
Response by J. DAVID ROGERS

Mentors, Failures, and the Future of Engineering Geology

Luna Leopold

One of the most important determiners of success is the encouragement we receive from mentors. While I was attending graduate school in geological engineering at U.C. Berkeley, one of the giants of the scientific method, Luna B. Leopold, sat quietly in the northwest corner of the Earth Sciences Building, where he shared a split university appointment in geology and landscape architecture. Leopold was a scholar of the old school, and he believed in giving much of his time to each of his students. As a consequence, he consistently refrained from ever taking on more than just a few students, so he was never able to construct an academic empire like many of his younger colleagues. But for those of us who shared his time, it was a gift beyond comparison.

Leopold taught me how to study things. In the mold of Louis Agassiz, he taught one to become an astute observer of nature. We learned how to make measurements, how to collect large volumes of data, how to synthesize such data, and how to write it up. Leopold had studied under Kirk Bryan, and he passed on every aspect of Bryan's life and methods of operation that you can imagine, much like a native tribesman passes down the fables of his ancestors to his children. Leopold didn't believe in "salami science," as John Costa so aptly puts it, wherein faculty of the modern era publish regurgitated versions of the same piddly work in as many journals or conference proceedings as possible. No, Leopold would study a phenomena for 5, 10, 20 years or more before publishing a word on it. This was the example laid for us by our predecessors, by people like G. K. Gilbert, William Morris Davis, Kirk Bryan, and Charlie Hunt. They would study something for a decade or more before writing what was usually a definitive contribution on any particular subject.

Leopold also taught us how to tell a story with figures. Assemble figures to tell the story. Create figures to illustrate the key points. Remember that people who do not speak English as their primary tongue will be reading your papers! Carefully select the figures that tell your story, then write the captions. A reader should grasp the essence of one's work by quickly viewing the figures and reading the captions. Like National Geographic, if the figures and the captions are enticing, one may even break down and read the contents of the article!

Do we demean science by making it more palpable? I don't think so. When you adopt this methodology you're going to have to do a whole lot of work in preparing each paper, and therefore you'll be incapable of writing so many smaller articles. The essence of an article's scientific contribution should be sifted out in detailed peer review, review that we solicit from our brethren scientists BEFORE submitting it for publication. I've been deeply disappointed by the lack of in-depth understanding evidenced in the few official peer reviews my work has been subjected to. Too many junior faculty personnel, devoid of any practical experience and seemingly always in a hurry, seem to provide the bulk of reviewing manpower. As a consequence, many practitioners feel that little of the published literature is relevant, and a general disdain for participating in published work has developed within the mainstream of the consulting community. This trend suggests that our centers of education and research are having less and less impact on what's happening in the real world of solving problems, where the constraints of time, budget, legal concerns, and political correctness oftentimes crowd out technical considerations.

Leopold maintained, and I agree, that it is the authors who are often too lazy or feel incapable of producing good, high-quality figures to illustrate their papers. Sometimes this means hiring an artist, or chartering a plane to take key oblique photos, or, perish the thought, drawing some of the figures yourself! How we present our data is critical to their being properly understood, especially by those students who may be most influenced by our efforts.