How 2 Apply 4 Stuff*

(Strategic thinking and tips for academic job applications and career planning)

(*IN MY HUMBLE AND TOTALLY BIASED OPINION)

Sera Markoff (API/GRAPPA)

Warning: I didn't have time to update all the links yet but many of them are the same or will get you close, sorry!!!

OUTLINE

- **Some initial thoughts on the whole process**
- **Strategy/resources***
- **Different kinds of positions and other general advice for job hunting strategy*
- **How to write a good application & deal with letters of recommendation
- **#Group discussion (the most important part!)**

*including lots of stuff for online perusal later

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SOME POINTS TO KICKOFF THE DISCUSSION

- Start way, way ahead of time
- Some competition/stress can be positive, when not in excess
- Can you put your finger on your weak points?
- Are you *sure* you want to be an academic? Service >> prestige!
- Who are your letters going to be from?
- A good narrative is essential (tailored to the audience)
- Do everything Order of Magnitude first
- Chase fame with caution
- Define your 'terms of existence' (and stick to them)
- Most of this talk won't apply in Italy or France!

TOPICS BROUGHT UP BY THIS GROUP

- Challenges and strategy of switching fields: when, how?
- How to deal with imposter syndrome and stay productive
- A Having difficult conversations with colleagues and supervisors
- Asking for constructive feedback and to build better professional relationships
- Outreach, networking tips and getting noticed in the field
- How do we choose our research problem as a potential PhD candidate?
- Recommendations on training for leading the team and taking responsibilities such as of a lead scientist
- What are the key things to do as a postdoc to get a faculty job?
- Importance of timing/strategy

WHY I GIVE THIS TALK

- ☆ If you are enthusiastic, working in an active field, have good letters and a "typical" number of publications (~0 for MSc students), getting a PhD/PD position is usually not a problem
- However, getting the *best* position that will put you on a more direct track to a permanent position generally requires more effort (unless you are a rare genius, or you get lucky and discover something groundbreaking, in which case just go home now or take a nap!)
- Academia is very competitive, not unlike sports. To win, know your goals, understand the game, and think ahead, as early as possible! Success comes with hard work and training, but also strategy!
- We (I very much include myself here) tend to be a bit awkward, so while some of this will be obvious to many of you, I'm also trying to reach those for whom it will *not* be obvious!
- There's a lot of anxiety involved in this process, leading to procrastination. By giving you a sense of the various aspects involved, I hope to "demystify" what may seem like a scary process, and encourage you to begin earlier!!

WHY LISTEN TO ME?

- I have a pretty good track record at applying 4 stuff in the US and Europe
 (NSF PhD fellowship, 2 competitive PD fellowships in US and Germany,
 several competitive grants from NL/EU, net worth to date in grants as PI
 or primary Col ~ 10M€)
- Been on many faculty promotion and hiring committees (some for multiple hires) in the NL (both in physics & astro) and in Germany + NWO (NL) fellowship panels + NSF CAREER grant panel + NASA named fellowships, and NSF A&A Postdoc Fellowship selection panels
- # I care about helping/advising younger researchers so I've given this talk a lot of thought!

THE SEVEN KEY POINTS

- If you retain anything from this talk...:
 - Always remember why science is cool (enthusiasm)
 - You need to develop resilience, perseverance AND "gumption"

THE CONCEPT OF GUMPTION

gumption | gəmp sh ən |

noun informal

shrewd or spirited initiative and resourcefulness: she had the gumption to put her foot down and head Dan off from those crazy schemes.

ORIGIN early 18th cent. (originally Scots): of unknown origin.

informal we never thought Clarence would have the gumption to stand up to the committee—and actually get what he wanted: initiative, resourcefulness, enterprise, ingenuity, imagination; astuteness, shrewdness, acumen, sense, common sense, wit, mother wit, practicality; spirit, backbone, pluck, mettle, nerve, courage, wherewithal; informal get-up-and-go, spunk, oomph, moxie, savvy, horse sense, (street) smarts.

THE SEVEN KEY POINTS

- If you retain anything from this talk...:
- Always remember why science is cool (enthusiasm)
- You need to develop resilience, perseverance AND "gumption"
- You need to develop both independence, and the ability to be self-aware/self-critiquing
- You need to figure out how to be productive
- There are different types of permanent positions
- Don't rule out jobs too early, based on location
- Start preparing your application WAY BEFORE your first deadline (as in, ideally several months early!)

SAGE ADVICE I:



%The job search can, in many ways, be compared to dating:

- Just like "The Game", there's a lot of bad advice out there!
- You are looking for the right "match"
- You are being judged, at the same time that you are judging
- First impressions are very important
- You don't want to seem desperate, but you don't want to seem uninterested either
- If you treat potential candidates badly, you will get a bad reputation...it's a small world, people do talk to each other!
- There is no accounting for taste ➡ luckily not everyone wants the same thing!
- Bad experiences teach you valuable lessons for the next time
- You want to build up a record of past experience that looks appealing enough to attract "the one" (but maybe not too much...)

SAGE ADVICE II:

KNOW WHAT IT TAKES TO GET WHERE YOU WANT TO BE!!

- **There are multiple paths to a satisfying career in academia with a permanent position
 - There are many options beyond the archetypal university professor: e.g., observatories, labs, "Big Data"/Data Science/Archive centres, independent research facilities. Note: the EU has more options than US for permanent, non-academic jobs!
 - Many people don't like teaching, or have the patience for supervising students, or committee work. There's also often more pressure to constantly apply for funding. Be honest with yourself about what aspects of the job you enjoy and aim for that type of position that fits you best

MANY POSSIBLE PATHS

Phil Uttley: PhD Southampton

Postdoc Southampton (3 yr)

NRC
Associateship,
NASA GSFC (2 yr)

Marie Curie Fellowship, Amsterdam (1 yr)

STFC Advanced
Fellowship + Lecturer
Southampton (4.5 yr)

UHD (associate prof.) Amsterdam

Sera Markoff:
PhD U Arizona
(Astroparticle phys)

Humboldt
Research Fellow,
MPIfR (3 yr)

NSF Postdoc Fellow, MIT (3 yr)

UD (assist.prof), →
UHD (assoc.pr.) →
Prof. @
Amsterdam

Regular postdoc (PDRA)

Key:
Postdoc Fellowship
Permanent

position

Diego Altamirano: PhD Amsterdam

Postdoc Amsterdam (5 yr)

Royal Society
URF + Lecturer
Southampton

Michael Wise: PhD U Virginia

NOAO Postdoc (Tucson, Az) 3 yr

"AXAF" Postdoc

Senior Research
Scientist
(MIT, 11 years)

LOFAR Software
Group Lead
LOFAR Project
Scientist
Head, Astro. Group
(ASTRON, NL)

Director, SRON

SAGE ADVICE III

- There is more than one way to be a good scientist. Each way can lead to discovery and a fulfilling career:
- Building cool experiments/infrastructure
- Theoretical discoveries: can be narrowly focused within a field but can be very broad/collaborative!
- New, cutting edge observational/experimental discoveries or confirmation of theories
- Synergizers: people who see new patterns or connections often between disciplines, often more broadly focused/phenomenological

SAGE ADVICE IV:

KNOW WHAT IT TAKES TO GET WHERE YOU WANT TO BE!!

- **World mobility is really changing things. If you want to get a permanent job (outside the US anyway), usually you need to have some international experience
 - You can no longer count on easily finding a position in your home country, because it's increasingly more common to move me more competition but more opportunities
 - Consider all the options, don't limit yourself to one country, but if you must, be aware that you may need to work a bit harder
 - This situation can be difficult if you have a 2+ body situation, you should be aware, discuss with your partner, agree on guidelines
 - Maybe better to make sacrifices for short-term (couple years) when in PhD/PD stage, rather than ending up longer term in a non-ideal situation

FINAL SAGE ADVICE!

*Do not rule out too many possibilities too early

- What you're sure you won't take today may look awfully appealing when you are facing unemployment. Think about it like insurance!
- (I cannot emphasize enough how many times I have seen people ignore this piece of advice and live to regret it !!!)

The job application process is very time consuming

- This isn't something you can just do in a day (emotional=harder)
- # It is not generally a statement about your abilities to get rejected, be prepared to try again and again
 - It may feel like the "moment of truth", but like dating, the match and the timing is everything... some years what you do may be "hot", others "not", it can be frankly rather stochastic
 - Especially fellowships and faculty jobs often take multiple attempts. There is absolutely no shame in reapplying. Like anything, practice makes perfect.

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THERE IS NO MAGIC BULLET

- © Getting a permanent position comes down to (IMHO): ~1/3 scientific ability, ~1/3 secondary skills (communication/writing/networking) and ~1/3 some random combination of being at the right place at the right time and (frankly) some sheer, dumb luck
- You can optimise your chances by spreading your net widely via having many skills, working with different communities, being open-minded, and coming up with a good strategy
- That strategy has to start with knowing yourself, knowing where you want to end up and knowing what it takes to get there! It obviously won't be the same for everyone.

© Committees hiring for faculty positions at top-tier research institutes generally want to see: great and relevant science, independent and creative thinking, initiative, demonstrated leadership, ability to get funding, international network of collaborators, teaching/mentoring abilities, and of course a good fit to their program. Many places also consider a good fit to the institute "culture", which means your behaviour is very important around the interview in particular.

Committees hiring for faculty positions at top-tier research institutes generally want to see: great and relevant science, independent and creative thinking, initiative, demonstrated leadership, ability to get

| Please rate the applicant on each of the following: | excellent | boob | neutral | fair | poor | unable to |
|--|-----------|------|---------|------|------|-----------|
| Evidence of research productivity | | | | | | |
| Potential for scholarly impact / tenurability | | | | | | |
| Evidence of strong background in relevant fields | | | | | | |
| Evidence for our desired style of research | | | | | | |
| Evidence of teaching experience and interest (including grad mentorship) | | | | | | |
| Evidence of teaching ability | | | | | | |
| Potential to interact with UT Astronomers | | | | | | |
| Potential to contribute to diversity of the department | | | | | | |
| Evidence of leadership | | | | | | |

• How? Just a few examples:

- independence: The ERC Starting Grant asks for a list of publications without your PhD advisor! During your PD phase make sure to work on (some) new ideas with new people.
- leadership: Try to be PI of some proposals, for funding or observations. Or if you are part of a large collaboration, you need to "take over" a small piece of the project/ analysis and be visible as such within the group. Write a review article!!
- initiative: You went out and got an independent fellowship, you started a journal club, you initiated a new project with new people (who write you letters), you pursued a new type of experiment/observation...
- funding: At any level you can win smaller competitive grants like scholarships, travel funds, summer school grants, or "best paper/poster" prizes at conferences/schools

- If you want to land a faculty job at Harvard/MIT/Princeton/Oxford/Cambridge etc, everything you do needs to be turned up to "11". Two named PD fellowships are pretty much the minimum requirement these days.
- Lateral moves are possible and frequent! Given tenure rates at those schools, this is a potentially better strategy anyway....
- Many great jobs do not look for the 2 prize fellowship profile, particularly outside the US, and in fact that can be a liability for liberal arts/undergrad only colleges (in the US mainly)!
- Non-academic positions (labs/observatories) can often have more focused requirements, and less pressure. This can be a major advantage for life/work

- Don't trust my advice! A foolproof way is to look at the CVs of people who have your dream job. These days it's possible to find out (almost) everything you need to know on the internet, most people post their CVs on their webpages.
- Point is: if you know what you need early enough, there is time to "course correct" but it's entirely up to you to be aware of what the standard/bar is, and to gauge how close you are to it

STRATEGIZE: TIMING YOUR APPLICATION SEASON

- **Get organized to be ready for the "top" hunting season, know relevant deadlines well in advance!**
- The main advertising "season" is the autumn for jobs starting the next autumn, but you will find things year round:
 - Competitive fellowships are a worthwhile goal: get more independence, usually more money, and more prestige. These are usually on fixed schedules, most have due dates in autumn.
 - Jobs offered from someone's grant or paid from a large experiment are usually more flexible in terms of start/end times.

STRATEGIZE: TIMING YOUR APPLICATION SEASON

- If you are finishing (anything) in 2019, this coming autumn is when you should be gearing up to serious apply this autumn, up to ONE YEAR in advance!!
- *Astro examples: 85 postings on AAS job register for PDs in September 2016, many of which were top fellowships, compared to only 36 in March 2017. For faculty positions, there were 58 in October 2016 compared to 13 in March 2017!!!

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FINDING POSITIONS

- Where to look? Depends on your field, but here are a few suggestions:
 - AAS job register (http://jobregister.aas.org), for all astronomy-related positions, from PhD to Faculty
 - EU EURAXESS "mobility portal" (http://ec.europa.eu/euraxess/index.cfm/jobs/index)
 - Academic jobs online (https://academicjobsonline.org/ajo)
 - INSPIRE (http://inspirehep.net/collection/Jobs)
 - Websites of specific institutes or national professional societies
 - Mailing lists of collaborations
 - In publications like PRL, Physics Today, Nature, Science, etc...



FINDING POSITIONS II

- Be very cautious about 'spamming' potential hirers with your CVs!
- I increasingly receive unsolicited emails from people asking if I have a position and sending me their application/CV
- If the email is sent from a nonprofessional (gmail/hotmail etc) account and is clearly mass-market ("Dear Professor"), I tend to ignore it
- If the email is sent from an individual who clearly is interested in my group, I am polite and write back, usually just to say "if I have something, it will be advertised, please apply then"
- Sometimes (also increasingly more) I get very strange, lengthy and over-personal emails back. These will *never* be received well, so I recommend you remain succinct, professional and polite in your responses, and listen to what is being told to you!!



NEW IN 2018: FINDING POSITIONS III

- You can anticipate what kinds of opportunities may be coming
- Especially for permanent positions, hiring is not just a matter of "oh this person is really good, let's hire them!". Usually institutes develop a "strategic plan" years in advance laying out the areas where they will prioritise growth and hire first if money arises
- These strategic plans may not be on the web but they are usually available, you
 can ask around to find out what a given institute's likely near-future hires will be
- Also keep tabs on big grants, new government opportunities/initiatives: for instance in the Netherlands new money is coming from the "National Research Agenda", "Zwaartekracht" grants and "Sector Plans". Watch carefully which areas succeed and you can guess where the hires will be a year later.
- Than, develop a strategy to make yourself an appealing candidate!



FINDING NON-ACADEMIC POSITIONS

- There is a really nice site for astronomers looking for nonacademic jobs:
 - http://www.jobsforastronomers.com/
- There's also a LinkedIn group for "Astronomers Beyond Academia: http://linkd.in/Uzn7wL
- Re-training "business" on the rise, several companies specialise in turning (astro)physics PhDs into "data science" experts (e.g., S2DS, Pivigo., etc.)

NEW IN 2019: DIFFERENT KINDS OF POSITIONS (PHD) I: US VS EVERYONE ELSE

- The US system for PhDs is different than most other countries. In the US, you apply for a PhD program at a university directly after the (4yr) BSc. The first ~2 years comprise the MSc phase with courses, after which (sometimes based on exams) you can continue on to the PhD phase which lasts 3-4 years typically.
- Once accepted to a program, you are free to choose your advisor based on projects, and (if you need funding) their ability to pay you! Some programs encourage doing smaller projects first before choosing a final advisor/project.
- Many US schools do not recognise foreign MSc degrees, so if you have a MSc already be aware that you will likely need to negotiate if you do not want to redo 1-2 years of coursework.
- Many US schools require the GRE exams (general and physics). These exams are tedious and biased, an increasingly not required, so try to negotiate out of them!

DIFFERENT KINDS OF POSITIONS (PHD) II

- The US has a very heterogenous system. Within the same department one can have students funded by teaching, as research assistants (from advisor's grants), via internal fellowships and via competitive external fellowships. Be aware these can pay quite differently from each other!
- In the EU, PhD fellowships less common than in the US. There are a few types of positions, be aware that many applications are due a year before starting!:
- EU/national fellowships: EU (Marie Curie ITNs), NOVA/FOM (NL), STFC (UK), DAAD (DE), NASA/NSF (US)
- Institute/program specific fellowship (example: NWO Graduate Schools like GRAPPA or within Research Focal Points like the Delta ITP).
- Working for someone or a collaboration, paid off their project/experiment's grant
- Usually the best source of info will be institute mailing lists and your advisor!!



DIFFERENT KINDS OF POSITIONS (PD)

- There are generally various categories of PD positions roughly in order of competition/prestige:
 - Named Fellowships (often country or EU-wide but not institute specific), typically 3yr
- Fixed-term (often 4-5 yr) research positions, institute specific, often seen as "junior faculty" type positions (rare in US, but more common in EU/Canada/Australia)
- Named Fellowships (institute specific), typically 3-5yr
- EU Initial Training Network type positions, typically 2yr
- "Created" Fellowships (usually institute specific, often based off specific projects but recast as fellowships), typically 3yr
- Fixed-term research positions off grant money (project specific), typically 2-3yr

DIFFERENT KINDS OF POSITIONS (PERMANENT)

- Permanent positions are extremely country- dependent, so take this with a grain of salt:
- Research-oriented universities (international, good funding, good resources): typical teaching loads ~1-2 courses/year (~50 CHs)
- Joint research/faculty positions: new development, such as national data science centers, places like Flatiron/CCA in New York, etc.
- Teaching-oriented position @ university: same as above but loads can be ~200 CHs!
 [CH= contact hour]
- Teaching-oriented universities (less international, often more limited resources for research): much higher loads + student supervision similar to teaching-oriented position
- Research-only institutes/observatories, labs: can be national/international, huge variety in types of positions and duties
- Research within a company (think: data science) or museum/outreach, usually national in focus, often in local language



NAMED PD FELLOWSHIPS

First type: non-institute specific (many but not all!!), not in any particular order:

- **❖** EU Marie Curie Individual fellowships (all fields -- http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/msca-if-2017.html -- due 14/9/17)
 → often requires PhD in hand to apply!
- * ESA Postdoc Research Fellowship program (ESTEC or ESAC, Madrid) (ESA member countries, plus few others -- anything space related -- https://www.cosmos.esa.int/web/science-faculty/research-fellowship -- 29/9/17)
- SESO Postdoc Research Fellowship program (Garching, DE or Chile) (EU member countries? -- Optical/IR astronomy -- https://www.eso.org/sci/activities/FeSt-overview/ESOfellowship.html -- 15/10/15)
- Humboldt (Germany -- any field, http://www.humboldt-foundation.de/web/sponsorship.html, multiple deadlines per year) -> Several programs including 5 yr, junior faculty/group building programs!
- * STFC (UK++ -- anything -- http://www.stfc.ac.uk/566.aspx- various)

NAMED PD FELLOWSHIPS



- More non-institute specific, not in any order, including US-specific ones (some calls are not yet posted for 2016):
 - **♦ NWO Veni** (NL -- anything -- <a href="http://www.nwo.nl/en/funding/our-funding-instruments/nwo/innovational-research-incentives-scheme/veni/index.html -- January 2017) need to have PhD thesis approved to apply!
 - * NWO Rubicon (NL/Other -- anything -- http://www.nwo.nl/en/funding/our-funding-instruments/nwo/rubicon/index.html -- 30/3//17 and 31/8/17) -- limited to 1-2 yrs, now mostly only for people who did PhDs at Dutch institutes to go abroad
 - Einstein (X-ray/γray, accretion theory, particle astrophysics, cosmology, dark energy, gravity waves -- http:// cxc.harvard.edu/fellows/ -- ~1/11/17)
 - Hubble (IR/O/UV/theory -- http://www.stsci.edu/institute/smo/fellowships/hubble-- ~1/11/17) –See also other fellowship links like Giacconi, Davidsen, Lasker on page...
 - Carl Sagan (exoplanets -- http://nexsci.caltech.edu/sagan/fellowship.shtml -- ~1/11/17)
 - **♦ NSF** (need to be US citizen/resident--anything -- http://nsf.gov/funding/pgm_summ.jsp?
 pims_id=5291&org=AST&sel_org=AST&from=fund -- ~15/10/17)
 - Jansky (radio, theory, some are NRAO specific -- https://science.nrao.edu/opportunities/postdoctoral-programs/jansky -- ~1/11/17)

NAMED PD FELLOWSHIPS

For US non-institute specific -- many of these ask you to pick 3 candidate institutes

- * Everyone wants to go to take their fellowships to Harvard/CfA, MIT, Caltech, U Chicago, UC Berkeley, Princeton, etc., but many fellowships also have a policy of one new fellow/institute/year
- * There are many great universities that are rated for astronomy/physics at the same level as the fancy schools. Ultimately you will succeed anywhere you know someone good you'd like to collaborate with, that has an active and lively research environment.
- I recommend also considering places that will not be so oversubscribed, if you make it to the short list it may even give you a (tiny) bit of an edge

NAMED PD FELLOWSHIPS



- Second type: institute specific (just some examples!)
- Miller Fellowships (UC Berkeley -- anything -- http://miller.berkeley.edu/fellowship two stage: nomination!! 10/9/17, proposal 10/10/17)
- CfA Multiple Fellowships (CfA -- astro/theory -- http://www.cfa.harvard.edu/opportunities/postdocs.html -- various Oct/Nov 2017)
- Pappalardo Fellowship (MIT-- physics -- http://web.mit.edu/physics/research/pappalardo/competition.html- must be nominated by Sept 2017)
- CITA Fellowships (Canada-CITA--theoretical astro, multiple fellowships -- http://www.cita.utoronto.ca/opportunities/post-docs/ -- Fall 2017)
- Caltech Prize Fellowships, multiple (Caltech --physics/astro -- https://applications.caltech.edu/jobs#Postdoctoral -- various Fall 2017)
- NASA postdoctoral program (any US nat'l lab-- anything -- http://nasa.orau.org/postdoc/application/index.htm -- 3x/year, nxt 1/11/17, 1/3/17, 1/7/17) but note that they have significant cut the number of foreign nationals allowed, and you need a "mentor" first
- Max Planck Institutes, multiple programs (Germany -- anything -- http://www.mpg.de/career_programs -- varies)
- ❖ Perimeter Institute (Canada -- fund. phys. -- http://www.perimeterinstitute.ca/about/careers/positions-- Fall 2017)
- Mon't forget Asia! China, Taiwan and Japan are on the rise in science in a major way. There are several fellowships at top institutes, some are offered in association with EU institutes like the Max Planck



SOME ASIAN A&A FELLOWSHIPS

**Thanks to (now graduated) API PhD Yi-Jung Yang, but maybe out of date, please send updates to me if you have them!!

JAXA has various positions/fellowships: http://global.jaxa.jp/about/employ/index.html

Sometimes there are special fellowships for projects, i.e. ALMA. But it's not regular, and is based on funding situation. Usually if there is a position open, it will be announced in the website. Below is the list of major astronomical institutes in northeast Asia.

Taiwan: Academia Sinica Institute of Astronomy and Astrophysics (ASIAA) http://www.asiaa.sinica.edu.tw/

Japan: National Astronomical Observatory of Japan (NAOJ) http://www.nao.ac.jp/E/index.html

China: Shanghai Astronomical Observatory (SHAO) http://www.shao.cas.cn/

The National Astronomical Observatories. Chinese Academy of Sciences (NAOC) http://www.bao.ac.cn/

Purple Mountain Observatory (PMO) http://www.pmo.cas.cn/

Korea: Korea Astronomy and Space Science Institute (KASI) http://www.kasi.re.kr/english/



ANOTHER HELPFUL LISTING (MORE UK FOCUSED)

**Thanks to Dr. Rhaana Starling, at University of Leicester, for this additional list of links (some overlap with mine) including several 4-5 year fellowships:

http://www2.le.ac.uk/departments/physics/people/equality/fellowship-listing

(note seems to be a bit out of date but list of fellowships still useful)

NOTES FOR FELLOWSHIPS

- Note: to apply for fellowships it is generally NOT expected that you have entirely new, independent ideas all on your own yet!
- Most fellowships require a host or sometimes even someone to nominate you

 method critical to identify that person (ideally 6+ months ahead of the deadline). You may or

 may not work closely with this person, but it's important for your career development

 to have a local mentor/collaborator.
- Contact that person, ask if they would be interested in being your host, send some ideas and work together with them on the goals/ideas of the proposal! You have to do the heavy lifting, they will just advise and comment on your drafts, but they benefit if you succeed by getting a free group member!
- The earlier the better: your ideal host may already have been approached by someone else otherwise

OTHER GENERAL ADVICE (PD)



Some other things to keep in mind:

- * There is an explosion in "fellowships" these days, but they are not equally prestigious or free in terms of research. Be sure to know what you're being offered (when in doubt, ask externals)
- * The majority of positions out there will involve working for someone off their personal grant. Generally gives you less independence, but can be equally productive if...
 - 1. You like the person/get along with them (very important!)
 - 2. You like the research topic and you can demonstrate initiative!
 - 3. You are at a good institute with other people to interact with
 - 4. There are sufficient resources (decent office/computer/facilities)
 - 5. Travel budget-- very important!! Ask for specifics
 - 6. You have some percentage (usually ~30-40% of the time IF you fulfill your other duties) to do your own research

TIMING STRATEGY (PD)

#Half the game is knowing how to play

- Catch the first application "season" in the early Autumn
- **USA** "standard decision time" is February 15!!
- This gives you a shot at the "second wave" offered in the spring, plus you may have feedback on prior applications
- * Always apply for as many fellowships as you qualify for, in any land you'd be willing to live! Should be your first target
- * Always apply for as many non-fellowship jobs as you qualify for, but ONLY those you would actually consider taking!!! [But, again, I advise against ruling out based on location!]
- Do not take a PD job requiring teaching (optional is ok, then you can choose load), unless you want a teaching-oriented faculty job, in which case you actually need some



PR STRATEGY (PD+)

- **To get your name "out there" by decision-making time, you should plan lecture tours in autumn, and attend conferences
 - * If you are applying for any jobs this year, you should seriously consider the winter meeting (early January) of the American Astronomical Society (www.aas.org, look at their career services page)
 - * Largest meeting of international astronomers besides the IAU general assembly (every three years), most advanced career services I've seen
 - * Many positions conduct interviews at the AAS. I hired my last postdoc based on his AAS talk and subsequent interview!
 - Mention on job apps that you will be there, in case someone just might want to meet you in person
 - (All of the above likely applies to APS or equivalents in other subdiscliplines)
- Consider other PR avenues (always within reason, always with care): blogging,
 Twitter, posts on relevant Facebook science groups, TED talks, YouTube videos,
 etc.

IF TRAVEL IS NOT POSSIBLE

- Depending on the strength of your currency or the level of funding at your institute, going to meetings may not be possible. What can you do to still raise your profile and network? Just a few ideas:
 - ★ Research collaborations: work with people outside your country, and build on those relationships. Show leadership on the project, initiate Skypes/telecons etc.
 - ★ Proposals: identify people who do relevant science that you would like to work with, and invite them to participate in a proposal you are writing
 - ★ Send (very good) posters of your work to put up at conferences with colleagues who are going somewhere
 - ★ Many institutes have funding for short term visitors, do "homework" and investigate what you can apply for!



OTHER THINGS TO BE AWARE OF FOR USA (+ ASIA)

**Be aware of differences in work culture vs. living culture!

- In the US there is some "official" vacation time (4 wks?) but no one really pays attention to that as long as you get your work done. Don't ask about vacation in interview...it comes off badly
- * That said, it would be very unusual for a postdoc to take off for a month at a time if working off someone's else's grant, even in the EU!
- * Health insurance is complicated in the US and expensive, usually there is a choice of plans so find out how it works, and if the job includes benefits. Plans can vary widely in coverage and price, but often do not include dental/optical (!) though this may be changing...?
- * Very few cities are accessible only by public transport or bike...need to keep that in mind when factoring costs, not to mention housing. US PDs generally are better paid than in Europe (in units, i.e., typical is ~\$55-70k + research budget) to compensate
- In China, often salary depends on productivity, and the concept of tenure is not so clear

OTHER GENERAL ADVICE

- It is ok to ask questions about advertised jobs, but don't pester...make sure they are good, serious questions
- * Do NOT get hung up on the idea that you can or should only do what you did for your PhD!! I strongly believe you can switch between subtopics, a first PD in particular can be like a 2nd PhD. It's a very good opportunity to widen your scope, learn something new, move to a different subfield, etc. Drastic changes in fields are much harder, but can be done.
- *The risk of staying in the exact same area is becoming "locked in" or "too narrow"... plus you will qualify for more positions if you have multiple areas of expertise
- It is very important to demonstrate independence from advisor, so whatever you do, make sure to *lead* a project at least slightly different than what your PhD advisor does, somewhere during your PD years!

OUTLINE

- **Some initial thoughts on the whole process
- **Strategy/resources***
- ** Different kinds of positions and other general advice for job hunting strategy*
- ** How to write a good application & deal with letters of recommendation
- **% Group discussion**

- Applying for jobs is VERY time consuming because you should be prepared to spend at least some time tailoring. Even a small investment can pay off
- Applications often consist of
 - Cover letter
 - CV + Publication list
 - Research Statement (or essay, for fellowships)
 - Teaching Statement (faculty)
 - 2-5 letters of reference (depends on level)
- General tone should be "confident yet reasonable": don't brag, but don't underplay your talents either
- Reviewers typically read 10s-100s+ applications: CV, publications, references first, so CV is really key! All crucial info on the first page!!!

- Cover letter (when relevant)
 - ◆ Opinions vary, but why risk it? It's the first impression so put some minimal effort in.
- ◆ Make sure it's tailored to the right person at the right institute! And do not write "Dear Sir(s)". Unless you want to piss off any woman that might otherwise have hired you...
- ◆ Explain *very briefly* who you are, what your background/interests are, and why you are applying for this particular job. Most important: make clear how your interests overlap with those of the person or institute advertising the job!
- ◆ Put more effort in if it is not obvious why you fit the job
- ♦ Usually you also put the names/contact info of your letters of rec
- **♦** Sound enthusiastic, but not brown-nosey!

BASIC CV LAYOUT



- CV general structure (make sure key info on 1st page!)
 - ◆ Basic info: Name, current position and contact info, citizenship (DoB, marital status and photo not done in US but normal in EU!)
 - ◆ Education section: start with university degrees only. Write your degree name in native tongue, then translate to system where you are applying, i.e.: "U Antarctica, Diploma Bovinus Scienciae (equiv. to Bachelors Degree)"
 - ◆ List PhD thesis title and advisor
 - ◆ List all research jobs/experience that are *relevant* (no nonacademic jobs unless there's good reason)
 - ◆ List all awards/major grants!
 - ◆ List recent invited talks/colloquia + contribute talks (separately)
 - ◆ List all skills (computer programming etc)
 - ◆ List all languages and level of fluency
 - ◆ In the US it is *not* common to list external interests or at least not too many. I recommend against it for US applications.

PUBLICATIONS

- Some applications want this as part of the CV, some want it as a separate list, make sure to follow instructions!
 - ◆Once you have a decent publication list (>10 refereed) no one wants to see all your conference talks/proceedings (too many can be interpreted as 'filler'—an attempt to pad a sparse record). Suggestion: list a few, then make use of a short URL link to the full ADS list.
 - ◆ Be very careful about listing papers that have not yet been submitted to a journal. Since there is no proof of the existence of these papers, this mainly looks like padding. If you do list them, put them in a separate section like "works in progress" to make clear you are not trying to lump them in with actual papers!

- Letters of reference/recommendation
 - **♦** This is probably one of the more important, yet tricky aspects
 - ◆ Ideally you want very positive letters from people who know you and your work well, but
 who also have name recognition in the field you are applying

 ★ think ahead (whom will
 you ask??)
 - ◆ There are two camps: 1) those who think any letter from someone famous is more important than a good letter from someone not famous, and 2) those who think a really good letter from anyone is better than a bad one from someone famous
 - ◆ Part of the problem is that committees will likely be made of a mix of people who fall into both camps!
 - **♦ Strategy:** do a little of both, develop a pool of letter writers (>3) if you can, that you can swap around depending on the job
 - ◆ Or in your cover letter, you can say "here are my 3 references" and list them, then say "for additional references, you could contact"... and list a couple others. But no more than 4-5 total (for PD/faculty), and really only do this if you have good reason.

You really want to know what kind of letters you are getting!

- ◆ There are some tricks. Never ask by email if possible. Ask: "Would you feel comfortable writing me a strong/good letter of recommendation"? This is different than asking "Can you write me a letter?" Watch the reaction very carefully!
- ◆ With people you know well, try to ensure they tailor the letters. I have seen countless letters with "To whom it may concern" and "I'm sure they'll do great at your university". I tend to weight those lower since they clearly have no idea!
- ◆ Even if you have three famous people whom you kind of know, make sure one of your letters is from someone who really knows you and your work personally
- ◆ Foreign letters tend to be more understated, which in the US might be interpreted as a weak letter. And US letters often seem over the top outside the US! Coach your writers accordingly.

- Make sure you know where you stand with your current advisor since their letter will count the most!
 - ◆ They should be willing to have a very frank discussion about how you are doing, and your career prospects. If you are not sure where you stand, you should sit down and ask, well before the deadlines!!
 - ♦ It is your responsibility to pursue this talk! They probably will not volunteer it, especially if it's bad news, but it is far better for you to know than not.
 - ◆ Also provides an opportunity for you to fix a problem that may stand between you and a good letter, like finishing a paper or something that your advisor/boss is cranky about, but that is also why you shouldn't do this last minute.
 - ◆ My advice: pursue this talk 6 months (MSc) to a year (PhD/PD) before you plan to apply for a new job!!

Other good points that came up from prior discussions:

- *Famous people are often asked by many people for letters, and if they write letters for more than one candidate for the same job, it is *very common* for them to compare the candidates! Thus you should know who your competition are and don't ask for a letter for that position/fellowship unless you're pretty sure you won't be the one he/she says is not as good as the others...
- Important ways to "groom" future letter writers: grab people at conferences to see your poster, ask them about their paper or show them yours and have some (good) questions for them, contact people via email to ask a (good) question about their research. People admire initiative from young scientists, as long as it's not pestering and there are logical reasons to be contacted.
- Don't be shy about asking for letters, that's your advisor/boss's job, and someone wrote them good letters once or they wouldn't have that job! But it is your responsibility to do so with enough time (at least a few weeks warning is ideal, two weeks is already pushing it)!!!

WRITING A GOOD APPLICATION (PHD/PD)

Research statement

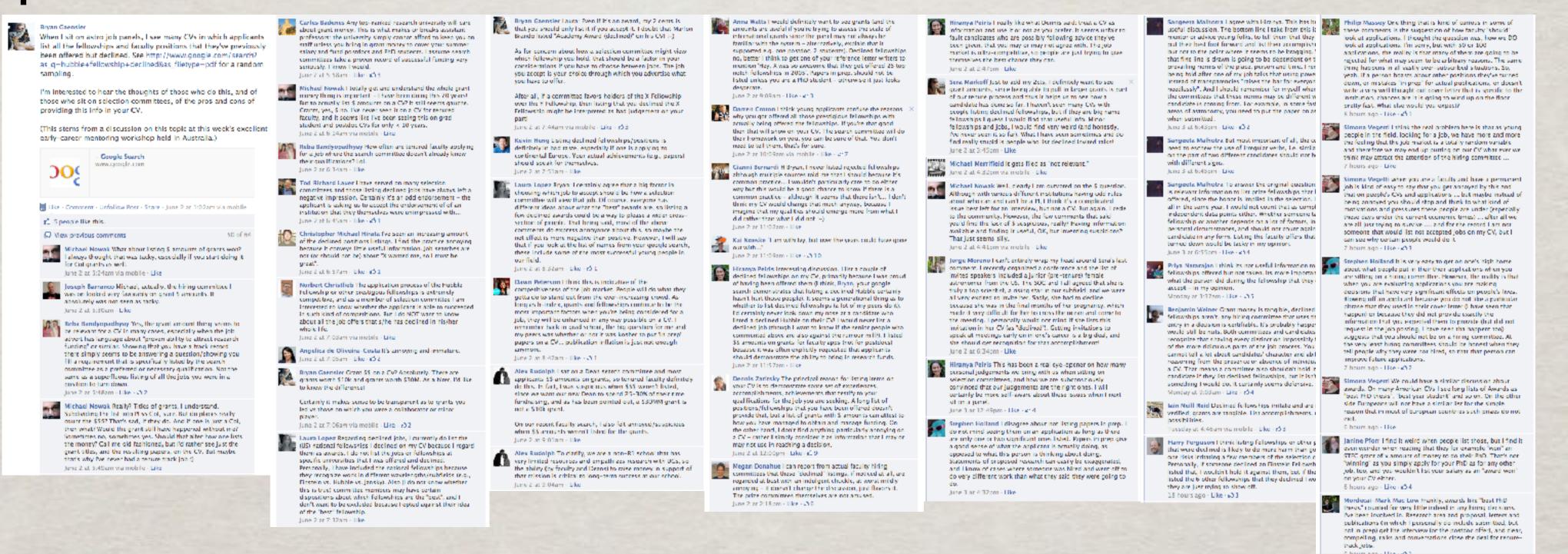
- ◆ Follow application instructions very carefully, when in doubt, shorter (~1-2 pages max) is better
- ◆ Tailor it! (at least for the jobs you really want!) Emphasise aspects of your work that fit the job you're applying for. Mention specific people/projects/names @ the institute, and sound like you mean it!
- ♦ Why? It shows that you've done your homework. Many people don't bother, so it will make yours stand out in the pile
- ◆ A nice figure says 1000 words. Make very nice, clear, easy to parse, colorful figures. And then say less.
- → Show awareness about the position!! I always get a few PD applications *telling* me what they are going to do, often unrelated to my posting!! If the job is not a fellowship then you should make clear you understand that you will be working with the group on their science for the majority of your time, and show interest in/awareness of that science!

WRITING A GOOD APPLICATION (PERMANENT/FACULTY)

- Research statement: These are much more critical than for PDs, follow those guidelines for PDs in general but also:
- ◆ Try to stay within ~4 pages with figures and references, and have really clear layout with beautiful figures that speak to non-experts
- ◆ You want to clearly lay out your expertise, your standout successes and your future research direction, showing clear leadership abilities
- ◆ Tailor it! In this case you want to make sure that what you are saying will appeal to the place that is hiring
- ◆ Do not try to go into great detail, think of it as an abstract of your research to advertise your vision, with a goal of getting them to invite you to an interview

REMINDER: TAKE ALL THIS ADVICE WITH A GRAIN OF SALT!

For every two scientists, there are three opinions! See a 2013 FB Astronomers group thread over what to do/not do on CVs!



This emphasizes yet again why you need to start early! Your advisor/boss will likely want to iterate with you, but also you should allow enough time to "poll" a few more senior folk and see how they feel about your entire application package.

INTERVIEWS



- Some PhD, many PD and all permanent positions require a video or in person interview
 - ◆ Requires its own talk so this is just a basic summary, because an interview can involve a research talk as well as discussions
 - ◆ Dress code: casual/business, a full suit and tie is generally overkill for sloppy astro/phys folk. Show that you put in some effort but you don't need to go overboard.
 - ◆ Obviously give a good, relevant talk and practice. Tailor to the audience, make sure to ask what level to aim for. For faculty should be *very broad* colloquium.
 - ◆ Know all the people you will speak to and what they do, so you have something to say that demonstrates your knowledge!
 - ◆ Be able to clearly say what you would do at the institute you're applying for, what attracts you to the position/group, what your vision is for yourself in the future. These are standard questions. Show awareness of the position and place!

NEW IN 2019! FACULTY INTERVIEW STANDARD QUESTIONS



- Ultimately "Why you, why this, why now", similar to writing a compelling grant, so you want to step away from the details and show you have vision and plans, and strategy for the next decade
 - → variations on this theme will definitely come in some form: what will you have achieved in 5 years? what
 about 10 years? what's your "big picture" plan for the future, ie. say you're writing a million €/\$/¥ grant, you
 have to pitch solving a major problem in the field, what will you pitch? Why are you the right person to do
 this?
 - ♦ In 10 years what will you look back on and be most proud of?
 - ◆ Do you see yourself changing fields, learning new skills?
 - ♦ Which instruments will you use in future, role in big facilities?
 - ◆ Of course as part of the research chats, show you know what everyone does, how you would fit, with whom might you develop collaborations (without stepping on their toes!)
 - → Education/teaching/supervising: make sure you know what they teach and show that awareness, have ideas about what you'd teach from their existing courses as well as something you'd like to develop at BSc and grad level. Have examples of BSc, MSc,. PhD research projects off the top of your head.
 - ◆ understand something about innovative teaching methods: interactive learning, flipped classrooms, blended learning etc...

NEW IN 2019! FACULTY INTERVIEW STANDARD QUESTIONS II



- → Have some outreach/diversity ideas, particularly if you are yourself not URM, departments may want to see that you're sensitive to the problems and have ideas how to improve things.
- → You might expect them to try to probe what are your original ideas particularly if you're more junior, so be ready. No matter how weird you find the question, use humor, try to laugh a bit and not seem phased if you can. Being ready and practiced are good ways.
- ◆ Startup related: Do you already have a sense of what resources you would need to be successful? (this may not come until offer time, but it's good to think ahead and have a good idea about this, don't ask for money just to have money, have a good justifiable reason for everything you need to give you a leg up in the first years, like summer salary, computers for you and your group, travel and publication money, money for X students/postdocs, etc.
- ◆ Research related questions based on your talk and statement: this is where your friends can also help, to ask you nitpicky, critical questions about your statement and your talk, and be really nasty, to give you practice handling the worst case scenario. Hopefully it won't happen (these days most interviews are really congenial) but you never know...especially more "old school" departments sometimes like to push a little harder to see how people handle it, and they want to see you push back.
- ◆ Some departments will ask for examples of how you are a good citizen in your institute
- ♦ Always ends with "do you have any questions for us?" Make sure you have some!

NEW IN 2019! INTERVIEW STANDARD QUESTIONS III: ** PD/STAFF @ LABS/FACILITIES (VIA V. BECKMANN)

- ♦ what are the largest risks for your project? how do you ensure that your project gets done in the time you have
- ♦ who are your international collaborators on the project? who else works on this field might they work on a similar project as yours?
- → with whom at *institution hiring* could you work together on your project (would be good for you to know who else has
 a postdoc there and who else is working here on your field)
- → name 4 strengths / weaknesses of yourself? what are your plans until the start of the start of the position? do you have other applications running right now?
- ◆ could you see yourself doing my job (you might want to look up in advance what the interviewer is working on...)
- ♦ where do you see yourself in 5 years / what is your plan for after the postdoc?
- → which of our projects/missions (current or past) you consider the most successful? Why?
- ◆ Do you have a question for us? (make sure you do)
- → typical questions of the HR person (and he/she has to ask something!): how do you deal with stress / conflicts at the workplace? what do you do in your free time as a balance to your work? what challenges for you to live in [city/country you apply in] area and how do you deal with them
- ◆ Typical questions you are likely to get, or variations of those: How would you explain your research to a non-specialist? (or some other version of the elevator pitch)? What scientific result on the cover of Nature would get you so excited you'd call your family to tell them about it? If you had a billion euros, which mission would you build? If you had a million seconds of observations, how would you use them? What are the main topics ESA is involved in? (Not just in science think Earth observations, etc)? What would your former supervisor/boss/colleague say about you?



NEGOTIATION (PD)

****Once you get an offer, you can often negotiate a few things**

- What sort of facilities/computer you get on startup
- For a job off someone's grant, you need to discuss the percentage time for your own work, travel money, and in some cases salary (US does not have fixed scales for non-governmental jobs!!)
- If you have multiple offers, it's ok to tell people that you need time to decide etc...up until Feb 15 is "acceptable" by the honor code for US postdocs, so if they try to pressure you that's not a good sign about them.
- Sometimes it can pay to tell someone their job is your top choice, but you have to use your judgement...base it on rapport
- * Never be unpleasant/arrogant. Treat everyone as a potential future colleague...how do you want them to see you? So be honest and respectful. Even if you turn them down. They could be on a panel next time you apply for funding!



NEGOTIATION (PERMANENT)

- **This is very country dependent, the key is to talk to people and get advice ahead of time of what is considered acceptable at a given institute
 - * For instance in the US salary is extremely negotiable, two people coming into the same level may not get the same deal! Summer salary is not included but startup packages tend to be much higher than EU
 - * In the EU, salaries/benefits are usually not too negotiable, but other things like startup are, and summer salary is covered in most contracts (sometimes also annual bonuses!)
 - * Be very aware of what the rules are for getting tenure/permanency and try to negotiate with that in mind. I.e., at UvA we want to see successful PhD supervision and getting grants. We usually give incoming faculty a PhD student in lieu of all-cash startup at the start to give them some of that experience while they work to build up a group.

FEEDBACK

- #Finally: if you apply for a job/fellowship that you really wanted, and you didn't get it, it can be ok to ask for feedback on your application
 - I would only do this if you know you were on the shortlist, since otherwise they may not have paid as much attention to your individual application
 - * You can politely ask "if you feel comfortable, I would really appreciate some feedback on my application to help improve my chances for other positions" etc. You may not get anything back, but often you do, and it doesn't hurt to ask.
 - In the rare case where you know someone on the committee, you can sometimes find out more sensitive things like, did your letter writers write letters as good as you thought they would? Sadly, this often turns out to be an issue, which is why I stress being very thoughtful about your letters.

TIPS FOR MODERN TIMES

- **Google yourself. Seriously. Because we (the people you applied to) definitely will!!**
- # Hide your weird issues and fetishes behind the privacy settings of things like Facebook, Instagram, whatever. Sometimes it really is too much info, and can seriously hurt your application!
- EVERYONE knows each other (1 degree of separation), EVERYONE talks, so
 behave well at all (professional) times!!
- Learn some etiquette! I get the sense that because of social media, the younger generation thinks we are all friends. We are not your friends!! We are your potential bosses, and we are generally not impressed by over-casual and over-personal emails. Stay professional unless you really know the person (and even then, there's a certain formality about job applications, people become suddenly old-fashioned...).

THE RUMOR PAGE

- In Astro, there's a very useful "astro job rumors wiki"! http://www.astrobetter.com/wiki/tiki-index.php?page=Rumor+Mill
- Some physics pages (new!): In the case of condensed matter / AMO, a (somewhat US-focused) site for faculty rumors: https://cmamorumor.wikispaces.com/
- **In high-energy there are a number of rumor mills. For HEP-theory postdocs, the relevant site is: https://sites.google.com/site/postdocrumor/. It also has a bunch of links to sites for faculty positions, as well as related fields.
- # If your area doesn't have one, you should start one! Ours was started by postdocs fed up with the game-playing, and led in part to the agreed 15 Feb "unified" date for PDs

POTENTIAL CAREER PITFALLS

- To put some things out there for the discussion, I wanted to also list what I see as dangerous patterns/pitfalls to be aware of:
 - Lack of self-awareness, or not doing anything about it even when you know you have weak points (coaching, trainings are very helpful!!)
 - Procrastination and time management in general: not planning well, overbooking, doing busy work but not real work (advice: take a course/ coaching!!!)
 - Avoiding talks/networking from fear of public speaking and shyness
 - Avoiding risks (scientific or otherwise)
 - Too much being a team player, support role

HELP ME IMPROVE THIS!!

If you have any tips, or feel there were omissions, or would have liked to hear more about something else, etc, please let me know! Each version includes updates from input received in the prior year, it's a 'living document'!

OUTLINE

- **Some initial thoughts on the whole process
- **Strategy/resources***
- ** Different kinds of positions and other general advice for job hunting strategy*
- ** How to write a good application & deal with letters of recommendation
- *DISCUSS!