Careers Session

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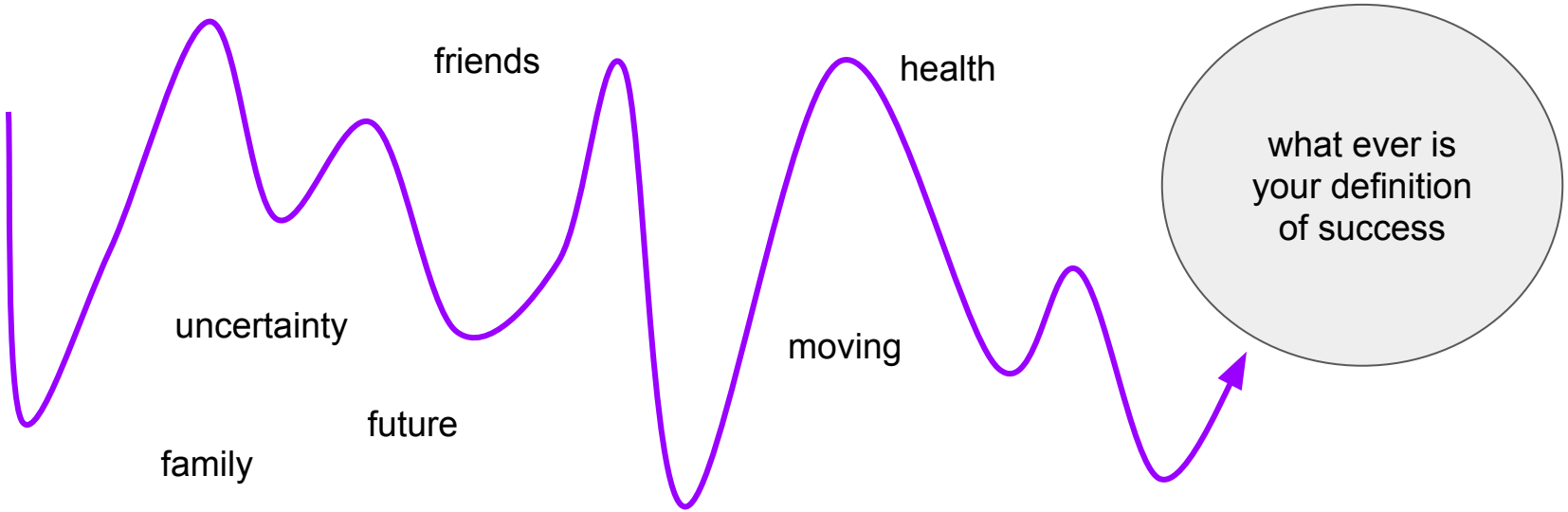
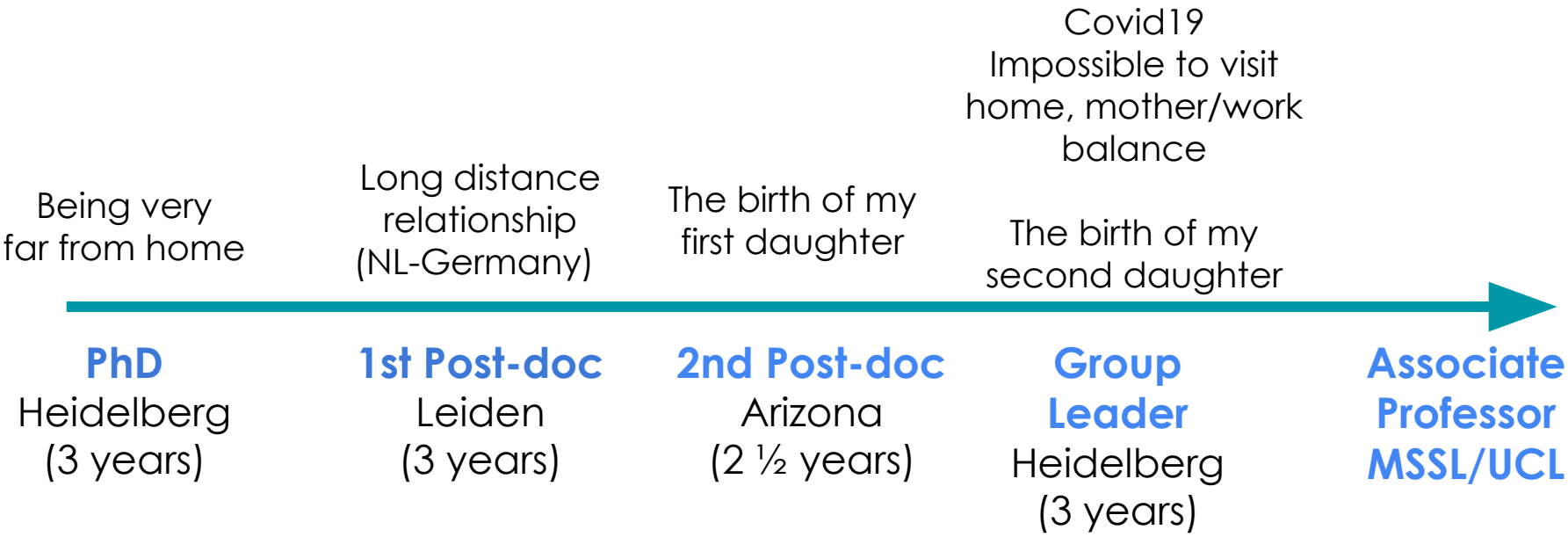
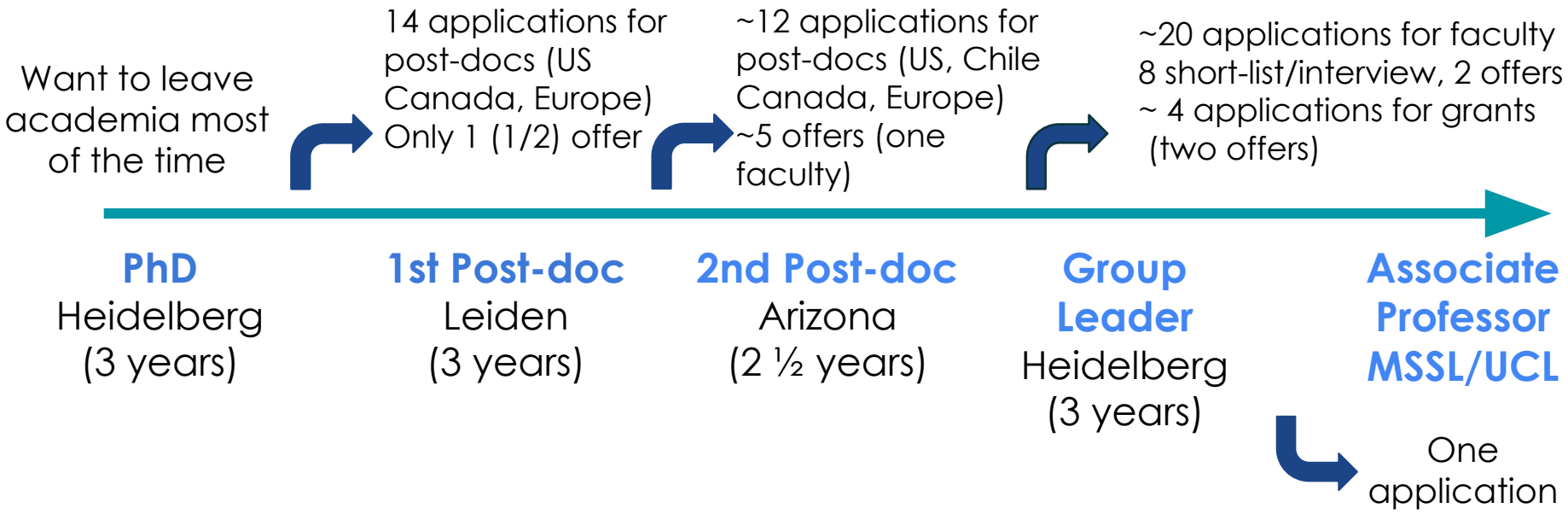
Career in Academia: no straight path



Paola's Career so Far: Personal Challenges

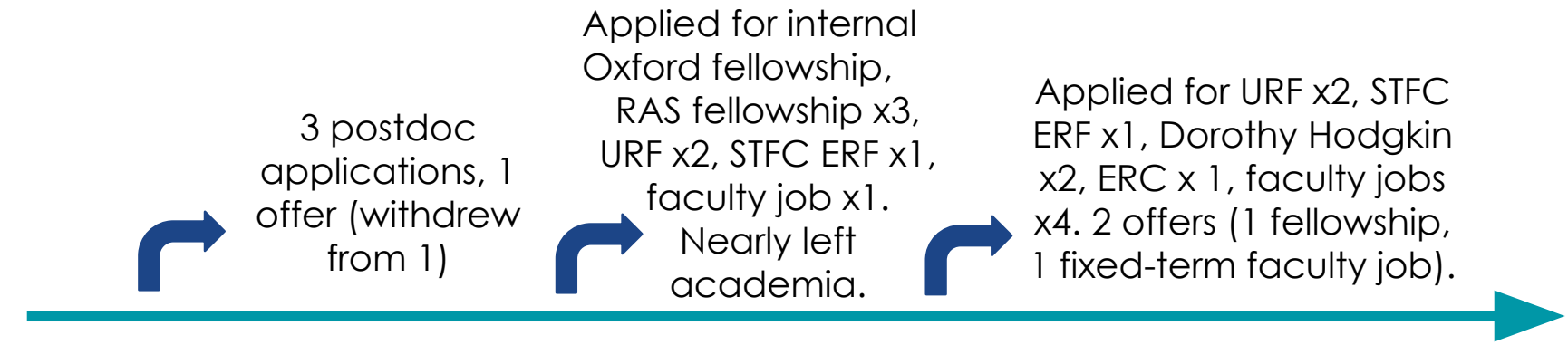


Paola's Career so Far: The unpublished CV



And ***many many*** other proposals (observations, funding, etc) rejected!

Jo's Career so Far: The unpublished CV



Types of post-doctoral positions

Postdoctoral Researcher

You are hired by someone to work (usually 50-100% of your time) on a specific project

Postdoctoral Fellowship

You get funding to do your own research, often control your own budget

Some fellowships still include some duties (e.g., ESO fellowship)

Types of post-doctoral positions

Postdoctoral Researcher

- Someone hires you to work on a specific project - if it is an exciting, high-profile project, can be better than a fellowship
- Generally are part of a group/team. Helpful supervision, support, and possibly more papers
- Can allow you to learn and move into a new field

Types of post-doctoral positions

Postdoctoral Fellowship

- Purely/mostly research
- Independence (defining topic, managing budget) and recognition within the community
- But very competitive, and ***You*** are responsible for your own career
- Examples: NHFP (Hubble, Sagan, Einstein - USA), NSF (USA), Institute fellowships (many of them), Marie Curie (Europe), CITA (Canada), Veni (NL), Royal Society, Stephen Hawking (UK), etc

How to find a post-doc/fellowship?

- AAS/RAS job registers - http://jobregister.aas.org and www.jiscmail.ac.uk/rasjobs
- Contact collaborators (especially at other institutes), let them know that you are finishing/looking for a position. Your supervisor can do this too!
- Go to conferences/workshops and give colloquia/seminars (volunteer!) - introduce yourself to people you would like to work with. Can lead to jobs and collaborations
- Talk to colleagues/friends 1-2 years ahead of you, ask questions

Fellowships

Why a fellowship?

- Control over your research direction
- Often longer duration than a postdoc contract + zero-cost extensions usually possible to cover e.g. family leave
- Comes with some funding for travel, hardware etc
- Often some additional support from funder, e.g. UKRI FLF development programme
- Attractive to future employers - evidence of ability to obtain independent funding
- Longer-term fellowships can help negotiate permanent job (although this is getting harder)

Available schemes in the UK

From PhD:

- RAS Research/Norman Lockyer Fellowship (3 years duration, <5 years post PhD)
- 1851 Fellowships (3 years duration, < 3 years post PhD, need to change research group)
- Marie Sklodowska-Curie Fellowships (1-3 years duration, < 8 years post PhD, MUST involve an international move)

After at least 1 postdoc:

- Royal Society URF (up to 8 years duration, 3-8 years post-PhD)
- Royal Society Dorothy Hodgkin (up to 8 years duration, flexible, <6 years post-PhD)
- STFC Ernest Rutherford Fellowship (5 years duration, quota system for applications)
- UKRI Hawking Fellowship (3 years duration, minimum 4 years experience)

More senior fellowships:

- Future Leaders Fellowship (4+3 years duration, can apply from a permanent position)

What goes into a typical application?

- CV - often in a specific format, e.g. UKRI grants now require a narrative CV.
- Research proposal - usually 3-4 pages, 8 pages for FLF
- Financial details, e.g. salary requested, including justification - your proposed host institution will help with costing
- Supporting statement from proposed host institution

Other things that might be requested are:

- Personal references
- Justification for choice of host institution
- Data management plan
- Impact statement
- Lay summary of your research plan

The Case for Support/Research Proposal

This is the heart of your application and it has to sell **YOU** and **YOUR IDEAS**.

You'll need to answer the following questions:

- Why is your area of study important?
- What challenge/problem within that area will your research address?
- What will the outcomes of your research be and how will it impact your field?
- Why are you the best person to do it? **You need a unique selling point.**

DO:

- Be honest
- Construct a good narrative
- Be clear and concise
- Tailor to your audience
- Get lots of feedback
- Look at successful examples

DON'T:

- Be modest
- Use specialist jargon
- Assume your audience cares(!)
- Pull focus from your research (other accomplishments go in your CV)

Choosing a host institution

- Family constraints/personal preference
- Necessary resources/infrastructure
- Potential collaborators
- Future opportunities
- Most longer-term/more senior fellowships are transferable

Institutional pre-selection/expressions of interest

- For STFC/ERF and some other schemes, institutions can support a limited number of applicants.
- Even if there's no official limit, institutions are likely to only support applicants they think have a good chance.
- Institutional pre-selection deadlines are now typically nearly 2 months before the actual fellowship deadline - so for applications due in the autumn, start planning in the late spring/early summer.
- Each institution is different, but they will require either a draft of a full research case, or a short expression of interest which summarises it.
- You can submit EoIs to multiple institutions to maximise your chance of support.

Interviews

- Only a small fraction of applicants are shortlisted for interview.
- Interviews typically require a short (5-10 minute) presentation, either with or without slides, on your research.
- Following your presentation there will be questions about your research but also more general questions about your career ambitions etc.
- You will be usually be notified of the panel composition ahead of time.
- If you can, try and arrange a mock interview to get an idea of what the tricky questions are likely to be.
- Cater to your audience - is it very specialist (e.g. Royal Astronomical Society) or very broad (e.g. Royal Society)?

Senior Grants (ERC) & Faculty Positions

Grants (e.g., ERC)

- Two parts: (1) 5 pages long+ CV, (2) ~15 pages long and include:
  - Introduction: motivation & outlook
  - Summary of preliminary work, main contributions
  - Future research: general and specific goals
  - Methods
  - Why the host institution (no always)
  - Significance of the proposal for your research
  - Time schedule (very detailed)
  - Composition of your group and roles of each member

Preparation

- Takes time (at least one full month), but it will guide your research for the next 5-8 years
- Think about big questions: where is the field going? Why are your ideas timely?
- Be passionate about your research
- Feasible, but also a bit risky
- Be aware of your weaknesses and build your group based on that
- It is so helpful to think about your dreams, your ideas, your future

Faculty: Typical Process & Advises

- Documents: similar to post-doc applications + teaching statement +diversity statement.
- For the teaching statement: talk about your own experiences. Imagine your perfect lecture.
- Research/Future Statement: keep them short, adapt to each place: telescopes, people, programs, clusters.
- Diversity statement: what are you doing to increase diversity in your own institute, what plans do you have for the institute that you are applying?
- Usually 5-6 people are invited to the interviews.

Faculty: Interviews

- Preparing/Going to job interviews is extremely tiring and time-consuming

- Talks:
  - ~10-15 minutes: motivation (big picture)
  - ~10 minutes: One main result of your research, broadly explained
  - ~10 minutes: Current research, to experts in your field
  - ~10-15 minutes: conclusions, future work, how your research fits in the department.
  - Practice a lot (first 5-10 minutes are crucial)
  - Be positive, enthusiastic, clear, don't take longer, appreciate questions, if you can personalize the talk to that particular institute (don't give the feeling that you are giving exactly the same talk everywhere)

Faculty: Interviews

- Interviews: get ready to answer typical questions and to ask many questions (committee, dean, department director, faculty members, PhD students, post-docs, undergrads)
  http://www.astrobetter.com/wiki/Interview+Advice

- Take some time to look at the place (would you like to live there?)

- Talk to young faculty before going to your interview

- Don’t be afraid to apply (this is also a way to promote your work)

Outside Academia

Marco's Career so Far

Reach out on LinkedIn!
https://www.linkedin.com/in/marcotazzari/

. Obs. signatures of dust evolution in pp discs using multi-wavelength sub-mm/mm obs (ALMA, VLA).
. I led the first 3mm survey of pp. discs with ALMA
. Modelling of interferometric obs. in the Fourier plane
. Developed Python package ***galario***

. Statistical sampling of financial losses due to natural catastrophes
. Quantitative development (Python)
. Monte Carlo, random gen.
. No research/work with obs. data 😒

PhD
ESO, Munich
(2013-2016)

1st/2nd Post-doc
IoA, Cambridge
(2016-2021)

Senior Developer
Oasis LMF,
London
(2021-now)

Marco's Career so Far: Personal Challenges

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Pursuing the dream

. Realizing the long road to lectureship
. Lots of enthusiasm

. covid (-> no family)
. Lots of acad. job app.
. ALMA succ. Rate < 10%
. Less enthusiasm

. First short-lists to *big* Fellowships (SMA, ERF, UKRI FLF)
. Cost of living crisis begins (2021)
. Timescale for acad. job security

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(2013-2016)

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IoA, Cambridge
(2016-2021)

GALARIO

Senior Developer
Oasis LMF, London
(2021-now)

Marco's Career so Far

Reach out on LinkedIn!
https://www.linkedin.com/in/marcotazzari/

- **Papers:** tot. 63x refereed, of which 7x 1st author, 4.3k cit., h-index 34.
- **Obs. proposals**: ALMA 3x as PI (18hrs), 19 as CoI; VLA 3 as PI (110+hrs), 9 as CoI
- **Teaching**: Examiner of CPGS PhD, 2x PhD 2nd adv., 2x MSc Adv.
- **Professional Dev.**: Interferometry workshops, HPC, Support Astronomer at JCMT,...
- **Reviewer**: ALMA TAC, UKRI FLF, FONDECYT, + several journals.
- **Talks**: 30+ tot., 12 invited.
- **Job. app.**: avg. 10 fellowships app./year in UK/US. 3-5 lect./perm. in 2020-2021.

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Senior Developer
Oasis LMF,
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Why did I move from Academia to Industry?

def. Industry = tech, finance

- Lack of **reward**:
  - long timescale for job security,
  - little/no opportunities for career progression;
  - not enough money (cost of living).

- Desire for:
  - long-term **team-work**
    (tired of order in author lists & career implications).
  - being a **problem-solver**,
    not a proposal writer or a (grant/group/dept./…) manager.

How did I move from Academia to Industry? (1)

- PhD in Astrophysics: **great personal & commercial value**
  - resilience, determination + unique knowledge & skills
  - pressure from London/Cambridge recruiters in tech & finance.
  - Did 1-2 applications/yr since 2018 to probe process & outer world. Most app. resulted in offers, min. gross salary +50%.

- With time, **interest shift/broadening**:
  - not just solving problems, but also developing tools (Galario).

- A key moment:
  - shortlisted for UKRI FLF after \HUGE effort (incl. a $500k extra deal with AWS Education that I negotiated on my own).
  - Despite prestige of fellowship, no pay increase or permanent job.

How did I move from Academia to Industry? (2)

- **LinkedIn**: unique tool, job board + social:
  - Followed interesting ppl/companies to learn language, key themes, main challenges & tech tools.

- Finding the right **job title(s)**:
  - Takes time (~2 years for me)
  - Hit-and-miss process
  - Started from immediate interests, got feedback from recruiters & applications

- Roles of interest for me: **cutting edge tech ∩ science/maths**
  - Python Developer -> tech, finance, insurance, …
  - Quantitative Developer -> finance, insurance, banking.

How did I move from Academia to Industry? (3)

- Recruiters:
  - Learnt **a lot** by talking to them.
  - Initially, I applied if 50% match with job spec, then worked out if viable.

- Getting **systematic**:
  - automatic alerts on main job boards: indeed, reed, cwjobs, cvlibrary, totaljobs
  - be the **1st** applicant: send if >50% match; recruiters call 95%.
  - learn by doing (e.g., interview process).
  - get smart to upskill for interview (youtube, leetcode, udemy, books,…)

- **CV:**
  - 1x 1-page version, 1x 3-pages version to showcase academic excellence.
  - Tuned a few times, but largely the same for all companies.

Cool aspects of applying for a job in the Industry

- Reuse **same CV**, no extra material needed. 😱
  (no more Research Statements, Proposals, word limits, reference letters, etc.)

- The process is **simple & very fast**:
  - job ad is found -> apply ASAP (2 clicks on LinkedIn) -> interview ASAP -> offer
  - companies need to be quick: **we are a rare asset in huge demand**.
  - time from application to offer: min, max, mode: 1, 6, 3 weeks

- The process is **repeatable**:
  - Job is not satisfactory? I can change, anytime, quickly.
  - Empowering thought: the world is full of opportunities.
  - My skills & motivations are my boundaries.

Challenges of applying for a job in the Industry

- Market keeps moving: job trends may last 8-10 months max.
- Interview process is performance-based:
  - CV gets you to the interview, then it only matters what you can do **now**.
- Carrying out realistic & successful **negotiations** (not just pay).

- Finding good recruiters that understand **your value** vs mass-fishers

- Finding a role that:
  - Is **intellectually challenging** -> long-term enthusiasm
  - Has **scope for growth** (skills & responsibilities) -> sense of reward
  - Has a **specific purpose:** it's not just a +1 in a big team -> visibility

Transitioning from Academia to Industry

- I'm a Senior Developer: **quantitative** coding in natural catastrophe modelling (insurance/reinsurance sector):
  - def. **quantitative** = numerical algorithms, libraries, automation;
  - mostly Python, I invest time to stay up to date with latest features;
  - I have lots of **freedom** on how to solve numerical problems;
  - Job is highly **meaningful**: I contribute directly to key computational tools for very important global goals (e.g., building resilience vs climate change, ...)
- Fatigue for lack of opportunity to work with observational data.
- No scope/business need for real research (focus is delivering codebase).
- Little/no overarching visibility on the whole project -> upside: more focus.
- Performance review is result-based; flexibility on working hours & location.