I write not as a member of a geoscience department, but as a geologist who leveraged his training into a long and varied career.

I graduated from Amherst College in 1980 with a B.A. in geology. I then received my Ph.D. from the California Institute of Technology in 1986, again in geology. Since that time, I have not practiced geology nor thought of myself as a geologist. Indeed, I scarcely remember any geology.

Despite this, I firmly believe that my training in the geosciences was the key enabler of my career and that I would not have been successful without that training.

A brief synopsis of my career arc follows: After leaving California, I spent eight years working in R&D at Corning Incorporated, followed by another ten years in Corning in various general management positions, primarily working in the telecommunications and flat panel display industries. I left Corning as an Executive Vice President of the company. I then spent three years as a Professor in the Department of Manufacturing Engineering at Boston University, followed by three years as the President and CEO of Schott North America, a large manufacturing company, where I was responsible for businesses in fields such as pharmaceutical packaging, military armor, and solar power. I am now back at Boston University as a Professor in the Department of Mechanical Engineering. I have also served on the board of numerous start-up companies in industries as diverse as water purification and data networking.

A prudent reader might be inclined to doubt my assertion that geology had anything to do with this trajectory. Without question, the particularly unique, trial-by-fire character of the education provided me by Amherst and Caltech would have provided skills I needed for the workplace regardless of major or field of study: the ability to function under pressure, an aptitude for assimilating massive amounts of information quickly, even a knack for extemporaneous presentation despite a lack (or even reckless disregard) of subject matter knowledge. But I assert the following:

*Mineralogy and petrology are excellent preparation for a career in high tech.* I was mostly interested in igneous and metamorphic petrology in school and, in essence, have spent my career capitalizing on the materials science I learned.

At the Corning R&D laboratories, at least in the 1980s, we had a very specific philosophy: we only hired chemists, physicists and geologists, and then “taught them the trade.” This was because geologists were the only people we could find with sophisticated training in silicate chemistry. Only a mineralogist would appreciate that most catalytic converters are essentially cordierite, or that Corning Ware is simply a form of spodumene or that the transparent armored windows used in military vehicles are actually eucryptite. Only an igneous petrologist would comprehend Soret diffusion in a glass furnace. One of the most prolific inventors at Corning and a man who greatly influenced me, generated most of his ideas simply by reading the back pages of *The American Mineralogist*. After years of looking down a petrographic microscope, it took only a few minutes to realize that the physics of light moving through an optical fiber is no different than the physics of light moving through a thin section (albeit with considerably different length scales.)

The business world that most graduates now enter is highly technical; the technical knowledge that I acquired as a geologist was relevant in almost every business in which I subsequently became involved.

*The specific oral and written communications skills required by geoscientists are universally required*. In my view, the essence of leadership is simple: “when you are in a dark cave, everyone follows the person with the match.” The question, of course, is how leaders convey that they, in fact, “hold the match”. Obviously, this can only happen with exemplary communications skills. I learned more about oral communications preparing a fifteen-minute presentation for my first AGU meeting than from any other single event in my life. (Although, to be fair, after 30 years I still harbor a slight grudge against my thesis advisor for the living hell he created for a week prior to that talk.) My experiences in a college structural geology course were equally grueling and helpful. Further, the written communications required in business are very similar to the lab reports and scientific papers I wrote throughout my training. They placed an emphasis on problem statements, data, facts and conclusions, all delivered tersely and dispassionately. Arguably, these skills are taught by every scientific discipline; I learned them as a geologist.

*The geosciences prepared me for a life of organizing, leading and participating on teams.* I know that every science department in every college and university declares that they teach teamwork and I have no doubt that there are pockets of excellence. Short of military service, however, I postulate that some of best leadership training comes from coursework in the geosciences. Group mapping exercises, in particular, taught me that cooperating with others, despite time pressure, honest differences in interpretation of results, and occasional differences in ability, is essential to getting things done. Four days in field camp in Elk Basin, Wyoming, spent with people that I had met two days before, mapping an anticline in 100-degree temperatures and surrounded by rattlesnakes and dead cows, turned out to be a fairly apt metaphor for business.

*The geosciences honed my observational skills.* Most successful general managers in large businesses require finely tuned antennas. In my business career, I often needed to walk into troubled manufacturing plants and, in a day or less, assess the situation, then propose and implement remedial action. It is often difficult to separate symptoms and root cause in such a situation and the clues are often subtle: poor maintenance of a piece of equipment, the body language of a plant manager, the work patterns on the plant floor all may be signs of an underlying problem. Then again, they may not be signs of anything. In the aforementioned Elk Basin, I spent four or five hours one day, desperately looking for a fault that might explain the data. Finally, a kindly faculty member decided to ask me to look between my knees; I was sitting on the slickensides. The ability to think in three dimensions, assemble visual clues before jumping to conclusions and then fit those visual clues into a cogent hypothesis is a skill I learned as a geologist, not as a businessman.

Geology is a hard science and taught me hard science skills required for success in the workplace. It also taught be softer skills, many of which are unique to the geosciences. In my view, conveying the essence of geology to the many non-geologists in the workplace is a fundamental challenge. The unique training afforded by an education in the geosciences is something that should be built upon, not lost.