How to write a proposal

Andreas Fichtner (ETH Zürich)



Picture: Tightrope walker Nik Wallenda crossing the Niagara Falls on June 15, 2012.

foresight

planning

passion

discipline

balance

craziness

knowledge

Many thanks to my students

Iris van Zelst, Saule Simute, Laura Ermert, Patrick Paitz, and Mike Afanasiev

for useful ideas on the content of this presentation, to

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for sharing their expertise on proposal writing, and for providing information on funding opportunities, and of course

Heiner Igel

for sharing the QUEST presentation on proposal writing.

Preliminary Remarks

Target audience

✓ Mostly students and postdocs (trying to get funding for independent research).

Style of the presentation

- ✓ A bit different to what you usually see from me. (Hopefully sticks to your memory.)
- ✓ Hopefully interactive. (Your comments will be added. Final presentation will be made available.)

Why bother?

- \checkmark Your funding \rightarrow Independence + recognition for being a professional visionary.
- ✓ You will always have to make proposals (in both academia and industry).

Disclaimer

- ✓ All of the recommendations are totally subjective. Not the ultimate truth.
- ✓ Make sure your proposal reflects your personality.

Outline

- 1) Great ideas
- 2) Getting organised
- 3) Elements of a proposal
- 4) A little style guide
- 5) The interview

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6) Appendix

- i. Funding sources European, national, institutional
- ii. Questions to answer before you start writing
- iii. Information about the host institution
- iv. Impact and spin-off
- v. Style guide continued
- vi. Miscellanea

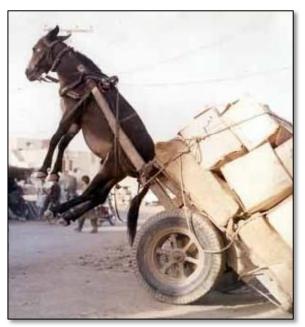
1. Great Ideas

Think tank.

Where are great ideas born?

- ✓ Usually not in the office (shower, while running, in the train, during brainstorm with colleagues, ...).
- ✓ Plan your work to allow for creative time.
- Create the right atmosphere for thinking.
- ✓ Keep record of your great ideas (Collect them systematically. Always have something to write with you).

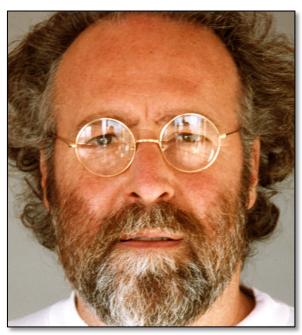
What motivates great ideas?



Imperfect means of transport.

- ✓ Imperfection of current solutions.
- \checkmark
- \checkmark .
- **✓**
- **√**
- ✓
- ✓ .

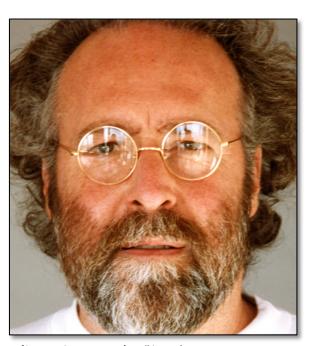
Characteristics of great ideas



Albert Tarantola: "Don't waste your life on small problems!"

Characteristics of great ideas

- Challening! (Don't propose something that just needs to be done, and could be done by anybody.)
- ✓ Combine new theory and new observations.
- ✓ Of more general interest. (No need to please everyone, but don't choose a problem that only you understand.)
- ✓ Potential to build a career on this idea! (This becomes even more relevant when you write proposals to support PhD students.)



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2. Getting organised

When do you start writing a proposal?

Time before deadline:



Reading literature & other proposals (to fully understand your field)
Collect ideas & big challenges (little proto-proposals)

Time before deadline:



≈3 years (beginning of PhD)

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6 months:

First rough draft (readable but not polished)
Give 2 really good colleagues to read (tell you politely that it's crap. ;-))

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5-3 months:

Dedicated time to write (complete proposal)

Additional background reading; figure out technical details.

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1 week:

Submit proposal (Never submit anything on the day of the deadline!).

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!!! Plan time for the "little" things: good-looking cv, publication list, career plan, ...

Problems sticking to a schedule?

Always ready in the last second?

Always stressed?

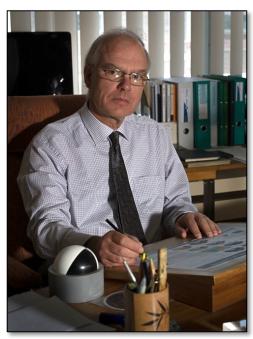
No time to be really perfectionist?

As PhD student or postdoc you have more time than you will ever have again in your life!



Brian Kennett: "I did 5 minutes of science today!"

Academics and organisation



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Academics and organisation

- Academic freedom is no wildcard to disorganisation!
- ✓ Get organised! (You need to develop the strategies that work for you. No universal recipe.)
- ✓ Otherwise, your proposal will never be perfect (and neither will be the rest of your work).
- Being organised does not mean to be uncreative.
- ✓ Plan time for: research, creativity, reading, ..., the different steps of proposal writing.

3. Elements of a Proposal

Abstract

- ✓ What?
- ✓ Why?
- ✓ Why now?
- ✓ Why you?
- ✓ Impact?

In 15 s!

- 1) Short paragraph about the overall topic. (What is it, and why should we care?)
- 2) State of the art. (Do not miss important references of potential reviewers.)
- 3) Problem statement. (Why is the state of the art not good enough?)

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thesis statement



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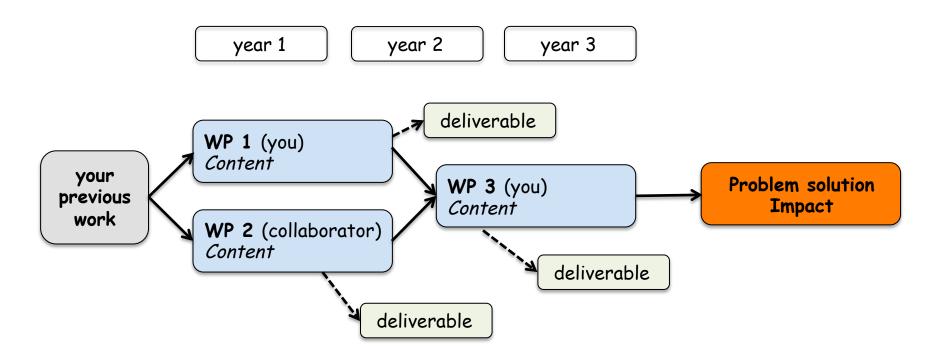
- ✓ Do not write about everything you know.
- ✓ Introduction exists for the thesis statement.

Science & Work packages

- Scientific and technological quality (incl. inter- and multidisciplinary aspects).
- ✓ Research methodology (in relation to previous own work).
- ✓ Originality and innovative nature (relation to state of the art in the field).
- ✓ Timeliness and relevance. (Why should we care now?)
- ✓ Host scientific expertise in the field. (Why is the host the right one?)

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- ✓ Host scientific expertise in the field. (Why is the host the right one?)
- ✓ Credible plan (work packages, timeline, deliverables, ...). Be visual and creative!



The Principal Investigator (PI, you)

Convince the reader that

- 1) you are are the person for this project,
- 2) you can responsibly manage the resources.

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Mention the following

- ✓ Research experience and results (publications, patents, teaching, ...).
- ✓ Independent thinking and leadership qualities.
- ✓ Match between your profile and the project.
- ✓ Your potential of reaching a position of professional maturity.

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General recommendations

- ✓ Write in first person ("I") not third person ("we").
- ✓ Clearly state your expertise, but do not oversell yourself.

Surprise the reviewer with something that is not requested but sticks in memory

- A special industry partner.
- A nobel prize winner as collaborator.
- ✓ An unusual format for outreach and dissemination.
- ✓ Ingeneous management idea.
- Links to international initiatives or observational infrastructures.

Be creative!



4. A little style guide

Style guide 1 (length of sentences)

How long can a sentence be?

- ✓ Average sentence length is 14 words: readers understand >90 %.
- ✓ Average sentence length is 43 words: readers understand <10 %.</p>
- √ 25 words should be the limit. (Still 10 times more than Donald Trump!)

Style guide 2 (emphasis)

- People tend to scan not read.
- This tendency increases with increasing literacy of the reader.
- ✓ Keep in mind: Your proposal may be 1 of 20 that the reviewer has to read.



After reading 20 proposals on an ERC panel.

Style guide 2 (emphasis)

- ✓ People tend to scan not read.
- ✓ This tendency increases with increasing literacy of the reader.
- ✓ Keep in mind: Your proposal may be 1 of 20 that the reviewer has to read.
- ✓ Repeat! Repeat! the key messages.
- ✓ Carefully emphasise the most important content.
 - Turn requested information into sections with headlines.
 - Use boxes and bold font.
 - Be visual.
 - Don't overdo it. With style and elegance!

Style guide 3 (linearity)

- ✓ Formulate clear and coherent lines of arguments (same skill needed for papers).
- ✓ Delete all adjectives that are not absolutely needed (especially the superlatives).
- ✓ Write linearly, one topic after the other (otherwise text is hard to understand).

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Style guide 3 (linearity)

- Writing linearly sounds simple but is often the biggest problem!
- ✓ Hint for improving linearity:
- 1. Classify each sentence as belonging to a specific topic. (Maybe use color.)

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2. Question: Is that sentence really really absolutely needed to make your point?

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3. No: Delete. Yes: Reorder. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril delenit augue duis dolore te feugait nulla facilisi.

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The morning before

5. The Interview

Preparing for the interview

- ✓ Re-read your proposal. (You may not have looked at it for a few months.)
- ✓ Simple and illustrative presentation (simple slides with few key messages).
- ✓ Rehearse! Rehearse! (Ask colleagues, friends and grandma to help you.)
- Think of possible tricky questions and prepare answers.
- Be able to explain the key innovation in one sentence.
- ✓ Keep cool! (The best medicine against being nervous is deep knowledge of your field.)



Your body speaks!



Your body speaks!

- ✓ Stand upright.
- ✓ Hands out of the pocket (Sorry if I sound like your mother!).
- Look committee members into the eyes.
- Speak with clear and sufficiently loud voice.
- Also spoken language has punctuation.
- ✓ Nervous?: Take a breath after each question and sort your thoughts. (Don't start with yoga!)

Appendix I

Funding schemes - European, national, institutional

Funding sources - European

- ✓ ERC Starting Grants (https://erc.europa.eu/funding/starting-grants)
- ✓ Marie Curie Individual Fellowships (http://ec.europa.eu/research/mariecurieactions/about/individual-fellowships_en)

Funding sources - National

Ireland

- ✓ Science Foundation of Ireland (http://www.sfi.ie/funding/funding-calls/programmes-for-early-and-mid-career-researchers.html)
- ✓ Irish Research Council (http://www.research.ie/funding-opportunities)

France

✓ ANR Jeune Chercheur (http://www.agence-nationale-recherche.fr/financer-votre-projet/plan-action-2017/)

Funding sources - National

UK

- ✓ Leverhulme Early Career Fellowships (https://www.leverhulme.ac.uk/funding/grant-schemes/)
- ✓ EPSRC Fellowships (https://www.epsrc.ac.uk/funding/)
- ✓ Royal Society (https://royalsociety.org/grants-schemes-awards/grants/university-research/)
- √ NERC Fellowships (http://www.nerc.ac.uk/funding/available/fellowships/)
- ✓ 1851 Fellowship (https://www.royalcommission1851.org/awards/)
- ✓ British Academy postdoctoral fellowships (http://www.britac.ac.uk/british-academy-postdoctoral-fellowships)

Switzerland

✓ SNF Ambizione (http://www.snf.ch/de/foerderung/karrieren/ambizione/)

Netherlands

- VENI (https://www.nwo.nl/en/funding/our-funding-instruments/nwo/innovational-research-incentives-scheme/veni/index.html)
- ✓ VIDI (https://www.nwo.nl/en/funding/our-funding-instruments/nwo/innovational-research-incentives-scheme/vidi/index.html)
- √ Rubicon (https://www.nwo.nl/en/funding/our-funding-instruments/nwo/rubicon/index.html)

USA

- ✓ SNF Integrated Earth Sciences (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504833)
- ✓ Fulbright Scholarship (http://www.fulbright.be/fulbright-awards/post-doctoral-research/)

Funding sources - Institutional

- Cambridge Fellowships offered by many colleges
- ✓ ETH ETH Fellowship
- ✓ ETH Branco Weiss Fellowship
- ✓ Harvard Reginald A. Daly Fellowship
- ✓ MIT W.O. Crosby Postdoctoral Fellowship
- Oxford Fellowships offered by many colleges
- ✓ Princeton Hess Fellowship
- ✓ Stanford Thompson Fellowship
- ✓ UC San Diego Green Fellowship
- ✓ UC Berkeley Miller Fellowship
- ✓ University of Michigan Turner Fellowship
- **√** ..

Already 28 opportunities on the last 3 pages!

Appendix II

Questions to answer before you start writing

Get some basic information

- ✓ Does your idea exactly fit the call?
- ✓ How much money is in the call? What is reasonable to request?
- ✓ Any information about the evaluators? (Experts or not? Affects writing style.)
- ✓ How multi-disciplinary is the call?
- ✓ What are the evaluation criteria?
- ✓ Is there a template for the proposal?

Appendix III

Information about the host institution

The following information on the host institution should be included in the proposal:

- Quality of infrastructure / facilities and international collaboration of host (outgoing and return host)
- ✓ Practical arrangements for the implementation and management of the project (outgoing and return host)
- Feasibility and credibility of the project, including work plan
- ✓ Practical and administrative arrangements and support for the hosting of the fellow (outgoing and return host)
- ✓ Do they want an overhead? If so, how can this be covered?

Appendix IV

Impact and spin-off

Explain the impact of your research and potential spin-off projects:

- ✓ Societal and economic impact
- ✓ Importance for the advancement of related or completely different disciplines.
- ✓ Potential of acquiring competencies during the fellowship to improve the prospects of reaching and/or reinforcing a position of professional maturity, exposure to complementary skills training
- ✓ Contribution to career development or re-establishment
- ✓ Potential for creating long term collaborations and mutually beneficial cooperation between host and a third party.
- ✓ Contribution to host's excellence and competitiveness

Appendix V

Style guide continued

- Follow exactly the template.
- Turn some of the recommended contents, questions into titles and subtitles.
- ✓ Cover all recommended items in each section even though there is tremendous duplication!
- ✓ Highlight key words or key phrases using bold face or italics.
- ✓ Make some simple graphics that illustrate the concepts.
- ✓ Details, details, details! (put them in tables, not necessarily the running text).
- \checkmark Write at an **appropriate** technical level! (Feed the outsider but also the expert.)

Appendix VI

Miscellanea

- ✓ Don't do "cut and paste" write the proposal yourself as much as possible.
- ✓ Provide links to ongoing or future projects/activities/infrastructures.
- ✓ Put yourself always in the mind of a very critical reviewer.
- ✓ Don't miss an important paper by a potential referee!
- ✓ Define credible deliverables.
- ✓ Be consistent (man-months, tasks, deliverables, etc).
- ✓ Watch out for IP issues when industry is involved ... mention it and provide a solution.
- ✓ Know your enemies, find out who else is proposing and what, be complementary (or join them).
- ✓ Be open about potential risks, offer mitigations.