

How and what should we teach novice geoscientists about geoethics?

Vince Cronin, Professor of Structural Geology at Baylor University and co-chair of the US Section, International Association for Promoting Geoethics, Vince_Cronin@CroninProjects.org

Science is our best way to obtain reliable information about the physical world and its history, processes, materials and hazards. Integrity, based on a shared sense of ethics, makes science possible. I will use the term *geoethics* to mean ethics applied to the geosciences, in both the macroethical sense of our interactions with each other and in the macroethical sense of the interaction of the geosciences with society at large.

The responsibility to learn about geoethics belongs to each of us individually, but teaching student/novice geoscientists about geoethics is a responsibility shared by the entire geoscience community. The American Geosciences Institute (AGI) has challenged its member societies to examine their ethical norms and collaborate on the development of guidelines for ethical practice (<http://www.americangeosciences.org/community/agi-guidelines-ethical-professional-conduct>). The American Institute of Professional Geologists (<http://www.aipg.org>) and the International Association for Promoting Geoethics (<http://www.iapg.geoethics.org>) are largely devoted to the development of geoethics. A compilation of some ethics codes relevant to geoscientists is available, along with other resources, at <http://CroninProjects.org/Vince/Ethics/>.

The mere existence of ethics codes does little to inspire ethical practice, however. What we need are effective ways to encourage novice geoscientists to internalize high standards of ethical behavior, and to work to meet those standards at all times throughout their careers.

No person wants to be accused of being unethical. Asserting that someone's actions are unethical is one of the most direct ways of earning their animosity. Going beyond that and saying that a *person* is unethical (implying that the person is irredeemably and comprehensibly corrupt) will seriously damage or destroy the relationship. It is essential to learn how to talk about ethical problems in a constructive and respectful manner that focuses on decisions and actions rather than on people. Learning from mistakes, taking responsibility, apologizing, recompense, redemption, forgiveness -- these are all parts of a mature process of living an ethical life.

There is a role for all of us to play in the development of geoethics, individually and as part of professional organizations. Teaching geoethics is too important a topic to leave to any group of "eminent minds," because the important ethical decisions that you face exist in a context that is likely to be well known to any august panel of ethics scholars. We need practical guidance about practical challenges that are actually faced by real working geoscientists. And out of these experiences across the spectrum of geoscience fields, we need to find ways to facilitate the ethical development of young geoscientists, and to support the ethical practice of the mid-career geoscientists. Above all, we need professional and academic geoscientists whose consistent integrity can serve as an exemplar to novices, because we all learn from example.

Society needs reliable information and real solutions from geoscientists. Our ethical responsibilities as *professional scientists acting in the public interest* extends beyond our interactions with each other and our clients. Our knowledge of Earth imparts a responsibility to help society manage challenging issues concerning water, energy, minerals, geologic hazards, and related public policy.