

seem distant from students' daily lives. It is one thing for young scholars to affirm that all people should be guaranteed human rights, but it is something else entirely for them to see themselves as part of that human endeavor, wrapped up in a common fate, and to feel empathy for those who lack clean water or freedom of speech. By facilitating student research on such important topics while the students are living in new environments, travelling far outside their comfort zones, professors can foster that synergistic moment when students redefine themselves. My student, Elena, had taken an earlier trip to Africa during which she realized the importance of empowering individuals to help their own communities; our trips to Geneva helped her grasp the grand enterprise of world aid that too rarely reaches those on the ground. In her words, "When you go, you learn."

Today's undergraduates have unprecedented opportunities to travel and study abroad. The number of students participating in international programs has grown, as has the number and diversity of destinations. Such opportunities are undeniably still a luxury, but we should seize them nonetheless, encouraging our students to go and to learn.

Undergraduates, Faculty Mentors, and Professional Disciplinary Societies Address Climate Change as a Global Human-Rights Issue

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Climate change ranks among the greatest human-rights issues now and for future generations. The United Nations Human Rights Council has expressed concern "that climate change poses an immediate and far-reaching threat to people and communities around the world" and has recognized the United Nations Framework Convention on Climate Change (UNFCCC) as the "comprehensive global framework to deal with climate change issues." The ultimate aim of the UNFCCC is to stabilize greenhouse gas concentrations "at a level that would prevent dangerous anthropogenic interference with the climate system ... within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner" (UNFCCC 2013, http://unfccc.int/essential_background/convention/items/6036.php). Negotiations to achieve such goals through legally binding multilateral agreements take place at the U.N.'s annual Conference of the Parties (COP).

For the past several years, students and faculty representing Moravian College, York College, and the American Chemical Society (ACS) have attended the COP meetings as official civil-society observers or with press credentials. These participants have gained a deeper understanding of science, sustainability, economic equity, social justice, and the difficulties involved in developing multilateral policy. Although people from many nations comprehend the gravity of the situation, the dearth of understanding of the complexity and urgency of global climate issues in the United States continues to thwart any real progress in national or international policy. It is our hope that by engaging in research and disseminating the results, students and faculty can help to counter the U.S. public's denial or lack of understanding of the scientific underpinnings of climate

change. National consensus on this issue is critical for meaningful policy to be adopted (Ding et al. 2011).

Prior to attending the international meetings, students conduct significant background research focusing on the UNFCCC process and relevant U.S. initiatives. For example, students representing the ACS meet at the national headquarters in Washington, D.C. with ACS staff from the Office of Public Affairs and then travel to Capitol Hill for off-the-record meetings with legislative staff involved with environmental affairs, including climate change. One student spent a day at the National Oceanic and Atmospheric Administration's (NOAA) Climate Program Office, meeting with its manager of the international programs, to investigate the U.S. government's policy position on climate change. Two other students met with Peter Tans, a senior research scientist at NOAA's Earth System Research Laboratory in Boulder, Colorado. Another student interviewed ACS President Bassam Shakhshiri about the society's Public Policy Statement on Climate Change, the ACS Climate Science Toolkit, and other documents. The information gleaned is shared in blog posts and on the ACS policy website (see <http://www.studentsonclimatechange.com/cop18-student-participants.html>).

The COP meetings go beyond being a fascinating learning experience; the conferences serve as an international multidisciplinary laboratory. Students interact with individuals from around the world, ranging from other youths attending as observers to high-ranking ministers, and with negotiators from the 195 U.N. member states that are parties to the UNFCCC. They gather data and information while attending interactive sessions run by governments, the Intergovernmental Panel on Climate Change (IPCC), and non-governmental organizations (NGOs). The students have interviewed negotiators, government officials, representatives from indigenous cultures, and youth from a multitude of countries to gather stories on how people around the globe are impacted by climate change, to identify which issues are of critical importance for the negotiations, and to learn why some individuals are driven to activism. Students learn first-hand how the disparate impact of



Faculty mentors and students at COP18 in Doha, Qatar, December 2012, from left to right: Gregory Foy, Keith Peterman, Nikki DeLuca, Marla Bianca, John Siller, and Parker McCrary. (Photo Credit: Diane Husic)

climate change is already being felt—most often by those who live closest to the land, in developing nations, and particularly the poor who have minimal capacity to adapt and who often have done little to contribute to the rising atmospheric levels of greenhouse gases that lead to climate disruption. After the students acquire, analyze, and synthesize this data, they integrate it into articles, blog posts, and presentations delivered at local and national meetings (see examples at <http://moraviancollegeatunfccc.blogspot.com/2013/08/faculty-and-student-scholarly-outcomes.html>).

These students participate in research, journalism, and the use of social media to communicate information to campuses, professional societies, and the broader public. Although the student observers are science majors, the outcome of their research produces interdisciplinary scholarship. The students must translate technical, scientific, policy, legal, and ethical information into formats accessible to multiple disciplines and audiences. Indeed, the student engagement in the COPs has provided the impetus for new scholarly endeavors on and beyond students' campuses. Some examples include student participation in the Eastern Pennsylvania Phenology Project (a study of the timing of seasonal events in nature which are highly dependent on weather; see <http://lgnc.org/research/phenology>); interviews with first responders and survivors impacted by Hurricane Sandy; the collection of oral histories of residents of coastal communities in Alaska and agricultural regions in Peru hit by water shortages due to diminishing snow pack and receding glaciers; and analysis of the environmental education and psychology literature in order to develop effective curricula for teaching the public (of all ages) about climate change. Educational materials that students have produced are being used by the National Park Service, regional nature centers, and coastal communities in New Jersey.

The faculty mentors model this interdisciplinary scholarship by contributing articles and interviews for blogs and the press (e.g., the *Huffington Post*, National Public Radio, and KYW/CBS); conducting climate-based research in areas ranging from ecological monitoring to adaptation and resilience at the community level; making presentations at regional and national conferences; and serving on steering committees focused on linking research to climate policy at the state and international levels.

The American Chemical Society's official Public Policy Statement on Climate Change recommends "Climate Change Literacy and Education" as one of four specific "actions" to mitigate and adapt to the consequences of climate change. The engagement of U.S. college and university students and faculty in the UNFCCC COP process as press representatives and observers for non-governmental organizations directly responds to the ACS-recommended "action." The participants employ the U.N. climate conference as a platform to promote literacy and education about climate change. This project broadens the "silo" of scientific understanding to one that engages a constellation of social, political, ethical, and economic issues. The resulting multidisciplinary scholarship provides a contextual framework for understanding the momentous challenge and the urgency of addressing climate change as fundamentally a human-rights issue.

Reference

Ding Ding, Edward W. Maibach, Xiaoquan Zhao, Connie Roser-Renouf, and Anthony Leiserowitz, "Support for Climate Policy and Societal Action are Linked to Perceptions about Scientific Agreement," *Nature Climate Change* 1 (2011): 462–466, accessed May 29, 2013, doi:10.1038/nclimate1295.

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