
FROM THE STATE GEOLOGIST

By John P. Bluemle

“The Language of Geologists”



Bill Shilts, State Geologist of Illinois, gave a thoughtful talk at the recent Geological Society of America Annual Meeting in Toronto. He pointed out that even though geology is essential to our economic and environmental well-being, it is poorly understood and underutilized. I've borrowed and built on his ideas for this column. Even though my column this time might seem to be addressed to other geologists, I think it's a topic appropriately shared with others.

Bill pointed out that we, as geologists, have a problem as to how we relate to the rest of society. Expressing the geological facts to the public or media is always a “touchy” exercise — it's easy to be misunderstood or misquoted. I know that I have to be careful to be clear in getting the geological point of view across in meetings with industry, and with other state and federal agencies, some of which have a primarily environmental mission, and I even need to take care that I am not misunderstood when dealing with geologists whose career centers on teaching at a university. It seems we all speak slightly different versions of the same language!

Two (or three) principles that are drummed into every geologist's head through university or employment experience tend to “predestine” us to be at odds with political opinion and the world view of our fellow scientists. First, we are trained as geologists to see ourselves as a small part of the global scheme — astronomers are probably the only other scientists who have a similar perspective as a foundation of their science. Second, in the latter half of the twentieth century, geologists have had the added problem of practicing a science that was nurtured and developed by and for the resource extraction sector of our economy -- in North Dakota that's mainly oil, gas and coal. The careless way our science was used in the past to extract minerals and energy puts us, by association, in a camp that is the target of relentless criticism by the environmental movements of the sixties and later. For this reason, the dice are somewhat loaded against geology and geologists, and this is unfortunate for society.

One of my most important tasks as leader of a geological organization is to find ways to explain and publicize

what we do for society in general, not just for the traditional clients we have served in industry. This brings up another problem that is built into our relations with the public: we have developed a jargon and outlook that is easy for our traditional clients to use and understand because they employ people like us. Because of this style of communication, we've been poor at presenting the results of our research in terms easily understood by the general public or by our fellow scientists (a problem astronomers don't seem to have). The *NDGS Newsletter* is one attempt to communicate effectively (NDGS editor Ann Fritz and I will appreciate any comments you may have about how we can improve communication).

The image of the rough and rugged field geologist may hold a romantic fascination for some, but it no longer does justice to the technological sophistication and widespread application of our work. Traditionally, geologists have written for other geologists working in the extractive industries. However, as geology has been increasingly applied to other areas, our ability to translate our jargon and concepts has not kept pace. As a result, the public is poorly aware of the technological and scientific advances we've made, and of our involvement in environmental protection and remediation. This harms our public image as the public simply does not understand the nature of our science, and we, in turn, fail to adequately address the priorities of our society. That's why geologists so often seem to come down on the “wrong” side of issues of concern.

The nature of our science itself presents a barrier to communication because the magnitude of time and space with which geologists work is absolutely incomprehensible to most people. Geology and many geologic processes cannot be directly observed — they are buried, take place too gradually, or are of too great a scale.

Geologists are especially trained to understand the scale and inevitability of natural variation in the environment, and this can result in what appears to others to be a detached, or even condescending view of the significance of anthropogenic (human) influences. This often puts us, as geologists, at odds with scientists from other disciplines and members of the lay public whose frames of reference are based on the time-scale of human history. I've been faced with this problem many times when speaking or writing about the geology of Devils Lake. The lake has been rising for the past several

decades causing serious problems for those who live there. Even though I know it is an entirely normal occurrence for the lake to rise, and that's what I tell people, many of them just cannot or will not accept that fact ("It's never been this high in my lifetime!" or "Farmers caused this by draining the wetlands!") are typical comments). In fact, the lake has risen to overflow into the Sheyenne River many times during its 12,000-year history and it has dried up completely many other times. The problem is that peoples' frame of reference prevents them from realizing that, in rising, the lake is behaving as it always has. Similarly, floods like the one in 1997 in Grand Forks are not unusual events. Floods as high, or higher have happened often in the past and will occur again in the future.

We need to overcome a variety of communication barriers, including the fact that geology is rarely taught in high schools. Most high school science teachers have had little training in geology, and this hinders their ability to develop effective earth-science curricula (although I know of some notable exceptions). As a result, the public has little awareness of the scale of geologic processes. The NDGS recently sponsored an Earth Science Fair (discussed on page 16) as one means of promoting public awareness. Activities like these help, but much more is needed.

Geologists need to effectively reach out to the media, rather than waiting for and reacting to the publicity gener-

ated by geological disasters like floods or earthquakes (or movies that incorporate, but often distort, geological subjects). Although we cannot change the nature of geology, with the advanced graphic capabilities of computers we can develop 3-D illustrations and animation to help people visualize what they cannot observe directly. This ability, combined with the growth of the world wide web, provides us with another means to reach beyond the classroom, but we also need to be proactive in bringing geology into the educational mainstream.

The easiest barriers to overcome are those we have created ourselves. We need to develop new ways of explaining not only our science, but the relevance of geology to all social enterprises. We need, especially, to learn to speak plain English. Professors should insist that their students master not only content, but the communication skills needed to convey their knowledge in wider academic, public, and professional circles. We need, first of all, to be certain that we, as geologists, are articulate, confident and competent, scientific professionals, and second, we need to work at cultivating and promoting that image.

Reference

Shilts, W. W., 1998, Taking earth science to the people - barriers and opportunities: Abstract, Geological Society of America Annual Meeting, Toronto, Abstract Volume, p. A-105.