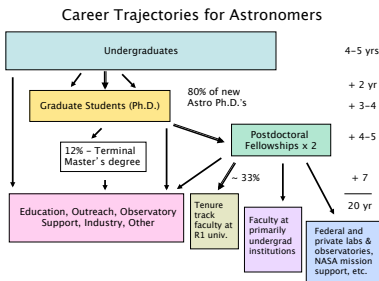


"Career Outcomes for Astronomy Ph.D. Graduates of the University of Texas at Austin: The Next Generation"

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Abstract: Sixteen years ago, at the 189th AAS Meeting in Toronto (Jan. 1997), I presented results from a survey of the career histories of 78 astronomers who earned Ph.D.s in Astronomy at the University of Texas at Austin during 1984–1995. In the present poster I update this earlier study by adding 81 Ph.D. recipients from 1996–2010. I use this expanded data set to assess possible long term trends and to compare to the national context and documents such as the Astro2010 Decadal Report. Despite the understandably discouraged outlook of young astronomers who have not yet secured long-term positions of their preference, the patterns of professional outcomes have not changed as dramatically, nor are the prospects as bleak, as is often perceived. As of late 2010, about 75% of Texas Ph.D.s 7–14 years past the Ph.D. were still participating actively in the astronomical enterprise. Most of those who had left astronomy did so by choice (and have had considerable success in their alternate careers). Of graduates 6 years or less past the Ph.D., 50% were in postdoctoral positions and less than 10% had left astronomy. Several recent articles have highlighted the fact that astronomers who obtain permanent positions usually first hold two or three temporary (postdoctoral) positions, and that less than 50% of astronomy Ph.D.s end up in academia. This has been true for a long time. On the positive side, new technologies and more inclusive attitudes have made it possible to remain part of the astronomical community from a wider range of positions.

This chart was created to ~~care~~ warn prospective undergraduate astronomy majors about what it takes to become a professional astronomer. The point was made that by year 4–6, you should be doing research and already consider yourself to be an astronomer.



Comments on the New Results

- Nearly all new Astronomy Ph.D.'s from Texas go right into postdoc positions. Even the Cohort G individuals in columns (g) & (i) have this title, so the fraction is 95%!
- After about 5–6 years, researchers on soft money no longer go by that title, so the postdoc fraction is 0%.
- Among those beyond the postdoc stage, 64% hold permanent jobs as astronomy faculty or staff, and 76% (3/4) remain part of the astronomy enterprise.
- There are opportunities in new private observatories, e.g. Las Cumbres and other "start-ups."
- Several of the few who "left astronomy" have been highly successful. One is director of a Supercomputing Center, another is a high-level patent lawyer. Three (two females, one male) are currently full-time parents.

Evolution of the Nature of the Astronomy Postdoc

- Holding two or even three sequential postdoctoral positions, which is decried by Metcalfe (2008) and Seth et al. (2010), has been typical for about/at least three decades (since the late 1970's).
- The duration of some postdoctoral appointments has increased, from 2 to 3 or even 5 years, especially for prestigious, "prize" postdocs, and some astronomers "stack" multiple postdocs in a given location; these strategies were developed as solutions to the issue of frequent moves.
- A much higher fraction of today's astronomy postdocs hold "prize" fellowships, enabling them to conduct independent research based on successful proposals. Their situation is comparable to junior faculty without the burden of teaching and service obligations. To the extent that these populate the rising curve (right), it is a positive development.

The above right figure, from Seth et al. (2010), is based on data from Metcalfe (2008). The correlation of Ph.D. production with federal research funding was already noted (for all science disciplines) in Griffiths et al. (1995). The most notable feature is the dramatic spike in the number of postdoctoral positions, compared to the flat trend in (faculty + research) positions. The rise in postdoc jobs continues to 2009 in Fig. 4–13 of the Astro2010 report.

Disclaimer and Acknowledgments: The statistical information presented here has some uncertainty due to the author's possible errors in tabulation or interpretation of the career status of those surveyed; any errors are my responsibility. I would like to express my (long overdue) appreciation to the Texas graduates who provided me with information for my initial study (Cohorts A, B, and C) before the days of Google and the World Wide Web. I also acknowledge support from NSF grant AST 0708245.

Motivation for Tracking Astronomers' Careers

- Students embarking on Ph.D. training in astronomy deserve to be provided with a realistic picture of career options and prospects.
- Useful to look for trends, e.g. in length of the postdoctoral phase, small number of research faculty openings (cited by Metcalfe 2008; Seth et al. 2010). There has been little change in these parameters.
- The proposition that the only successful career is one just like your advisor's (= a tenured faculty position) needs to be countered with examples of a broader range of successful career paths.

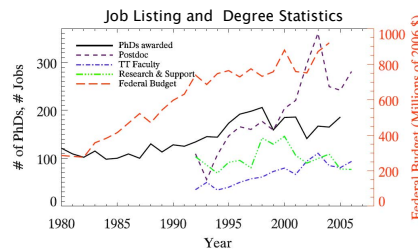
Results of the Previous Study (1984–1995)

- Roughly 2/3 of new Ph.D.s went directly into postdoctoral positions, but only a few had moved to permanent positions by 5–8 yr post Ph.D. (a 5% change.) Typical postdoc phases already lasted up to 6 yr and 2 or 3 positions. (Note: Cohort C was not sampled at 5–8 yr.)
- Not shown in the table: By 9–12 yrs post-Ph.D., 72% of Cohort A had permanent positions, but only 39% of the cohort were in academia.

Career Outcomes for the 1996–2010 Graduates

	Year of Ph.D.	2008-10	2004-07	2000-03	1996-99	Combined
	Yrs since Ph.D.	0–2	3–6	7–10	11–14	7–14
	Cohort Designation	G	F	E	D	D+E
(a)	Postdoctoral positions	80%	50%	0%	0%	0%
(b)	TT Faculty, research univ.	0%	6%	29%	16%	22%
(c)	TT Faculty, undergrad inst.	5%	12%	7%	25%	18%
(d)	Staff scientist, lab/observ.	0%	0%	7%	16%	12%
(e)	Support staff, lab/observ.	0%	0%	14%	11%	12%
(b)-(e)	Total Permanent ast. jobs	5%	18%	57%	68%	64%
(f)	Soft-money, affiliated	0%	6%	0%	5%	3%
(g)	Large company, astronomy	5%	0%	0%	0%	0%
(h)	Small company, astronomy	0%	12%	7%	0%	3%
(i)	Science educ./outreach	5%	0%	7%	5%	6%
(a)-(i)	All astronomy jobs	95%	88%	72%	79%	76%
(j)	"Left" astronomy	5%	12%	28%	21%	24%

Notes: Each cohort includes only 14–19 people, so one individual corresponds to 5–7%. Also, some columns do not add up correctly as displayed, due to fractional percentages. The right-most column is the sum of the previous two; these people have established career outcomes. (c) indicates faculty positions at small colleges or primarily undergraduate universities. (f) indicates soft-money astronomers affiliated with a research university or lab. (j) includes 11 people who went into the computing, financial, publishing, patent industries, or private life.



Demographics of U.T. Astronomy Ph.D.s

Cohort	PhD year	Total #	% women	% non-US
A	1984-1987	18	6	22
B	1988-1991	23	30	43
C	1992-1995	37	14	46
(A-C)	1984-1995	78	17%	40%
D	1996-1999	18	6	28
E	2000-2003	15	40	40
F	2004-2007	29	45	34
G	2008-2010	19	37	26
(D-G)	1996-2010	81	33%	32%

1984-1996 Sample: Outcomes at Fixed "Delays"

Job/Cohort	1–4 yrs after Ph.D.			5–8 yrs after	
	A	B	C	A	B
Postdoc	61%	74%	59%	50%	39%
Academia	28	4	16	33	26
Lab/Observ	11	13	11	11	13
Permanent	39%	17%	27%	44%	39%
Industry	0%	9%	14%	6%	22%

Additional data and commentary can be found at Dinerstein 1996, BAAS, 28, 1277 (189.0501), or <http://www.as.utexas.edu/astronomy/people/dinerstein/talk.html>.

Nothing New Under the Stars?

15 years ago:

- "More than half of new graduates with Ph.D.s [in all scientific disciplines] now find work in nonacademic settings." (Griffith et al. 1995)
- "For the past several decades, about 2/3 of the class [of new Ph.D.s] stays in astronomy ... Only 46% of the class of 1960, who faced as wide-open a job market as any group in this century, ended up in universities." (Shipman 1996)

35 years ago:

- "... only a small fraction of new Ph.D.'s can look forward to permanent positions in Ph.D.-granting departments, as they could in the past." (Leo Goldberg, AAS Astronomy Manpower Committee, letter to NAS dated Feb. 21, 1975)

(Chronological) Sources & Resources

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