

# Evidence for Life After LPL

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I have been asked to comment on what I have learned about becoming a planetary scientist!  
Commencing countdown, engines on...

Planetary science has a way of drawing you in. You might have started as a geologist, an astrophysicist, a chemist, a mathematician, or nothing of the sort. You might have owned a telescope as a seven year old, or gone to some museums with pictures of planetary landscapes. Maybe you are the son or daughter of academicians. Maybe you have no idea how you got here. Whatever your path, now you're hooked, and you want to make a career of it, despite everybody's clear advice that (a) planetary science doesn't pay well, (b) the job market is unstable and brutally competitive, and (c) you might end up living in Houston.

What can I say about carving a career out of this jungle? I'd first say that this is the wrong metaphor. Think instead about planting a garden in a desert. You have to be accepting of what is out there, and willing to put in a lot of hard work to prepare fertile ground, not just for yourself but for others, and *with* others. Dream about starting something new. When I lived in Tucson, I was a good gardener except for those times I left for two weeks and returned to find everything dead. To succeed in planetary science, I think you have to work at it 100%. Sorry to say, there are going to be few true vacations. A conference in Nice is nice, but still a conference.

But in recompense there is the old adage, "find a job that you truly love, and you won't have to work a day in your life." A career learning how the planets work is certainly worth a few traditional sacrifices. Going to the dome, traveling to the field, visiting colleagues in Italy, showing up for work at noon – these are the silver linings that continue long after grad school.

You have to be good at bootstrapping. You also have to be willing to take major career risks in order to ensure that your life is sane and balanced and fun. Don't take a job working for a jerk on a project you think is boring, just because you'll still be a Planetary Scientist. But don't assume that you "deserve" anything – remember that pure research is a luxury afforded by taxpayers and is not of immediate utility, unless you use it to educate. After graduate training in planetary science, we are all well trained to take on any number of jobs, such as teaching at a high school or a non-research college, solving environmental problems, working for structural or explorational geology firms, or as bureaucrats, machinists, journalists and opticians.

If you are looking forward to your first postdoc, brace yourself. The difference between a postdoc and grad school is far greater than that between grad school and undergraduate studies. Things become hugely different, and you have about two or three years to become self-sufficient (unless you want to settle down as somebody's indentured servant or running Powerpoint for a NASA bureaucracy). You don't have *N* years (as many as 17, a graduate watermark set in the late Merlinian) to think deep thoughts and go have pitchers and enjoy the campus. You have to compete seriously for funding and positions, sometimes against your friends. The path towards funding security has broken many a spirit in science, and sad to say it has also ruined many a friendship. Are you sure this path is for you?

If so, then be flexible and collaborative. Strive to work with people in different disciplines. And be willing to wager your career for the opportunity to meet the challenges ahead. A career in planetary science is a chimera that is not worth pursuing, except by doing.

## Other Random, Unstructured Advice for a Planetary Sciences Postgraduate:

1. It only gets worse. If you have complaints about anything related to planetary science (too many geeks, no girl/boyfriend, copiers don't work, no money in it, horrible bureaucracy) that complaint will amplify a hundred fold by the time you have been piloting an increasingly grimy workstation for five years behind the soothing pink wall partitions of, say, building 245.
2. However homely, decorate your cubicle and make it a pleasant place for a visitor to sit.
3. If you love planetary science, you'll be creative in finding a job. The easy or obvious jobs sometimes have a catch. The good jobs are the ones waiting for you to define them.
4. In science, don't be afraid to be controversial. You are an attorney for hypotheses: recognize your duty to defend an idea, even when you harbor your first doubts, but not beyond the point of reason. Don't take it personally to be wrong (or right for that matter) – it's part of the method.
5. Spend your own money on some things that your employer can't/won't buy – e.g. a chair that won't cripple you, or travel to a meeting outside your job description.
6. Crash on the floor of a friend's house, if traveling to a meeting on the cheap, or if faced with the prospect of Yet Another Corporate Wasteland Suite.
7. Think real hard about wanting to be exactly what you think, right now, you want to be (e.g. a planetary scientist generally, a meteorite petrochemist specifically, or a “this-is-my-chondrule-rim” fetishist extremely specifically). Would it kill you to sell books for a couple of years and meet some human beings? (Yes, this would hurt your immediate research career prospects in planetary science. But you might also get laid.) Or to accept a postdoc in a field that is totally, totally different? Or to teach?
8. Soft money is *fine*. Also, contrary to popular belief, a faculty position does not mean the end of soft money. Instead, you end up raising money not for yourself, but for your research group (friends), and the stress is worse than ever when the grants fall short.
9. What they are looking for in a faculty search: somebody they'll have to work closely with *for the rest of their life*. Take it as seriously as you would getting married. Make a good professional impression, but let loose your human side.
10. When you get a responsible job, shoulder your burden. But unless you really want to run the place some day, don't exhibit that kind of competence or ambition (Zahnle's secret).
11. Say no to a manuscript review request if you already have one or more on your plate. And don't go fixing an author's math or prose unless you like to do their work for them. You should be working on your own math and prose.
12. Say yes, as a postdoc, to participating in a NASA review panel, and to serving as associate editor to a journal.
13. The first time you hire people (grads, techs) you're bound to learn something. Except for well-defined temporary positions, don't hire unless you know the funding is reasonably stable. Taking on a new student, you are committing to help bring that person to a certain level, so think real hard about this in terms of stipends and personal time.

14. Go ahead and accept a postdoc in Houston or Phoenix<sup>1</sup>. Remember, you're at a big research and financial advantage if you are willing to *leave* your postdoc!
15. But never take a permanent job in a town that sucks, unless you are extremely open minded. (I once heard a Rice graduate say, with a straight face, that Houston was the center of the cultural universe.)
16. Don't spend a wad on your first computer. Act as broke as possible your first year, as a general rule (except at the pub). Stacks of beowulfs sit reasonably idle across the country, waiting for you to justify their existence, and two grand in two years will buy you what 10 grand buys you today<sup>2</sup>. Whatever you do buy in terms of research hardware, make sure you can devote the time or personnel to keep it running.
17. Get your own printer/fax/copier/scanner, however, as these are only \$400 and are amazingly useful on your desk.
18. Exhibit team spirit among office and clerical staffers. Don't be a walking, talking crisis who needs to be micromanaged, avoided or sedated.
19. Travel to important meetings in Rio and Paris whenever they're paid for, but take the science part of the meetings seriously. When taxpayers send you to some isle of Bacchus, show them your appreciation by attending the most important talks, hanging out at the poster sessions, and making a reasonably coherent show of yourself (or at least providing entertainment) during your talk.
20. If you get tired of traveling, or are having a drag at a meeting, take a day off.
21. The most influential science reporters are, by definition, those who sell the most papers. Their metric of success is different from yours. Most science is easily miscommunicated, so don't feel obliged to return phone calls, but if you do talk about your work, spend the time to make sure you have had a good conversation about it, and that they understand it. If in doubt, ask to see a copy of the write-up before publication. Talking to the local paper or radio station is great if you want to get recognition at your new job.
22. Despite all precautions, you are not always in control of your words. Usually it doesn't matter, in the big scheme of things, if what you really said got prettied up a bit, or if the article you agreed to write is only approximately what you wrote, and is featured alongside a dramatically bad full page smudge-painting of a smoking, hurtling, diesel-fuming lava-spewing asteroid crashing into the American heartland.
23. Avoid skirmishes, and don't take part in high school locker drama. Refrain from sending emails when you're angry or inebriated – there is no “*unsend*” button.
24. If you are not having fun doing something (teaching, a research project you started), make it more interesting. If you are stuck trying to solve the problem with a computer model that doesn't work, go to the library and read a few papers. If your students are looking at you with glazed eyes, announce a spontaneous field trip, or drag one of them to the front of the room to explain something *you* don't understand.
25. Remember and honor your ignorance.
26. Ignore emails sent to more than 6 recipients (see 10).

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<sup>1</sup> I only use Houston and Phoenix as place holders for actual undesirable locations. I love Houston and Phoenix! What better places to study extremophiles, exotic atmospheres, and comparative planetology.

<sup>2</sup> 26 months being the optimal “slacking time”, according to *The effect of Moore's law and slacking on large computations* by C. Gottbraith *et al.* of Steward Observatory, <http://www.gil-barad.net/~chrisg/mooreslaw/Paper.html>

27. Be willing to quit your goddam job at any time, but go have a beer first.

28. Live long and prosper.