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A Survey of Amateur & Professional Participants in the Variable Star Observing Partnership

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During the summer of 1999, I conducted a survey of amateur and professional participants in the variable star observing partnership. The survey was distributed first on several email lists (AAVSO, CBA, and VSNET), and later at this conference. It included both basic information questions and open-ended questions on training, goals, and value systems.

By definition, the survey sample consists of a select group of amateurs and professionals who have a special interest in working with each other. The goal of the survey was to understand the sociology of this select group, as distinct from amateurs and professionals in general.

I received approximately 60 survey responses, 3/4 amateur and 1/4 professional. The high fraction of conference participants implies a sample bias toward the more active members of the VSO partnership, as well as those with time or money to travel.[1] All results should be viewed somewhat skeptically given the small sample size.

The basic demographics of the sample show a predominantly male population, ages 35-65 with a few outliers. At least 20% of the respondents come from outside North America. Defining "professional" and "amateur" can be tricky, so I asked people to classify themselves to see what self-definition would emerge.[2] The strongest indicators of amateur/professional status are formal astronomy degrees and paid astronomy employment. Type of work is also an indicator, with professionals focusing more on research for publication and amateurs focusing more on observation.

In what follows I compare with a survey by sociologist Robert Stebbins, who interviewed an unrestricted sample of amateur and professional astronomers working near Calgary. His survey participants included the full range of amateurs, from armchair astronomers through serious observers, and also a broader range of professionals, not necessarily interested in variable stars or in working with amateurs.

Stebbins reports that amateur and professional astronomers represent two minimally overlapping sets of individuals. He finds that early experiences with telescopes left more lasting impressions on amateurs than on professionals. Stebbins argues that the most common reasons why amateurs do not become professionals are that they prefer observation to analysis and/or that they believe themselves not good enough at advanced math and physics. He concludes that amateurs "generally have neither the inclination nor the aptitude for professional or advanced empirical and theoretical work in the discipline."[3]

This picture contrasts strikingly with the data obtained here for the VSO partnership community. Amateurs and professionals in this community strongly overlap, with 2/3 of professionals reporting that they were or still are amateurs as well, and 1/5 of amateurs reporting semi-professional status: life histories that include teaching astronomy, graduate level training in astronomy, or brief periods of astronomy-related employment.[4] Although a larger fraction of professionals use PEP or CCD equipment, nonetheless nearly 2/3 of amateurs also use such equipment. Furthermore, 95% of amateurs describe themselves as comfortable reading technical journals such as PASP or the ApJ. Amateurs are often professionals in other technical fields.

In recalling their first attraction to astronomy, approximately 3/4 of both amateurs and professionals describe being inspired by the beauty or fascination of the sky itself, usually as children or teenagers. There is no evidence that early telescope experiences made a greater impression on amateurs. The stereotype of amateurs as telescope-makers first and lovers-of-the-heavens second also fits VSOers poorly. When asked which aspects of astronomy are part of "why they do it," only about 15% of amateurs cite instrumentation as a key pleasure, the same percentage as for professionals. However, on average, amateurs spend more time on instrumentation, and while nearly 1/2 of amateurs say they do some instrumentation and enjoy it, only 1/5 of professionals say the same.

Only 20% of professionals describe visual observing as a reason why they do astronomy, whereas 60% of amateurs give it that priority. These numbers are consistent with Stebbins' results for the more general population of astronomers.[5] The demographics of the sample reinforce this picture: a higher proportion of amateurs than professionals grew up in rural or suburban areas, where one might expect relatively dark skies.

Stebbins' conclusions on why amateurs do not become professionals do not fit VSOers. Although enjoyment of pure observation certainly plays a role, lack of technical ability or interest is not obvious in this group. About 1/3 of amateurs wish they had greater time/money/opportunity for research. Only four amateurs cite intellectual or mathematical shortcomings as having prevented a professional career. About 3/4 of the twenty-three amateurs who comment on career choice, seriously considered becoming professionals. At least 1/2 of them gave up that dream due to factors other than preference: poor job prospects, financial pressures, doubt in their own abilities, or the lack of educational opportunities. One amateur remembers being counseled by a college adviser that he should forget astronomy because there were no jobs: "This was one of the saddest days in my life."

On the other hand, roughly 15% of amateurs describe their involvement in astronomy as a sort of unexpected surprise, as they discovered or rediscovered astronomy later in life. No professional describes his or her involvement in these terms, and all have or are pursuing undergraduate or higher degrees in astronomy, suggesting a clear intentionality in their career paths.

Based on frequency of mention, both professionals and amateurs in the VSO survey share what they view as basic scientific values: carefulness, integrity, accuracy, and perfection of results. A skeptical outlook on the world, stressing empirical proof and critical thinking, also characterizes both groups. Finally, the two groups share a deeper appreciation of the universe in poetic, spiritual, or philosophical terms.

Although equally small percentages (15%) of each group mention public outreach or teaching as an important value, in practice professionals are much more likely to commit time to it. Furthermore, amateur VSOers spend much less time helping beginners than do professionals, and perhaps as a corollary, most of them describe themselves as self-taught. The majority of amateurs prefer to observe alone.

Perhaps the most significant am-pro difference is that amateur VSOers are much more likely to make an explicit commitment to advancing science and expanding human knowledge. The desire to make a contribution strongly differentiates VSOers from the broader amateur population of Stebbins' survey, who see the rewards of astronomy primarily in personal terms.[6]

One could argue that professionals have similar goals to amateur VSOers, implicit in their career choices; however about half the amateur respondents and even a couple of professionals took a more negative view, describing professionals as often motivated by prestige, money, or a "publish or perish" mentality. Working with amateurs can be refreshing for professionals tired of that environment — as one put it, "It reminds me of why I got interested in astronomy."

[1] As one measure of dedication, sixty percent of the amateurs and twenty-five percent of the professionals observe on the majority of clear nights.

[2] Three individuals who classified themselves "amateur/professional" were reclassified as one or the other based on comparison with other survey respondents.

[3] Stebbins, 1981. Journal of the RASC, 75, 1: 12.

[4] Semi-professionals have a higher probability of having formal astronomy degrees and/or using CCD or PEP equipment. In all other respects they are similar to other amateurs.

[5] Stebbins, 1982. Urban Life, 10, 4: 449

[6] Stebbins, 1981. Journal of Leisure Research, 13, 4: 289