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"Plastics. . ."

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The imminent end of my graduate career provides an opportunity to reflect on my graduate studies and how they may affect my future. Though unpleasant, a realistic assessment of the present funding climate, job descriptions, and job availability is crucial. Too often, top-notch paleontology graduate students who produce good work, get grants, and have good personal interaction skills do not get the type of jobs they desire. Why? Almost certainly it is related in part to external variables, including declining federal funding, loss of positions, greater numbers of qualified candidates, and lower faculty retirement rates. There is very little that you as a graduate student can do about this.

However, what you as a graduate student can do is to prepare yourself for a highly competitive job market in which the challenge is to distinguish yourself from the competition. This entails careful consideration of potential research funding sources and development of strategies which provide openings to positions occupying different niches than those to which we have been directed historically.

A number of career paths (Fig. 1) are available to students, many of which involve paleontology at some level. One extreme path is to leave geology after completion of an advanced degree (either by choice or necessity) and pursue your interests outside of your work environment. I hope not to be forced along that path, but rather hope to use the skills, knowledge and experience acquired in graduate school to continue as a research scientist. Perhaps the most obvious, yet most elusive path is that of academia. This is the path that I have received the greatest amount of encouragement to pursue. What is often more difficult to see as a graduate student are alternate career choices which utilize our graduate training to the fullest extent. As a paleontologist in particular, following any career path which fulfills these expectations will require a lot of hard work and a bit of luck.

Today's graduate students are well aware of the traditional requirements to succeed - such as obtaining external funding, learning to teach well, performing cutting-edge research, presenting results at national meetings, and publishing. In addition to these obvious steps, there are a few key additional strategies for preparing yourself while in graduate school. These include becoming: a) multidisciplinary; b) applied; c) aware; d) creative; and e) flexible.

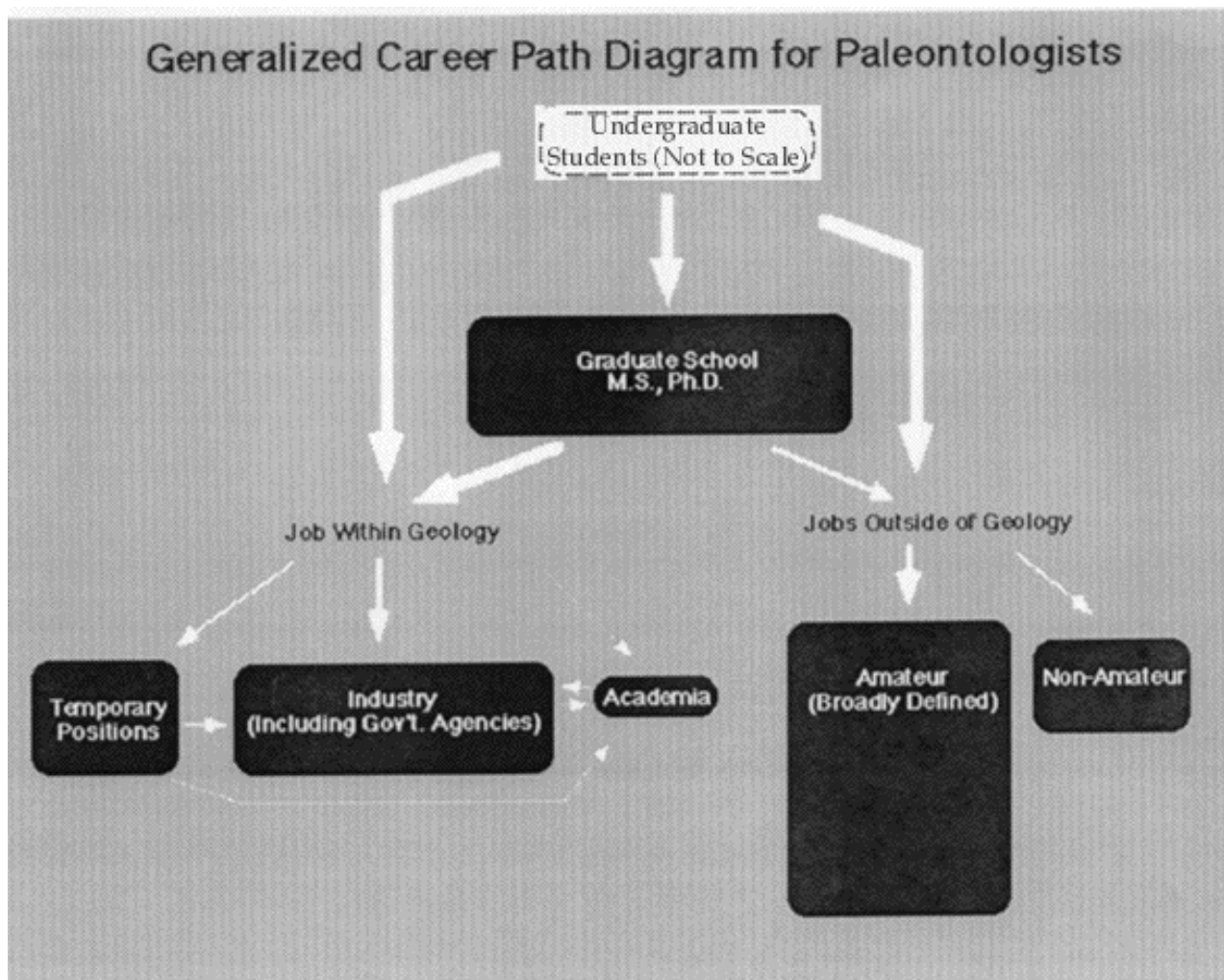


Figure 1

Be Multidisciplinary

Paleontology, like most science, is becoming more market-driven. To succeed in this climate, graduate students will have to gear themselves toward where the money will be, not where it is now. I have seen students succeed in this approach by learning to use traditional fields in non-traditional ways and by involving themselves in multidisciplinary, integrated studies. For example, recent graduates have found niches in global change research by integrating paleontology, stratigraphy, and geochemistry into fundable projects.

Increased demand for versatile scientists is leading more of my peers on this path. They are becoming increasingly multidisciplinary - no longer becoming trained only in paleontology, but rather seeking training from other faculty with different specialties, from professors at other universities, and on their own. As we have seen in the last year, this process is being aided by enhanced communication networks, such as PaleoNet.

Be Applied

Applied research approaches (broadly including research which has obvious returns for societal concerns and interests) seem best poised to acquire funding in today's market. Future paleontologists will need to tap into these areas in order to

survive. Perhaps this is the most difficult challenge for graduate students today because the existing framework at major research institutions does not teach them how to do this.

Difficulties in tuning their research to applied approaches seems to be distancing paleontologists from both traditional and (untapped) non-traditional sources of support. At the same time, it seems that fewer paleontology graduate students are being encouraged to explore applied paths of study. In the last year, for example, I have watched GIS sweep the country - creating hundreds of academic, government, and industry positions - yet I know few paleontologists who have tapped into this type of applied approach. Graduate students who consider developing or learning from these type of applied approaches will be best prepared to support their paleontological research interests and to garner future academic positions. These skills will also better prepare them to enter non-academic careers, such as environmental, petroleum, or commercial industries.

Be Aware

Over the years, I have watched my pre-professional friends don ties and learn how to succeed in the legal, medical, and business arenas. Savvy science graduate students can do the same by learning as much as possible about existing approaches to, and expectations in, the scientific arena. There is a variety of literature available to help graduate students in this respect. Students can also help themselves by communicating with peers and professionals from other universities and in different fields. Although this commonplace at meetings and on field trips, electronic communication (via the Internet) is rapidly proving to be an optimal medium for these exchanges. In addition, there are a variety of seminars, symposia, and workshops available at national meetings which foster dissemination and discussion of career strategies.

Be Creative/Different

Today's graduate students cannot follow the paths of their advisors, because their advisors came of age in dramatically different environment. In today's world, publishing papers is becoming common (although I am not in any sense belittling the process) because graduate students are encouraged, taught, and helped to do so by their mentors. Getting grants, on the other hand, is getting more difficult. NSF, PRF, and other large agencies are sending a message down the pipeline with extremely low funding levels. The message is - "traditional paleontology is dead/dying."

As a result of these patterns, I think more graduate students are realizing how interconnected "the bottom line" is with their graduate student experience and their career paths. In order to win a position in this climate, savvy graduate students will need to develop avenues of research which are poised to be funded. These will likely be in new applied, multidisciplinary fields which address societal concerns and interests. Additionally, creative graduate students will target support sources different from their predecessors, including new industry sources, community-level funding, assistance from amateurs or hobbyist groups, or individual/neighborhood project sponsorships.

Be Flexible

Being flexible is mandatory in today's job climate. The path to an academic job might include a number of post-doctoral, sabbatical replacement or short-term non-tenure-track teaching positions, research positions and positions in industry. It is clear from many of the job descriptions that this type of experience is desirable, if not mandatory, for winning tenure-track positions. Whereas the instability of these positions is disconcerting, they do have the potential to provide unique opportunities to become multidisciplinary, make contacts leading to new avenues of research funding, and expose you to new approaches and research directions. One thing that seems certain is that they are a reality now and for the future. If you desire an academic career, plan for and take advantage of these types of opportunities.

Conclusions

The face of graduate education is changing, not just for paleontologists, but for most graduate students in classic soft-rock fields. Some professors are helping to lead the way by guiding without making self-molds, and by encouraging students to seek new perspectives. For the most part, however, graduate students are changing the face of their own education, reaching out to each other, to others in their field, and to new sources not tapped by their predecessors. Today's graduate students are sawier than ever, but accordingly.

Enjoy graduate school - publish papers, get grants, give talks, make contacts, learn to teach, and tackle research problems. But look to your future - for most of you, I imagine it will be completely unlike that for which you envision. In our research, we have found that the present is often not the key to the past. In today's job climate, rest assured that the present is not the key to our future.