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Using Significant Geologic Hazards and Disasters to Focus Geoethics Case Studies

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Abstract Text:

Ethics education since classical times has involved the consideration of stories, parables, myths, fables, allegories and histories. These are the ancient equivalents of case studies. Modern case studies are used in applied-ethics courses in law, engineering, business, and science. When used in a geoscience course, geoethical case studies can enrich a student's understanding of the relationships between issues of geoscience, engineering, sociology, business, public policy and law – all with an ethical dimension. Perhaps more importantly, real cases affected real people. Students develop a strong empathetic connection to the people involved, enhancing students' drive to understand the interconnected layers of the cases. Students might begin to appreciate that geoscientists can help to avoid or alleviate human suffering -- that their careers can have meaning and purpose beyond simply earning a paycheck.

Geologic disasters in which losses could have been predicted, avoided or minimized are quite effective as cases. Coupling a "disaster" case with a comparable "hazard" case is particularly effective. For example, there are many places along the San Andreas Fault in California where [1] significant coseismic displacement has occurred during historical times, [2] structures that are still inhabited were built along or across active traces prior to the Alquist-Priolo Earthquake Fault Zoning Act in 1971, and [3] inhabited structures have been built legally since 1971 within a few tens of feet of active traces. The question students confront is whether society *ought* to allow habitable structures to be built very near to a major active fault. This topic allows students to work with issues of law, history, seismology, seismic site response, crustal deformation adjacent to active faults, building codes and, ultimately, ethics. Similar progressions can be developed for other major geologic hazards, both natural and man-made, such as floods, landslides, erosion along rivers and coastlines, subsidence caused by fluid/gas withdrawal, induced seismicity, and pollution due to extractive industries. Case study sources are available via <http://CroninProjects.org/Vince/GeoEthics/> and SERC has a growing collection of useful case studies (e.g., http://serc.carleton.edu/geoethics/case_studies.html).

Topic Selection: Geoethics and Critical Thinking in Undergraduate Geoscience Classes

Title: Using Significant Geologic Hazards and Disasters to Focus Geoethics Case Studies

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Preferred Presentation Format: Assigned by Program Committee (Oral or Poster)

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