1. Historical Drivers in Geoscience Enrollments

What are the historical drivers of geoscience enrollment. Through most of the tracked history, the health of the extractive industries was key students responded rapidly to perceived job opportunities. With the collapse of the petroleum and mining markets in the 1980s, two avenues entered into the geosciences: environmental studies and theoretical or “pure” geoscience (ala plate tectonics). These were driven nearly into lock-step with the other physical sciences. However, the fortunes of all sciences and engineering are under substantial pressure given the dot-com drain and a substantial decrease in reliance of science for economic growth, rather a focus on technology and its applications.

2. Historical Drivers in Geoscience Employment

Employment has historically responded just like enrollments (actually the other way around!). The extractive industries drove nearly 50% of employment, but following the collapse in the 1980s dropped in current levels around 36% of total employment. Government, environment and academia actually remain smaller players in the employment field. Of particular note is the static state of environmental employment. This is driven by the fact that geoscientists are best trained to address site characterization issues and not the actual remediation process. After the initial surges of SuperFund projects in the mid to early 1990s, most major clean-up efforts are now complete, leaving limited opportunities for more job growth for geoscientists. This is further complicated by the leverage the engineering community has gained against the geoscientists through licensing requirements, often leaving engineers with the licenses necessary for small-scale remediation work. Geoscientists who pursue a geology as a project. Continued resistance from the engineering community to having the geosciences primary functions which result in economic activity. The “Geoscience Economic Indicator.” One can work through the data one metric which AGI is beginning to analyze is the potential for a metrics of geoscience disciplinary health.

3. Departmental Diversity Issues

Since 1980, the diversity of departments granting the majority of the geoscience degrees in the United States has fallen sharply. Most significant is the contraction of departments actually granting thesis-based Master’s degrees. At the Bachelor’s and Master’s level, fewer than 20% of all departments grant a degree in a given year. At the Doctoral level, this rate is much higher, approximately 75%.

Source: GeoRef, AGI Departmental Surveys

4. The Geoscience Economy

One metric which AGI is beginning to analyze is the potential for a “Geoscience Economic Indicator.” One can work through the data used to develop the Gross National Product and isolate many of the geosciences specific high-tech fields (24%). However, this must be tempered at the Ph.D. level with over 50% of newly minted geoscientists now pursuing Post-Docs, with over half perceiving a poor job market and no desire to pursue job opportunities outside of academe.

5. The Future of the Geosciences

The US Department of Commerce does not provide a pretty picture of the future of the sciences in the U.S. Just like many manufacturers of the previous generation, automation is cutting at the core of employment opportunities in these sciences. The geosciences are not spared this problem. Likewise, the geosciences face a growing global workforce for the resources industry, a mature and stable environmental sector now familiar with new roles in economic activity. The largest issue in this discussion is the complexities of scaling, as can be seen in the chart.

6. Metrics of Geoscience Disciplinary Health

For the period 1960 to 2000, the Doctoral level, this rate is much higher, approximately 75%.