

The ups and downs of proposal writing

Eugene Vasiliev

IAU Early Career Astronomer online discourse series

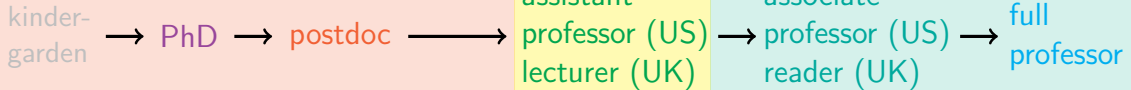
21 March 2025

Academic career

fixed-term contracts

tenure-track

open-ended / permanent

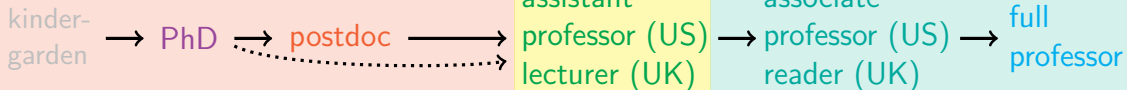


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Academic career

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kinder-
garden

→ PhD

→ postdoc

→

assistant
professor (US)
lecturer (UK)

→ associate
professor (US)
reader (UK)

→ full
professor

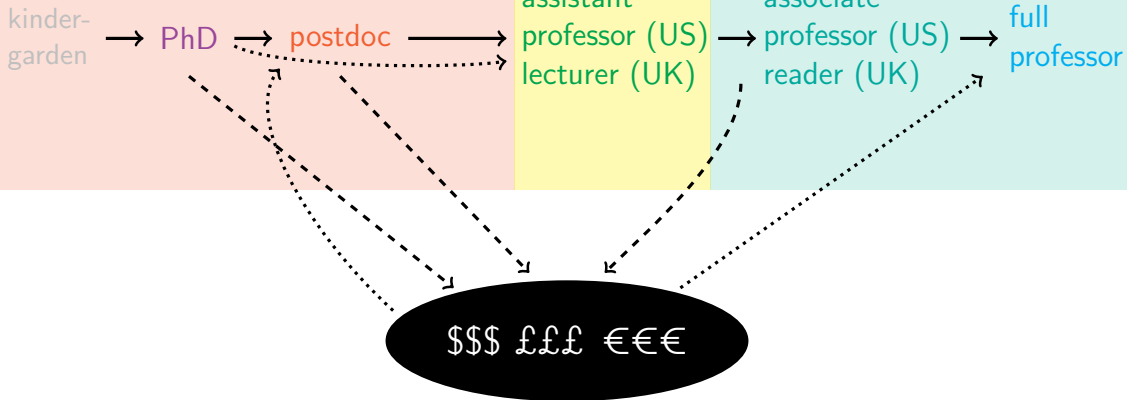


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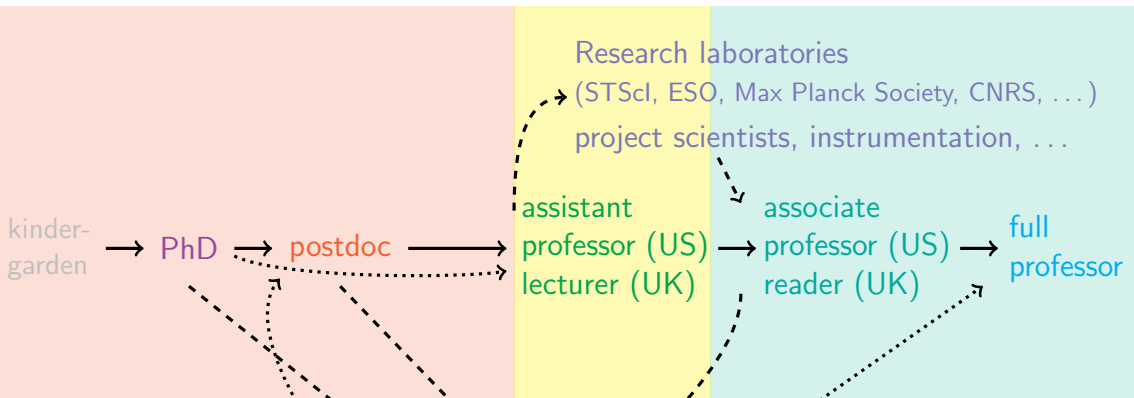


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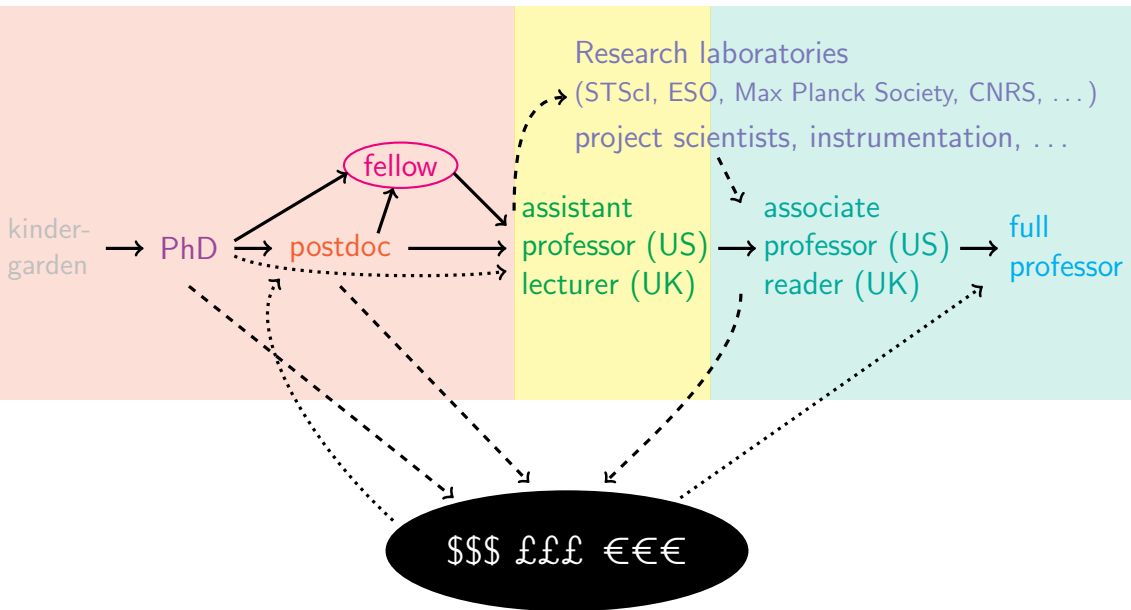
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[Postdoctoral] fellows vs. “ordinary” postdocs (PDRA)

- ▶ obtain their own funding through highly competitive schemes
 - ▶ set their own research agenda
 - ▶ have better career prospects
 - ▶ fellowships are much more competitive (sometimes even across multiple disciplines)
 - ▶ often need support / pre-selection from the host department; application process takes long time
- ▶ funded from their supervisor's grants
 - ▶ [mostly] work on pre-defined projects, although independent research is also often encouraged
 - ▶ if joining an existing project at an advanced stage, may get publishable results quicker
 - ▶ difficult to demonstrate your research independence (at least formally)

Types of fellowships and grants

- ▶ International (e.g., Marie Curie, ERC starting/consolidator/advanced grants)
- ▶ Inter-governmental (Country A \Leftrightarrow Country B)
- ▶ National funding agencies (state-run and private):
 - US: Hubble, Einstein, Sagan (NASA)
 - Canada: NRC, CITA National
 - UK: ERF, FLF, EPSRC, Newton, URF, RAS, Leverhulme, 1851, ...
 - Germany: Emmy Noether (DFG), Humboldt, Volkswagen Stiftung, ...
 - Spain: Ramón y Cajal, *la Caixa* Fundación, ...
- ▶ University- and college-level: JRF (Junior research fellowships @ Oxford & Cambridge); named fellowships at various universities & institutions
- ▶ NASA/ESA/ESO fellowships (mix of independent research and service roles)

Types of fellowships and grants

Additional aspects:

- ▶ duration (2–8 years);
- ▶ career stage (usually # of years since PhD, excluding career breaks)
- ▶ specialised fellowships for some social groups (e.g., minorities, part-time workers, returning to academia after a career break, etc)
- ▶ mobility (nationality restrictions; move to a different country; ...)
- ▶ quotas for host organisations; move between hosts
- ▶ funding only for the recipient or for establishing a research group (+postdoc(s), PhD students...)
- ▶ career promises (explicit or implicit) – transition to a permanent position

Resources:

<http://jobregister.aas.org>

<http://jobs.ac.uk>

<http://researchprofessional.com> (subscription)

Writing a fellowship proposal

Typical components:

- ▶ CV, publications list
- ▶ summary of past research experience and achievements
- ▶ research proposal
- ▶ auxiliary documents (budget calculations; pathways to impact; outreach plans; lay summary; . . .)
- ▶ recommendation and support letters

CV and past experience

CV can come in different formats..

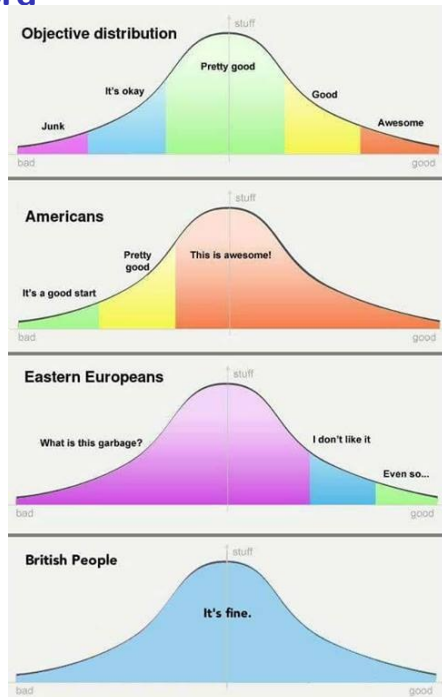
- ▶ “traditional” – sections with bullet points:
 - qualifications, academic career (incl. career breaks if relevant);
 - research interests, skills (e.g. programming languages, observing experience, ...);
 - grants, prizes, awards;
 - invited talks (seminars & conferences);
 - teaching, outreach, mentoring experiences;
 - community services (membership in collaborations; organisation or chairing of meetings, refereing papers and grant proposals, participation in selection panels, ...)
- ▶ “narrative CV” (same info but conveyed as normal text):
 - allows one to highlight specific achievements, convey a broader range of skills/experiences (e.g. development of publicly available software);
 - focus on a few key examples, explain how and what exactly you have contributed.

Past achievements & publication record

- ▶ list separately papers that are accepted/published and those that are submitted, arXiv-only, or otherwise non-refereed
- ▶ unless nothing else to show, do not include “in prep.”, conference talks/posters (though published proceedings are OK)
- ▶ highlight your name in the authors list (or put “XXX et al., including myself” for very long lists)
- ▶ citation counts are rarely used in the publication list
- ▶ bibliometric scores (e.g., *h*-index) can sometimes be included, but it’s rarely an important factor – should merely be “within reasonable range” for the career stage
- ▶ total number of publications tells little about your personal contribution; if possible, highlight a few key ones (usually first-author, but not always) and explain your role in them
- ▶ this applies more generally to the “research experience” document: quality of *your* contribution matters more than the quantity of outputs.

Past achievements & publication record

- ▶ tastes and conventions vary...
- ▶ make sure that the panel appreciates the quality of your scientific output
- ▶ but over-indulging in self-glorification may be detrimental
- ▶ in any case, it is much better to *demonstrate* your high standing with concrete examples than merely *declare* it with copious superlatives



Research proposal

Most important part of the application!

- ▶ a combination of a Big Problem That Needs To Be Solved [urgently!] and *YOU!!* as the Best Person [in the world] to successfully attack it

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- ▶ paint the Big Picture (key science question) first, then explain (in some detail) how you are going to address this question, ideally with some preliminary / pathfinder results, finally relate it back to the bigger context (what will we learn in the end)
- ▶ stress timeliness (e.g., exploitation of existing / upcoming obs facilities), but having some data is not the main reason you're doing the project – science question comes first

Research proposal

explain why *you* are the best person to carry out this project

- ▶ have unique tools and skills ideally suited for this problem
- ▶ are a [key] member of some collaboration
- ▶ have privileged access to some observational datasets
(existing / upcoming, but with a caveat that they might not materialise)

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JUST BECAUSE YOU ARE UNIQUE



DOES NOT MEAN YOU ARE USEFUL

Research proposal

reviewers and the panel may disagree with your estimates of complexity of the proposed work (personal example) \Rightarrow

▶ be ambitious but realistic:

the core part of the research programme should be almost certain to succeed, and various extensions could bring additional value and open up further possibilities in the optimistic scenario

(NB: some funding opportunities encourage more risky / blue-sky projects)

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(NB: some funding opportunities encourage more risky / blue-sky projects)
- ▶ have a credible work plan
(sometimes even formally required, e.g., in the form of a Gantt chart):
split the project into work packages;
relate the timeline to the upcoming observational datasets (if relevant);
perform risk / contingency analysis
- ▶ justify the use of resources (travel, hardware, computing, time, PDRA / students)

Research proposal

be kind to the panel! they have to sift through dozens of good proposals...

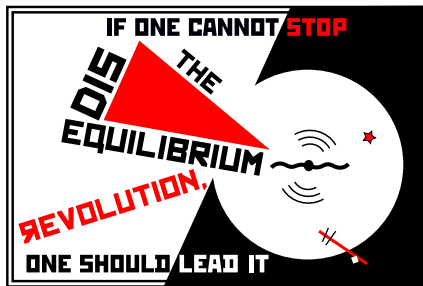
- ▶ try not to cramp in too much text (hard! page limits are usually tight)
- ▶ include a good illustration
- ▶ write clearly and engagingly, aim at a more general audience (your grandma?)
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(example from my own ERF presentation)



Reference and support letters

Reference letters:

- ▶ may not be needed for some fellowship applications
(in contrast to PhD, regular postdoc and faculty positions)
- ▶ if needed, choose your referees wisely:
strike a balance between “big names” and people who know you well
(from a good side:)
diversify the pool of referees – ideally they should all be from different
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Support letters from the host department (for moveable fellowships):

- ▶ although this looks quite formal, they can actually be important for evaluation [personal experience]!
- ▶ should be enthusiastic and personalised, demonstrating that the department wants *YOU!!*
- ▶ may include additional career development opportunities and promises

Proposal workflow

- ▶ start thinking about it well in advance of the deadline:
it takes a lot of time to prepare everything, and even more to do it well!
- ▶ for some fellowships, you first need to get the blessing of the host department (often there are quotas on how many applicants they can support
⇒ a preliminary selection stage)
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- ▶ if shortlisted / invited for interview:
prepare a brilliant presentation *and* rehearse it with your colleagues;
find out a list of commonly asked questions and plan your responses
- ▶ remember, the interview panel are not specialists in your field

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- ▶ all of the above is my personal opinion, and none are hard rules – I haven't followed even half of these advices myself!

Good luck!