MS OR PHD?

WHICH IS RIGHT FOR ME?

By Alaina G. Levine

Too often, students find themselves swimming in a career sea with no shore in sight. They study geosciences because they love it, but they can’t seem to find exciting career paths that interweave their other interests and personalities. We all know the traditional career paths for geoscientists: positions in academia, industries such as oil and gas (O&G), mining, and perhaps environmental consulting, and some government agencies and labs. But you would be surprised at both the diversity of sectors that welcome geoscientists, and the rich, non-traditional opportunities available to people with a geosciences education. And best of all, for those who are not interested in pursuing a PhD and are satisfied with a master’s as their final degree – you are in luck. For many jobs in many arenas, the MS is the degree of choice.

The first thing you have to recognize as you launch you career-planning strategy is that as a geoscientist, no matter your educational level, you bring great value to any firm who is lucky enough to employ you. This is because of the unique skill set that you developed in the process of becoming a scientist in general and studying geosciences specifically. Among your strategic assets are your:

- holistic and detail-orientated approach to solving problems;
- ability to be adaptable, and flexible;
- experience collaborating with and/or managing diverse teams;
- experience raising money (i.e. grants) and budgets;
- high level computing skills;
- consistent need to ask “why?” and not accept things the way they are; and
- deep understanding of how the world works.

These are all skills that drive organizations to victory, so they covet them in their hires. And since you possess these strategic skills, it should come as no revelation that you, with your geosciences education, are wanted and needed, and in many cases, extremely well compensated, for your contributions in many sectors. In fact, the job opportunities are plentiful, in surprising markets. Some of the non-traditional career paths and industries that appreciate geoscientists include:

- Non-profit program management – you can work for AGU and other science and technology-based societies implementing programs that enable and encourage science advocacy
- Science writing – you can write articles, in journalism circles, and for private clients penning white papers and technical reports
- Science communications and public relations – for companies, non-profits, museums, government, and even universities, someone needs to be able to articulate the significance of science and scientists to their many publics
- Science outreach – designing and implementing curriculum, exhibits, and demos for museums, universities and government labs and agencies
- Government – serving in the federal, state or local government, either as a representative or as a science liaison within the government offices. There are also opportunities in government agencies such as the FBI, NSA, CIA, or FAA, where your computing and analytical skills are highly prized, as well as “traditional” entities such as USGS, NOAA, NCAR, and NREL. Finally, don’t forget think tanks and government contractors. And of course, the same goes from non-US governments as well.
- Technical and Management consulting – major consulting companies like McKinsey & Co., Booz Allen Hamilton, and Accenture love professionals with physical science degrees, and
often the higher the degree, the better. The work is fast-paced and technically challenging.

- Financial sector – you’ll work for banks and other financial institutions as quantitative analysts, aka “quants”, writing algorithms that move and make money for your employer, which earning a hefty paycheck yourself.

If you are wedded to remaining in geosciences, where you will conduct research or solve scientific problems related to the field, there continues to be plenty of prospects in industries like O&G, mining, and environmental services. According to Alan Edwards, Vice President and Science Project Lead, Americas Product Group, for Kelly Services, one of the largest scientific recruiting firms, science jobs in the petroleum sector are growing at a rate of 33% annually and will continue at this pace through 2020. But did you know that there is a growing need for geoscientists in renewables, such as wind, solar and smart grid technology? Both Edwards and Dominic Graham, who heads Kelly’s Professional and Technical division for the UK and Ireland, note an increase in the demand for geoscientists in seemingly unlikely industries like green tech, advanced biofuels, building retrofitting, and even mass transit and rail.

**But can I “do” science with my master’s?**

The answer is a resounding yes! Experts say that for many science jobs within a multitude of industries, the MS in geosciences is the degree of choice. But students have to recognize the difference between research and scientific-problem solving. In companies, just like in academia, research is defined as designing and running original experiments, overseeing investigations and publishing results (both internally and externally, depending on the situation and intellectual property issues at hand). When companies hire scientists from outside of their employee pool to conduct research, they often look for PhDs as the entry point to research and development (R&D) positions within their organizations. Scientific-problem solving, on the other hand, involves the practical application of scientific know-how to customer problems. You are still involved in science, you still use scientific skill sets, and you still collaborate with other scientists. But the difference is that the problem at hand is driven by the needs of the customer. You will find scientific-problem solving a great deal in industry and in many government positions. In many instances, the master’s degree is all that is needed to take a lead in scientific-problem solving.

Here are a few examples of career opportunities in industries where you can still stay on the science side – as opposed to the management or business side – with a master’s as your highest degree:

**Oil and Gas (O&G)**

According to the Global Recruiter of a major, multi-national O&G corporation, the “MS is a filter” and serves as the standard of hiring. He explains that this is because of the value that comes with studying for a master’s degree – the scientist gains a deep understanding of the scientific method, and has proven they can solve technical problems at a high level. “If you want to get into the petroleum industry and solve geosciences problems,” he says, “then a MS is all you need.”

The O&G company recruiter clarifies that “we hire the best geoscientists we can.” He looks for certain skills that demonstrate this scientific excellence, such as:

- Intelligence, and quantitative/high technology skills
- Passion for science
- Passion for curiosity – always wanting to see what’s around the corner
- Integrative mind – a holistic, systematic way of thinking about problems, an understanding of the implications of observations and what they mean to others
- Interpersonal skills such as teambuilding
- Leadership – including a willingness to step up and lead in both formal and informal scenarios
- Communications – verbal and visual communication skills, the ability to understand your audience and change your communication method and means for new audiences.
Mining

There is a similar situation in the mining industry concerning how the master’s is perceived. Christopher Marrs, who holds a master’s in geosciences and is a consultant and economic geologist with his own venture, Western Alaska Copper and Gold, had been in the industry for several decades. His observations mirror what recruiters from other sectors indicate: the MS is preferred. “It’s more about being a generalist problem-solver,” he explains. The master’s affords a scientist the ability to understand science and scientific problem-solving and be able to be a generalist. “It’s about being flexible,” and being able to adapt to the different scientific stimuli and challenges that come your way, he continues. Someone with a doctorate might be seen in a different light in mining – they might be perceived as being too specialized and having an inflexibility concerning solving problems outside their province of knowledge. “If someone has a PhD and specializes in [a certain area] and they work in industry, if suddenly [budgets] shift and they have to work in a different area, they might not want to do that,” explains Marrs.

Environmental Consulting

In environmental consulting, “MS is king, then BS, then the PhD,” illuminates John Pekala, a Senior Manager with ENVIRON International Corporation, a major environmental consulting firm. “The MS is the degree of choice for geologists in the environmental arena,” he continues, adding that many of the decision-makers and managers in this sector have master’s degrees in geosciences. He even goes one step farther and advises students who want to go into environmental consulting that you are better off starting work after acquiring the master’s rather than going back for the doctorate, because you will get critical experience which will propel you further and faster on your career path. As is the case in many sectors, industry experience is what makes the difference in the hiring decision between top candidates who otherwise may appear similar.

So what about the PhD?

Don’t get the experts wrong – the PhD is a prestigious degree and is a signal to others that you have achieved a great deal. And not surprisingly, for certain jobs, it is a requirement. Of course it is needed if you desire a career in academia as a professor. It is required for management positions at some government agencies and laboratories, and to advance in science jobs and to qualify for certain grant funding in agencies and labs. The doctorate is also the degree needed for certain entry point positions in industry. For example, most O&G companies have a research and development division swimming with scientists who are conducting original research, designing experiments, leading teams, and in many cases publishing results. If you were interested in joining a petroleum company’s R&D arm fresh from graduate school, for the most part, you would need a PhD. But here’s the important point: For O&G, mining, environmental and many other industries, once you are in the door, you can do research in the company with only a master’s degree. So at that point in your career, getting a doctorate becomes a personal choice that should be dictated by your own interests, passions and chosen career trajectory.

So remember – the world is waiting for you and your valuable skills and experience that you possess because you studied and mastered geosciences. And if there is one thing you should remember as you begin or reignite your career planning process: find a vocation that drives you. As Wilford Weekes, who served as a geosciences professor for many years at the University of Alaska notes, “The most important decision you can make is doing something that you love.”

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