Outreach, Diversity, and Education at LacCore and the Continental Scientific Drilling Coordination Office, University of Minnesota

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For our student interns and researchers to feel that they and their work are "societally important" and "relevant," they need to see the big picture. Most of them already appreciate the importance of research to save the planet or advance understanding; they also need to see how the scientific endeavor works (e.g., collaboration, scientific meetings, grant proposals, publications, academia, teaching, state and federal agencies), and how science interacts with other realms such as policy, law, art, literature, sociology, history, human geography, natural resource management, and for some (especially some Native students), spirituality. We must help students make connections. Not only the critical intellectual connections between seemingly disparate realms of science, but also connections with new mentors and programs. Our roles include those of cheerleader, publicist, fairy godmother, and border collie.

Many students resist the real and perceived academic pressure to focus their studies and especially to specialize in a relatively small area of research. Although each scientist has to specialize more than he or she would probably like (in stark contrast to the multifarious interests that usually get us caught up in becoming scientists in the first place), we are still able to work in the other fields, and collaborate with specialists therein. We also need to emphasize that there are many different ways to be a scientist, including different career paths with varying levels of intensity (it changed my life when a fellow grad student told me "we don't all have to be Jim Russell," another grad student in our cohort who was clearly destined for a top tenure-track job). You can change your path along the way, rather than, say, dropping out of science. In short, we need to demystify the business of being a scientist.

"Relevant" does not have to mean "applied," but it often does at least in some sense. Students want to change the world, and they want to be able to explain to their grandmas what they do. For some (especially Native) students, "relevant" means related to cultural and natural resources that are important to their communities, such as wild rice and other plants, water, animals, and lands. Science can clash with culture in these cases if (1) the entities to be studied are sacred or otherwise off limits to outsiders; (2) they are seen as having an intrinsic wholeness that should not be taken apart for the purpose of study. So one needs to pay attention to others' rules, which is another way to help underrepresented minority students – by treating it as patently obvious that their culture is as important as the dominant one. In tribal work, and in all community outreach efforts, one must let the tribe or community lead in the determination of what to study and which questions to pursue.

The future of our facility includes expansion and formalization of Outreach, Diversity, and Education activities as part of the new NSF-funded Continental Scientific Drilling Coordination Office. We are

proposing a new model for outreach activities associated with major NSF continental drilling projects: each endeavor should have an outreach *research* component that is established and developed very early in the project, as part of the initial workshop if not sooner. The focus of these projects should be community-driven, i.e., determined based upon what the Tribes, DNRs and other agencies, museums, schools, indigenous peoples, and other members of the public want to know about. These scientific questions may not be the same as those the PIs have proposed to answer, but they should be addressed by the CSDCO or another institution, and this research funded and undertaken as part of the project. Such research would represent only a small percentage of the total funding for a project and would have the potential to form a powerful intellectual bridge for the community to better understand and appreciate the more esoteric proposed scientific project. It's a new concept that will require a bit of a different funding model, and it may very well fail and disappoint, but we feel that if researchers are operating with federal funds, they are compelled to act in accordance with Treaty rights and other less tangible respect-based norms. When these operations occur in international projects, collaboration with in-country scientists, agencies, and local people is critical and must begin years before drilling operations are scheduled. International work has the potential to entrain students from collaborator countries, which in itself is good and can also form a great basis for diverse teams including international and US underrepresented minority students.