

The issue is

- not to “show that you know” as in an exam;
- but to genuinely explain something new.
Handling questions at the end of a talk

- Most PhD students rush to answer, as if they were passing an exam.
- But you are not passing an exam.
Questions at an exam

- The questions are standard.
- The answers are standard too.
Questions at the end of a research talk

- The questions are open.
- The answers are open too.
The problem with questions

- They are rarely clear.

- Not everybody in the room hears them. (The bigger the room, the more so.)
The problem with questions

- They are rarely clear.
  
  So how can their answer be clear?

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  (The bigger the room, the more so.)
The problem with questions

- They are rarely clear.
  So how can their answer be clear?

- Not everybody in the room hears them.
  (The bigger the room, the more so.)
  So how can their answer be useful to all?
The real problem about questions

It is harder to ask a sensible question than to supply a sensible answer.

(Persian proverb)
Concrete example:
Tim Powers’s acknowledgments in “On Stranger Tides”

To [...] for clear answers to unclear questions.
How to handle a question

The goal is to communicate.
How to handle a question

The goal is to communicate.

- Show that you understand the question.
How to handle a question

The goal is to communicate.

• Show that you understand the question.

• Are you able to repeat the question?
How to handle a question

The goal is to communicate.

- Show that you understand the question.
- Are you able to repeat the question?
- You may even need to restate it.
How to handle a question

The goal is to communicate.

• Show that you understand the question.
• Are you able to repeat the question?
• You may even need to restate it.
• Only answer it once you both agree about it.
How to handle a question

The goal is to communicate.

• Show that you understand the question.
• Are you able to repeat the question?
• You may even need to restate it.
• Only answer it once you both agree about it.

Then you will be able to truly communicate.
Elementary reminder

A communication involves:

- a sender,
- a receiver (or several receivers), and
- the transmitted information.
Elementary reminder

A communication involves:

• a sender,
• a receiver (or several receivers), and
• the transmitted information.

Whether you are the sender or a receiver,

your goal is to maximize the throughput.
Transcripting questions

Questions are the salt of your research talk.
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Questions are the salt of your research talk.

So give them your complete attention.
Transcripting questions

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By force, you will forget the previous question to concentrate on the current one.
Transcripting questions

Questions are the salt of your research talk.

So give them your complete attention.

By force, you will forget the previous question to concentrate on the current one.

So have someone else transcript them (as well as your answers).

NB. Two transcripters are better than one.
Transcripted questions and answers

Identify who asks each question.

Afterward, revisit the transcripts, and don’t hesitate to get back to the person who asked a question.
Handling questions

The golden rule still applies:

**ALWAYS** repeat the question.

It gives you time to **identify its nature**.

- **Technical question**: give a technical answer.
- **Friendly question**: 
  use it to make your point even better.
- **Challenging question**: be upfront.
Example question #1

Q. Wouldn’t it have been simpler to use co-induction?

A, Version 1: The question is: “Wouldn’t it have been simpler to use co-induction?” That’s a very good point. No. I tried, and it is actually simpler to use induction.
A, Version 2: The question is: “Wouldn’t it have been simpler to use co-induction?” That’s a very good point. Perhaps. That’s worth looking into.
Example question #2

Q. Wasn’t this known already?

A. The question is:

“Wasn’t this known already?”

To the best of my knowledge, no, it was not known already.
Example question #3

Q. Isn’t your main theorem a corollary of Erdös’s theorem?

A. The question is: “Isn’t my main theorem a corollary of Erdös’s theorem?”
   Good question.
   Which theorem do you have in mind?
Example question #4


A. The question I believe is “Blah blah?” 
...(and then for an appropriate answer)...

Olivier Danvy, JFLA – 8 January 2014
Example question #4 (Tony Hey)


A. Could you crystallize what you said into a question?
Example question #5

Q. ...unparseable... ...unparseable...
    ...unparseable... ...unparseable...
    (unparsed)

A. I am sorry. Could you repeat your question?
Example question #6

Q. I don’t like your approach at all. (Blah blah blah.)

A. I am sorry. What was your question?
Example question #7

Q. I don’t believe you.
Example question #7

Q. I don’t believe you.

A. And you don’t need to!
Example question #7

Q. I don’t believe you.

A. And you don’t need to!
   It is formalized in Coq.
Example question #8

Q. More than a question,
   I want to make a comment. Blah blah blah.

A. Thank you very much.
Do

Make sure that all the terms of the question are defined.

When you speak, be careful with idioms when you are not a native speaker.
Don’t use slang, especially if you are not a native speaker. Slang terms mean something else than what you think it means. (cf. “Inconceivable!” in The Princess Bride)
Don’t use slang, especially if you are not a native speaker. Slang terms mean something else than what you think it means. (cf. “Inconceivable!” in The Princess Bride)

If the question is “What is X?”, don’t say: “X, it’s when ...”
It reveals muddled thinking.
Don’t

Don’t use slang,
especially if you are not a native speaker.
Slang terms mean something else
than what you think it means.
(cf. “Inconceivable!” in The Princess Bride)

If the question is “What is X?”,
don’t say: “X, it’s when ...”
It reveals muddled thinking.

At an oral exam, don’t say
“I knew you would ask this question.”
And if there are no questions?

- Say “thank you” again, and pack up.
And if there are no questions?

- Say “thank you” again, and pack up.
- If you have a computer demo, now is a good time to remind the audience.
And if there are no questions?

• Say “thank you” again, and pack up.

• If you have a computer demo, now is a good time to remind the audience.

• (seen at TLCA’01)

  “Good! Then let me show you a couple more slides.”
Refereeing a paper

What: the cornerstone of quality control.

How: peer review.

Reference: Parberry’s guide for new referees.
The actors in presence

- The author(s).
- The editor / program chairman.
- The reviewers.
The point of refereeing a paper

Quality control by peer review.
The timeline for conferences

- A paper is submitted.
- It is allocated to PC members and often subcontracted to external reviewers.
- Reviews are collected.
- A decision is taken at the PC meeting.
- Reviews are sent to the author(s).
The timeline for journals

- A paper is submitted.
- It is allocated to external reviewers.
- Reviews are collected.
- An editorial decision is taken: accept / reject / revise.
- Reviews are sent to the author(s).
Conferences: one-way communication

- Would the paper help making the conference a success?
- If not accepted, try another conference.
Journal: two-way communication

• Is the paper in archival form?

• If not, revise it and try again.
The point of view of the author

The idea is to try to give all the information to help others to judge your contribution; not just the information that leads to judging it in one particular direction or another.

– Richard Feynman
The point of view of the reviewer

One never notices what has been done;
one can only see what remains to be done.

– Marie Curie
Writing a review

Canonical reference: Parberry.

- Is it correct, worthwhile, readable, etc.?

- Which kind of paper is this: groundbreaking, improving, fixing, surveying, etc.?
The curse of novelty (flip side)

It’s got to be new!
It’s got to be relevant!
The curse of novelty (flop side)

...but it’s not new!
The curse of relevance

“In the Late Cretaceous”

Connie Willis, 1992

A must-read.
Some elements for a review

1. Convey your understanding of the paper with a summary.

2. Double up with an analysis.

3. Sum up with an assessment and a recommendation.

4. Add a list of remarks, if any.
Context of the review

- Be objective.
- Be fair.
- Don’t delay.
- Be courteous.
- Remain confidential.
To summarize

- Reviews should be as **comprehensive** as possible.
- Reviews should be as **courteous** as possible.
- Reviews should be as **selfless** as possible.
The job of a program chairman

Assemble the best possible program
(at the cost of rejecting good papers).
The job of a journal editor

Make the journal as good as possible.
The job of an author

To cooperate with the reviewing process.
The job of a reviewer

To provide impulse in the reviewing process.
Choosing reviewers

- Competence.
- Availability.
- Depth / breadth.
You, reviewer

- One among several others.
- Your anonymity.
Extracting reviews from reviewers

- It may take persistence.
- The more competent, the more busy.
Synthesizing the reviews

- Accept / revise / reject.
- Editors sometimes moderate the reviewers by coming back at them.
- Get back to the author(s).
Receiving a review

- Rod Burstall’s take: a review is an offering.
- The Dilbert syndrome.
Receiving reviews

From my close observation of writers, they fall into two groups:

1. those who bleed copiously and *visibly* at any bad review, and

2. those who bleed copiously and *secretly* at any bad review.

– Isaac Asimov
Facts

Nobody likes a bad review.

Most reviews are critical.
Take a holistic approach

• Distinguish between your work and your ego.

• Identify the cause of the criticisms and fix it.

• Rearrange the rest of the paper to fit.

• Persist: “If you don’t fight for your ideas, nobody will.” – John Reynolds
Take a holistic approach

• Distinguish between your work and your ego.

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• Persist: “If you don’t fight for your ideas, nobody will.” – John Reynolds
  (Corollary: “and will take credit for it.”)
Together with the revision

- Comment the reviews pointwise: the reviewers will appreciate to see each of their points addressed upfront.

- Thank the reviewers for their time: they are actually your best allies.

- Finally, consider using \texttt{latexdiff}: it is surprisingly useful.
Sending the revision

- Expect an acknowledgment.
- Be prepared to be moderated.
- Think of pinging the editor after 3 months.
Choose your editor wisely

• Rare are papers that don’t need any help.
• An indifferent editor is rarely of help.
Reviews and the paranormal

Feynman’s advice about the paranormal: keep track of presentiments, for you only remember them selectively.

Here: keep track of both good and bad reviews, for you also only remember them selectively.
Good reviewing experiments

- The submission is speedily reviewed.
- It is accepted (with minor changes).
Good reviewing experiments

- The submission is speedily reviewed.
- It needs to be revised, but with very useful reviews.
- It is accepted.
Not so good experiments

- The submission needs a lot of pinging.
- The reviews are lousy.
- You give up.
Not so good experiments

• The submission needs a lot of pinging.

• The reviews are lousy.

• You persist.

• The revision needs a lot of pinging.

• etc.
Yet reviews can be useful

Some reviewers are amazingly good,
and they lead you to a better paper.
Why you should review

You expect reviews on your own work, don’t you?
All in all

- Peer reviews: The means of quality control.
- We should all contribute to this quality control.
- We all try to survive them, even though they do make us a little weird.
Exercise

Find a good review and a bad review on amazon.com