How to reach Heaven: different career paths

Agata Ciabattoni

Becoming a Faculty Member

… remember Luca Aceto’s talk ☺

After the PhD ……

Becoming a Faculty Member

- You need
  - Excellence
  - Work hard
  - ….
  - ….

  &

  … Some luck

First steps towards a tenure (track) position

Postdoc positions:

- Project oriented position in existing funded projects.
  PI is usually a professor.
  You need to adhere to the project plan.

- Funding you have obtained by yourself.
  You will be hosted by some professor, but will mostly work on your own

Becoming a Faculty Member

Postdoc # 1

...

Postdoc # n

? ?

Becoming a Faculty Member

Postdoc # 1

...

Postdoc # n

Standard path

Becoming a Faculty Member

Postdoc # 1

...

Postdoc # n

Big project

Alternative path

Standard path

Becoming a Faculty Member

Postdoc # 1

...

Postdoc # n

Big project

success rate
~ 5-10%

E.g.

TU WIEN 180 candidates
4 Positions

Alternative path

Standard path

“Big” projects

- **ERC grants**

- National equivalents:
  -  START (FWF)
  -  Veni
  -  Emmi Noether fellowship

……

About myself …

11 years

- (EC) Marie Curie Individual Fellowship
- Habilitation Fellowship (Austrian Science Funds FWF)
- PI of a research project (FWF)
- PI of a research project (WWTF)
- START Prize

Faculty Position TU WIEN

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Faculty Position TU WIEN

… I keep on writing projects

… Advertisement

Current research projects (a selection)

- Non-classical logics: theory, applications and tools (2011-2019)
- TICAMORE – proof theory for modal and related logics (2017-2010)
- **Reasoning tools for deontic logic and applications to Indian Sacred texts** (2017-2021)

PhD position available

agata@logic.at

Am I crazy?

Writing project proposals

- is important
  - research can be done that could not be done otherwise
  - students/postdocs can be hired
  - computer, travel costs
  - …
- is useful

and … I like it

Reasons against proposals

- It is very time consuming!
  E.g. Individual Marie Curie Fellowship: **at least** 6 weeks (full time)
  Big Projects: **at least** 3 months (full time)

- The refereeing process is sometimes unfair
  "we experience unfairness from the Kindergarten on, and still continue to live and to pursue our goals. Why give up there?"

- As a newcomer I have no chance
  - Everybody was once a newcomer…
  - You could say it in the intro of your proposal…

Benefits of Funded Projects

… a lot of personal benefits (especially for young scientists)

- More research, more and better publications
- More financial autonomy
- More scientific independence
- More respect
- Better CV for future jobs
- Management experience
- Help you to assess your own research goals

Proposals: where to start

Project Idea: Needs some time for free flow of thoughts

Background Research:

Requires

- lots of Google scholar use
- much reading, and
- discussions with colleagues

Golden rule: Start writing the proposal (really) early!

Proposals: how to sell them

- A proposal is a (mind-) product that you need to sell
- It must be **very** good
- Selling needs marketing. In particular:
  Market Research
  Product Communication

Market Research

1. Identify the most appropriate funding body and call (Individual project, medium size project or big project)

2. Analyse and “optimise” the decision process
   - Who are the decision makers?
   - How can I help them to make a good decision?

Product Communication

- Many referees read mainly the abstract and the introduction
- They look carefully at the references in order to see whether related work they happen to know is cited
- Make the important messages unmissible
- Help the referee to accept your proposal by providing arguments s/he can use in the report
- Never underestimate the "non scientific sections"

  E.g. social relevance of your project (if asked)

  dissemination of results (if asked)

  outreach activities (if asked)

  …..

.. about non scientific sections

Example

Social relevance

- Hard or Easy to explain, according to the project’s topic

Personal experience:

- Logic for Medical Applications (450K) --- easy
- Logic for Indology (630K) --- needed some creativity

Individual Projects --- Examples

- (EC) Marie Curie Individual Fellowship (mobility)

- National projects:
  - Lisa Meitner (mobility to )
    www.fwf.ac.at
  - Irish Research Council (mobility or staying in Ireland)

.....

Golden rule

Proposals tailored to the evaluation procedure!

Example: MC Individual Fellowships

Reviewers do not have time or expertise to look at the proposal in details:

- Switch from a technical paper-writing style to a bold advertising style
- Give catchy and clearly marked objective
- Make the important messages unmissible
- Adress the evaluation criteria from the Guide for Applicants one by one
- The proposal is lost or won in the non-scientific part

E.g. Scoring 5/5 in Excellence, 4/5 in Impact, and 4/5 in Implementation gets you to 90% and drops you below the cut-off

Deadline September 14, 2017

Medium size projects

- Depend on the Country & Funding Organization
- Average: between 150K and 300K (e.g. 1y postdoc 🇱🇻 65k)
- Funds also for hiring people
- Very useful before trying a Big Project

Big projects

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- National projects (START, Veni, …)

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  www.wwtf.at

  - Thematic calls: “Mathematics *and* …” and “ICT”
  - Every 2-4 years
  - up to 1,6M, 8 years
  - Research in Vienna. Tenure (track) position!

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Two stages:
- Written Proposal
- Interview (of shortlisted applicants)

Big projects --- some prerequisites

at least 2 years after having obtained your PhD

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- Excellent idea
- A very appealing project application
- Outstanding CV
  - Papers in top journals and conferences in your area
  - Previous funding
  - PC memberships, invited talks …

… ask Alexandra Silva (ERC starting grant)

Big projects – the interview

Big projects – the interview

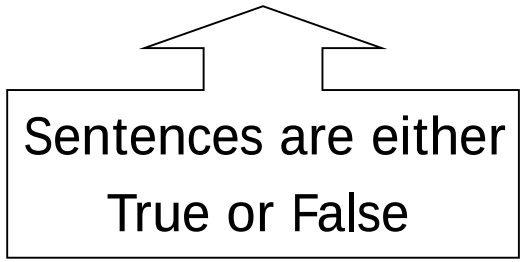
- 8-15 minutes to describe yourself, your project (and the research group)
- Evaluators will most often **not** belong to your narrow research area
- Your talk must be appreciable by non experts

… Learning by trials and errors

One Logic?

Classical Logic

Boolean logic (1848)



Non-Classical Logics

Łukasiewicz logic (1920)

Intuitionistic logic (1930)

Gödel logic (1933)

Linear logic (1987)

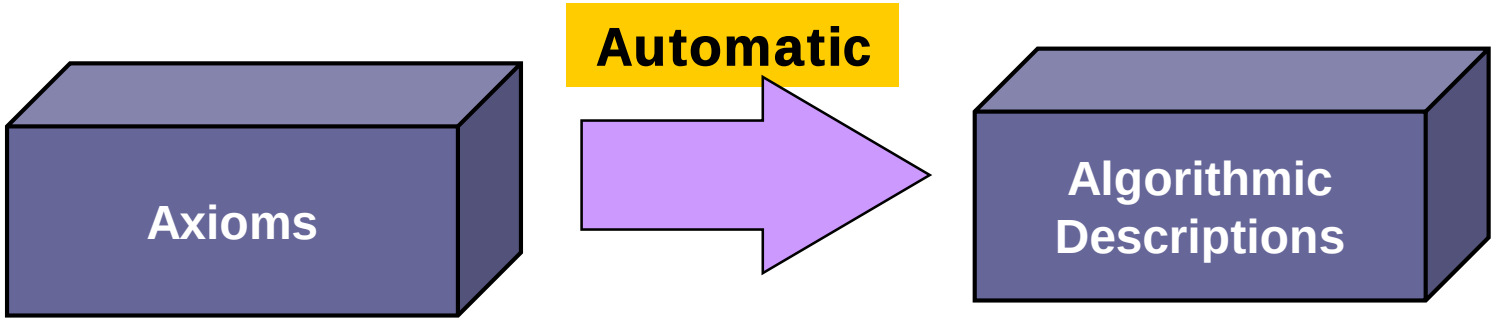
+ many more

For Computer Science, Algebra, Philosophy, Linguistic ...

➲ **Challenge:** unified framework for non-classical logics

My START Project

Theory



Applications

Information extraction: e.g. algorithms, algebraic results, normal forms

Tools

Software

… The successful attempt

Logic: Toolkit for Formal Reasoning

Mathematical Statements

$x.\ f(x) = x$

“the function **f** has a fixed point”

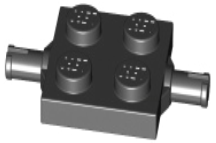
Classical Logic

Program Specifications

$\Box\ (req \rightarrow \Diamond\ ack)$

“each request is followed by an acknowledgment”

Temporal Logics



Medical Information

$oft(A \rightarrow B)$

“the symptom A often implies the disease B”

Fuzzy Logics

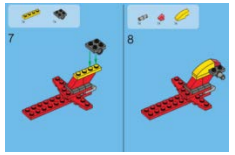
Project Aims

General and **Systematic** answers

Good calculi (sequent, hypersequent, …)

Decidability, complexity, Herbrand Theorems,…

Completions, non-deterministic matrices, …

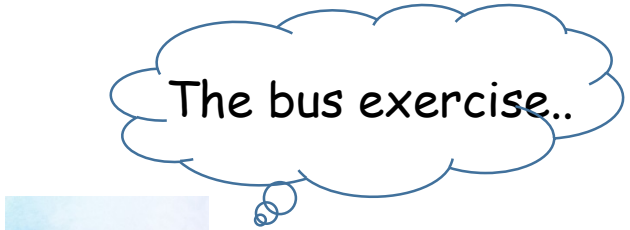


Applications

Tools

Theory

Big projects – the interview



Lessons I have learned

- Find the “right” way to present your ideas
- If you do not get it … try again!

Big projects – the interview

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Q: “*Why do you need to prove theorems*?”

Big projects – the interview

Lessons I have learned

- Find the “right” way to present your ideas
- If you do not get it … try again!
- Know your enemy ☺

or
better