

## ASA Early Career Researcher Mentoring Workshop – Session summary

Session Topic: Academic jobs, working in collaborations  
Discussion Leaders: Matthew Colless, Alicia Oshlack

If you only remember three things from this talk, remember these...

1. Know what job you want and what skills you require to get it, then do that.
2. Know the standard interview questions and prepare for them.
3. Know the value of your academic skills and achievements and be able to communicate them to a non-specialist audience.

### Session summary/notes

AO: Bioinformatician  
MC: Director of astronomy and astrophysics at ANU

#### **MC has a very impressive public biography, but what's the real story?**

Studied hard at USyd got a BSc (Hons I).

- First lucky break was getting a Shell Scholarship to Cambridge.

Worked hard at PhD

- Second lucky break, entering a field galaxy evolution, observational cosmology just when it was taking off

Fellowship at KPNO, postdocs at Durham, Cambridge

- Third lucky break having top scientists as mentors

Returned to Stromlo research fellowship

- Fourth lucky break recognized and seized opportunity
- Became co-leader of 2dF survey
- Fifth lucky break 5 huge scientific output of the survey

Underlying theme of developing a virtuous cycle with complementary

research/instrumentation projects: Developed instruments to do science; leveraged his science from instrumentation; new science to build instruments; instruments as reason for new science. This feedback between observational and instrumental sides of career fed into more grants, etc. and a broader research profile when applying for jobs

Learnt how to manage via leadership of 2dFGRS and instrument projects

Set out to make himself director of AAO

- Sixth lucky break, got the job! (then had to work hard)

Planned to spend 10 years at AAO, but does he then want to go full-time research or management? Preferred doing both.

- Seventh lucky break; At this point family commitments came in and realized up until that point his partner had been very understanding.

Returned to AAO as Director, building the Giant Magellan Telescope

- Eighth lucky break, another large project at just the right time

Take home messages:

- Do good science
- Diversify skills set
- Find great mentors
- Find high impact science questions

- Plan for what you want
- Most important: Do what you enjoy because there are other jobs that will pay better even if you hate them.

### **Matthew Colless career bio discussion session:**

(Q) What helped you advance the most?

(A) Matthew: scientific authority, understanding management, personnel management skills. (all required for job as AAO/ANU director)

(Q) Were there unlucky breaks?

(A) Matthew: There were things that seemed like bad luck at the time but ended up being good. Example: switching thesis topics led to greater breadth of knowledge. Had a terrible interview, but it was a learning experience.

(Q) Did management skills transfer easily from running a survey to managing an institution?

(A) Matthew: Yes, managing scientists was good preparation for managing (scientists and) technicians. But I was surprised by all of the personal issues that I had to deal with all of a sudden when managing an institution (examples: marital problems, nervous breakdowns, drinking problems...)

### **MC: Getting an academic job – why what, when, how?**

Why do you want an academic job?

- Not 'it's what comes next' or 'something else to do'
- right answers 'I love research' and/or 'I enjoy teaching'

Only be an academic if you are passionate about the job, or some aspect of it

What sort of job?

- University academics
- Non-university academics (CSIRO, AAO)

Pros and cons of both types

- trade off between teaching and functional duties
- Find out what both involve (most postdocs have no idea what faculty **do**)
- Match up job with your interests

Where do you want to get a job?

Big question:

- Smaller institution (big fish, small pond)
- Aim for bigger institution, which is kudos to career

Other factors:

- Work with someone, access to facilities
- Willing to live long term overseas, want to be at home
- What about family (partner's job, children's schools)

Get it clear before jumping

When to go for permanent job?

- Too early and

- not enough experience contacts/networks, publications
- may have to settle for less than ideal job and become stuck because oppor are limited
- Too late and
  - If you wait for perfect position or are unwilling to teach, or to work somewhere specific you can miss out
  - After time you become less marketable and become perpetual post-doc or must take job outside academia
- Finding goldilocks moment
  - Create a strong track record and exhibit plenty of potential

#### How?

- Strong research track record, good long term
- Other qualities – teaching experience, get some somehow, both lecturing and supervision experience are important
- Functional skills for non university jobs, specialist skills may be critical
- Grants, awards, networks, cross-disciplinary expertise, etc.
- Presentation counts for more than it should
- Make sure CV presents you in the best light
- Include everything relevant, nothing untrue
- Develop imaginative and well thought out research plan, get colleagues to critique it
- Eminent international referees are good, but best referees that know and are enthusiastic are better
- If you get interview, prepare! Think about how to answer questions, be informed about institution, have a positive plan.
- Above all, sell yourself, give them reasons to hire you!

Use supervisor's advisor's and mentor's networks.

Optimism is a far more efficacious attitude than realism, apply for jobs that you privately think you are not qualified for.

Only apply for jobs you want – be open minded about what is interesting and acceptable.

Keep in mind that getting a job is a stochastic process.

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#### **Matthew Colless "Getting an academic job" discussion section**

(Q) Please explain what a typical CSIRO/AAO job is like.

(A) Matthew: instrument and/or observing support (in addition to the research component)

(Q) Should you put a photo of yourself on a CV?

(A) Matthew: No. There's enough selection bias without including appearance. They are hiring you for your brains not your looks.

(Q) Can you go back to Uni if you leave for a different type of postdoc?

(A) Matthew: It can actually be good to take one (of two) postdocs to broaden your horizons. It isn't a limitation to do a postdoc that has a different focus from your long-term goals.

(A) Tara M: It is only bad if you let yourself get sucked into so much support time that you don't work on your research. But a similar thing can happen at a Uni, if you end up getting sucked into teaching.

(A) Matthew: your research time is the most valuable commodity you have, do NOT fritter it away! (you won't get it back)

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### **AO: Non-astro CVs**

Publications, grants, prizes, need to explain what they mean (explaining impact of these in your field: top journal, how many citations, author order, etc.)

Focus on skills: computational (programming, software), simulations, mathematical (DEs), statistical (Monte Carlo)

Know how to communicate your science to a non-specialized audience

Make it clear why you want the job (hint: not because there is something wrong with what you are currently doing).

Example: No one from outside astronomy gets a job in astronomy.

Getting an academic job outside astronomy, as an astronomy means they lack people with relevant background.

What you can do differently from a field specific individual is learn about a science problem and then implement the solution to it. CS degree don't have that same experience we do.

We are used to finding the right level of abstraction and then applying it.

Data experience is also a big plus, most others don't deal with real world situations.

Note: Data science is 1% of jobs on the internet, doubling every 12 months, 65% applicants come from outside CS, huge growth field. If considering a jump, learn the relevant coding skills (sql, python, whatever).

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### **Alicia Oshlack: Non-astro CVs discussion**

(Q) Did you have to do a lot of background reading to figure out how to switch from Astronomy to your new field?

(A) Alicia: They will know that we don't have the specific background. Tell them the things you know. You can learn the new things you need for new job.

(Q) How do we explain that we are so awesome by having a physics PhD if we don't have all the technical skills?

(A) Alicia: Sell the fact that you can look at a problem, and learn what you need to know in order to solve it. As astronomy phds, we have the skills to learn how to solve a scientific problem rather than just implementing a given solution. Sell data experience!

(A) Tara M: Don't underestimate how good people with comp.sci. degrees are at coding & software development. But it's easy to learn that if you're smart and commit to it! If you're considering taking this leap, the #1 thing you can do is up-skill your coding.

(A) Peter Q: Learn database languages (not C++, Fortran)

(A) Tara: learn web technologies (SOAP, JANGO, HaDooP), databases, a scripting language (like python), SQL

### **Why collaborate?**

Reasons for and against, do's and don'ts

\*Pros:

Opportunities, networking, more publications, job prospects, share work and ideas, new experiences, greater resources, cross-disciplinary work, higher impact

Cons:

Lost in the crowd, micro-management, telecons, personality clashes, less recognition, disorganization, loss of direction, bottlenecks\*

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### **Mock interview scenario:**

"Bad" techniques: Incorrect posture, defensive attitude, lack of specifics, lack of enthusiasm, slating supervisor, no concrete ideas regarding strengths, little supervisory experience, negative outcomes in management roles, blames others, no concrete ideas about job or what it entails, unprepared to ask questions about employer.

"Good" techniques: Specifics, ground breaking, enthusiasm, positive outcomes, cross-disciplinary outcomes, detail on how you tackle a problem, develop your own methods that are applied by others, has goals and career development aspirations.

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### **Mock interview discussion:**

Tara M. gives critiques on Pascal's interview: when talking about graduate students, mention in what way you supervised them, your approach, and how that relates to your future plans for supervising students.

(Q) How long should you spend on an answer to a question?

(A) Matthew: Prepare a few-minutes-long answer per question. Drop some hooks for the interviewer to grab on to. If they don't pick up on your clues, go back and answer the questions (that you wanted them to ask) yourself.

Positive critique: Pascal linked back to his strengths, presenting one coherent story through the whole interview

Alicia: You can choose to answer just part of the question (sort of like how a politician pivots an answer to the message they want to send)

(Q) How do we sell ourselves enough without selling ourselves too much?

(A) Matthew: Know your audience. (e.g., UK tones down reference letters while US tones them up. A UK letter will seem too mellow to a US audience.) Do a mock interview with postdocs in the unfamiliar culture to see how they choose to answer. Get references from people familiar with the culture into which you'll be applying

(e.g. US references for a US job).

(A) Tara M: Think about strengths you can substantiate. i.e., be able to give examples (such as: I had positive impact on the field of .....

(Q) What if they ask about your weaknesses?

(A) Matthew: Talk about things that the job will allow you to develop, so that your weaknesses turn into potentials, and the job is an opportunity to improve.

(Q) What about when they ask you whether you have any of your own questions? Are there wrong questions?

(A) Matthew: You *must* be prepared with your own questions about the job/company to show that you are prepared and engaged. Don't ask about the salary at this stage.

(A) Rachel: Ask about the research funding and resources that come with the job.

(Q) What are differences about interviewing for a postdoc or for a permanent academic job?

(A) Matthew: In a long-term position, personal chemistry really matters. ("no bastards rule")

(A) Alicia: For a permanent job, interview is often all-day and includes a public presentation.

(A) Tara: For a postdoc, you are hired on your ability to do something well. For a permanent position, you are hired on the basis of your long-term potential.

(A) Matthew: For faculty position, need to show your potential --- not just what you can do, but what can you create given your skill set (new stuff, not just same stuff as in your postdoc)

(A) Peter: Make sure to include a good cover letter; personalize for the job.

(Q) What if you have a small pool of potential referees?

(A) Matthew: Make sure to network and collaborate

(A) Rachel: it is a two-year process, not a 3-month process. Network by giving seminars, going to conferences. Decide who to target, and go have a beer with them.

(A) Matthew: Good to choose a person who is close to you, but also people with whom you have not collaborated, but who know your work.

(A) Rachel: "Find people who love you, and willing to lie for you"

(Q) What if you didn't leave on good terms with a supervisor?

(A) Do not ask them for a letter.

(Q) If interview is unsuccessful, should you follow up to ask for tips on improving?

(A) Matthew: Only if you know the person really well.

(Q) If there was a setback such as getting scooped or choosing the wrong collaborator, can you bring it up in the interview?

(A) Rachel/Matthew: Generally no, unless you can tell a good positive story about it with lessons learned. It is okay to mention that you got scooped as that is more "bad luck" than "negative".

Interesting quotes from the discussion