My New Global Reality

By Kate Rooney, ’14

I used to expect the ordinary when I opened my Facebook page: mundane updates, news from family and friends, the occasional funny picture. My expectations have changed after a year abroad. Now I simply wonder if I will be able to read it all. My News Feed has become a mix of obscure German slang, updates from Turkish and Egyptian friends bashing their governments, memes in Spanish, quotes in Russian, observations about modern French art, and posts in languages I don’t even recognize. And I love it. Every day I’m reminded about a fantastic year and a transformative experience.

I spent a full year in Germany, doing three different things in three different parts of the country. I started out at TU Braunschweig, the oldest university of technology in Germany, participating in the SENSE Program for international students. Here I took introductory classes in German while also studying automotive engineering. We “played” with the new Audi A3, tested suspensions, and analyzed the sound output of engineering. Part of what drew me to Germany in the first place was the country’s outstanding reputation in engineering, and it did not take long for me to see how well deserved that reputation is.

When the program at Braunschweig wrapped up, I traveled across central Europe for three weeks before starting school again, this time at Hochschule Bremen in the northern part of the country. My classes there called for a steep learning curve. Most of the courses were taught in German, and I had only begun to study the language. The first day of class I honestly knew about five words the professor used, but by the end of the semester I passed all of my finals in German.

In Bremen I experienced not only the German school system, but also a truly international environment. I lived in a house with eight students from eight countries and four continents. We quickly became a giant family, even though our backgrounds could not have been more different. Our group included art majors and engineers, wealthy students and less affluent students, Saudis, eastern Europeans, westernized Americans (me!), and Central Asians. We had our culture clashes, to be sure, but we learned much from each other, and these are now the people I stay up late to Skype with.

Soon it was time to move again. On the edge of the Alps, I began an internship working in the Manufacturing and Operations Department at Bosch. I learned much about manufacturing engineering and how it depends upon effective relationships between companies, often across borders. I became immersed in the technical side of the company, but I also saw...
firsthand how integrated engineering is with logistics, economics, and globalization. I even found myself translating phone calls from Japan and working with engineers from Porsche.

Above all, I came away with a deeper understanding about the impact of culture. During my internship I was thrust head first into a 100% German environment; all communications were in German and the business itself reflected their cultural norms. To function, I had to translate not just words, but ideas, symbols, traditions, expectations, and inferences. As Americans we mostly take for granted that so much of the world learns English, but we rarely realize how difficult it is to function in a different language. I gained a new respect for anyone working in a second language, because I empathize with all the challenges it brings.

Over my year abroad, I faced many challenges stemming from the unknown and unfamiliar. Yet each challenge taught me something about the world—and myself. I was especially surprised to see how much of what I learned in my McBride classes helped me understand the new global reality of my life. I may not understand everything I read on my Facebook feed, but it remains a curious source of continuing inspiration to me, an opportunity to learn about foreign cultures and a way to continue the journey I began a year ago.

Coast of the North Sea in Germany

Learning in the Lab: Honors Undergraduate Research Fellowships

By Kenneth Osgood

A running debate in higher education revolves around a supposed tension between research and teaching. Because time and resources are fixed, the assumption is that a focus on one invariably detracts from the other. The reality is quite different, however. Transformational research and transformative teaching often go hand in hand. Students learn more by struggling to solve real-world problems than they do by listening to lectures and reading textbooks.

Recognizing this fact, Mines is working to make research an integral part of the undergraduate experience. McBride is helping by offering new Honors Undergraduate Research Fellowships to support laboratory investigations by our most promising students. The theory is simple. Our students will develop a better understanding of scientific concepts and the research process by immersing themselves into cutting edge research projects taking place all around them. We are excited indeed to announce the first year’s winners!

Edward Wolfram will be working with Dr. Wendy Wempe in the Petroleum Engineering department to quantitatively characterize the pore shape and distribution in tight sand samples using co-located micro-CT images and FIB SEM images.

In Mechanical Engineering, Kate Rooney will work under Dr. Anthony Petrella’s supervision on musculoskeletal simulation research. She will perform test simulations with the AnyBody software to compare predicted muscle behavior with published benchmark data measured experimentally on real muscles.

Will Huddleston’s research is in Metallurgical and Materials Engineering. He will work with Dr. Svitlana Pylypenko on enhancing the performance and durability of nitrogen-doped platinum-based catalysts for direct methanol fuel cells.

Aaron Heldmyer’s project focuses on determining the effects of reclaimed water on various grasses. He will be working with Dr. Junko Munakata-Marr in Environmental Engineering.

Catherine Jimenez will work in Chemistry under Dr. Kim Williams. Her research will seek to increase the sample amount of silicon nanoparticles that can be size-separated using a semi-preparative asymmetric flow field-flow fractionation (AF4) channel.

With research that spans the campus, these McBride students will not only gain valuable lab experience, they will see firsthand how research and learning reinforce one another, with success in one area inspiring new discoveries in the other.
Where Engineering and Policy Meet: A Summer in Washington

By Alexandra Nilles, '15

Engineers and policy makers share a common goal – to solve problems and improve the human condition. Engineering and policy have more in common than many recognize — a key lesson I learned from a summer in the “Washington Internships for Students of Engineering” program. Best known by its acronym WISE, the program engages engineers in solving problems that lie at the intersection of science, technology, and public policy. My experience with the WISE program in summer 2013 was eye-opening and, in many ways, life-changing.

I have always been interested in how government works, a fascination with politics and policy made stronger by my involvement with high school debate and now, the McBride Program. Yet I do feel somewhat insulated from the policymaking process as a student at Mines: my coursework is mostly technical, and my exposure to political life is limited to reading the news. WISE offered a perfect opportunity to gain more experience in this field. I was one of about a dozen engineering students from universities across the country to join the WISE program. Living in the heart of D.C., we often walked or took short Metro rides to meetings at the State Department, the Office of Science and Technology Policy, the EPA, the Department of Energy, congressional offices, and dozens of other agencies and NGOs involved in science policy.

Each of us also pursued an independent research project that connected engineering with public policy. I researched data management strategies for the Smart Grid, an effort by the federal government to update the nation’s electrical infrastructure. The topic fascinates me on a technical level, but the policy issues are equally interesting and challenging, involving concerns such as efficiency (for example, making sure data formats are compatible), cyber security threats, and consumer privacy. Researching this topic forced me to think differently about solving problems – there is not often one “best” solution, but rather many possible solutions with different impacts on stakeholders. I found that everyone I contacted in Washington was very enthusiastic about talking to engineering students – the consensus seems to be that more technical expertise is sorely needed to craft smart policies that affect the scientific and engineering fields.

The WISE program was also a great cultural experience. I was able to explore many of the museums, monuments, and other historical landmarks in Washington. Additionally, in my free time, I was able to attend talks and briefings on such diverse topics as the possibility of life on exoplanets, religious trends in the Middle East, and prosthetic limb technologies. On a less intellectual level, I never went to the same restaurant twice, and took full advantage of many happy hour specials for summer interns. I also have vivid memories of walking down K Street at noon and seeing hundreds of people in suits eating lunch, and realizing that these were the dreaded “special interest groups” that radio talk show hosts complain about.

These types of experiences really changed how I think about the political process – the system is much more complex and bureaucratic than I previously thought yet on the whole, the people I met were well-intentioned and intelligent. As a Physics major, I’m used to being able to break down problems and come out on the other side with a logical solution. My summer in D.C. with the WISE program gave me a new understanding and appreciation for the complexities and challenges facing today’s policymakers, an experience that was immensely rewarding indeed.
It all started the summer I worked with corn. As an intern for DuPont Pioneer, I attended many seminars aimed at educating employees about new scientific developments and technologies. I was interested in the presentations, but baffled. I was only a sophomore then, but I could tell I was not the only one who was lost. Listening to the highly specialized jargon, I often thought to myself, “How do more than a couple people in the company understand this?”

I knew that the information being presented was important, even crucial, to educating the company leadership and helping them make informed decisions on what projects to pursue. How did those scientists take the technical jargon and make it accessible to corporate decision makers who had varying levels of exposure to the scientific questions at hand?

Those seminars sparked my curiosity. I began to wonder about the seemingly simple issue of communicating science to the non-scientist. As I came to understand how important, and complex, the problem was, I realized that I was going to need to do a lot more research to understand that simple question I kept asking myself during my summer with corn.

My own work at Pioneer focused on the environmental risks posed by genetically modified maize. I studied the transportation and fate of genetically modified maize pollen to determine how it degrades in the environment. The experience opened my eyes to a tremendously important question related to scientific communication: risk communication. I learned how essential it is to communicate relative risk, and in some cases lack of risk, to both the government and the public, since both would impact proper regulation of a new product. What is the most effective way to communicate complex scientific information especially when it involves risk?

A year later, I found myself exploring this question further, but from a different angle. Working with CSM professor Chris Higgins in the Environmental Engineering department, I spent thirteen weeks as an REU student researching the uptake and accumulation of perfluorinated chemicals, an emerging organic contaminant, in both the edible and non-edible portions of food crops. The research aims to determine if these food crops provide a way for humans to be exposed to this contaminant. I was eager to become involved in this project as its focus on quantifying chemical exposure pertained directly to the issue of risk communication that I find so fascinating.

What I found in this academic setting was surprisingly similar to what I experienced while working for Pioneer. Again, I attended presentations where I struggled to understand much of the science, even when it was directly related to my research. I found myself always returning to a variation of the same question, “How would I communicate risks I discover in my own research?” I never came up with an answer that satisfied me. There were always too many gaping holes in my plan. I became insatiably curious about the topic and it was then that I knew risk communication was an area of study that I wanted to immerse myself in.

After exploring my options, I felt that writing an undergraduate honors thesis would be the best way that I could really sink my teeth into the topic. While still in the early stages, this thesis will use a series of case studies to analyze the most effective ways to communicate risk to the public with a focus on potential risks from emerging chemical contaminants.

The project is a daunting one, and I know that my own research will merely scratch the surface of this critical topic. But I realize I will be able to apply the knowledge and insights from this research no matter what career path I pursue when I graduate from Mines — even if I find myself again working with corn.
A Brief Encounter With a Celtic Tiger

By John Michael Angle, ‘15

One of the fastest growing cities in the European Union, Dublin is no longer best known as a port of departure for people emigrating to greener pastures far away. It is now a bustling political, economic, and cultural hub. Centuries of Irish tradition and history are combined with a large population of young international students to create a uniquely diverse atmosphere. I could not have hoped to find a more exciting setting for a summer internship and an independent research project.

The term “Celtic Tiger” was given to Ireland’s economic boom from 1995-2000, which matched similar explosive growth in several East Asian countries, or “tigers”. The name is now used colloquially to refer to Ireland itself, its culture, identity, and zeal. Though the country is now in recession, many of the new developments that began during the boom are still marching forward.

My internship involved one such movement: green transportation. For over two months, I worked at Greenaer, an urban transport solutions company in Dublin, promoting the use of electric bicycles. In addition to gaining a phenomenal experience in engineering sales and technical communication, I played an active role in helping move Dublin towards a more efficient and environmentally friendly mode of transport.

The second facet of the trip, a research project that I undertook to complete McBride’s “practicum” course, was an extension of my studies in Comparative Ethics and Politics. The previous spring, I had taken that McBride course, co-taught by Ken Osgood and Keith Neeves. I was fascinated by one of the problems we explored: how differences in political ideologies stem from various moral frameworks. We looked at this issue through the work of the psychologist Jonathan Haidt, who had focused primarily on moral divides in American politics (The Righteous Mind). I wanted to know more – what role might cultural moral frameworks play in the political climate of other countries? This is clearly a huge research issue to tackle, but there seemed no better way to try than to immerse myself in another culture. I sought to compare Ireland’s cultural-political structure to ours.

Ireland was a fantastic subject for this study, as it has a very rich and unique cultural history, and is struggling through many of the sensitive moral-political issues being discussed in the US, such as abortion law. While in Dublin, I observed numerous protests, rallies, and events centered on this and other hot political topics.

There was a very clear divide between those who were young and international in their outlook, and those of the traditional Irish Catholic background. I personally witnessed many informal debates between the two groups, and participated in one-on-one discussions with individuals from all ends of the political spectrum. I made connections with many Irish people, but also with students and professionals from France, Spain, Italy, Georgia, Russia, India, Belgium, Germany, Slovenia, Brazil, the UK, and more. I couldn’t have packed more political or cultural experience into two months if I tried.

My research project on Irish politics, and my internship in green transportation, may seem far removed, but there was a singular resounding take away from it all: the culture of a nation plays such a vital role in its political nature that one can’t hope to fully understand the latter without experiencing the former. In fact, virtually anything you hope to learn from another country will be best learned through an up-close encounter.

I had a surprisingly intimate meeting with Irish culture despite being in Dublin for such a short time, and yet there’s still so much to glean from that society alone. Today my thirst to travel and experience different parts of the world is greater than ever. If I have learned anything, it is that I have much more to learn, and there is perhaps no better way to do so than through experience.
Student Highlights

Deborah Good, ’14 was awarded an international research experience for undergraduates (IREU) through the University of Florida and spent the summer researching gravitational wave physics in Cardiff, Wales, in the United Kingdom. She received funding through NSF and a McBride Honors Enrichment Scholarship.

Hailey Meyer, ’16 (below) worked at the Colorado Fuel Cell Center under Dr. Andrew Herring. Her main focus for the summer was researching and characterizing nanoparticle catalysts that are being developed for use in fuel cells. She had the opportunity to travel to Argonne National Laboratories near Chicago in June to perform experiments that would provide information about the chemical make-up and structure of the catalysts.

Kermit, Texas as an intern for Anadarko this past summer. He found it amazing to see the intricacies of the field, and how all of the different operations interacted to produce oil and gas. “I had the privilege of being able to drop the Frac-ball for a few stages on one of our wells” he recalled. It was a thrilling experience to be hoisted sixty plus feet into the air above the well head, just to drop a small black ball into a hole.

Kayla Sandoval, ’15. As the recipient of an honors enrichment scholarship, Kayla traveled to Iceland to conduct research on sustainable fishing. She interviewed government officials and business owners in Iceland to augment her other research on the topic.

Lucy Orsi, ’15 completed an internship with the Department of Education in Washington, DC. Lucy worked with the Office of the Deputy Secretary and learned about the Government Performance & Results Modernization Act. She also worked with the Office of Planning Evaluation & Policy Development. The internship gave her an awareness of how the department pursues STEM education reform in the current economic and political climate.

Carl Hecker, ’15 was a field intern for Southwestern Energy Company in Damascus, Arkansas. For ten weeks he worked with five different departments. Generally, he was laying pipe, swinging a hammer, or building a well head.

Bradley Wilson, ’15. (below) spent his summer as an undergraduate intern for the Incorporated Research Institute for Seismology (IRIS) working on earth structure research. The research consisted mostly of data analysis and computer modeling. He also worked on a field project moving the flexible seismic array and collecting data from across multiple states. He learned the entire process of installing a seismic station, and even put one new station online completely by himself. Not only did the field work enrich his appreciation of the data he was working with, but it also provided for many memories working with local landowners in rural Kentucky. The photo of Bradley below includes a "vault" on Bradley's head in which the actual seismometer is buried and placed to record ground motion.

Edward Wolfram, ’15 (above right) was the recipient of three scholarships this year: the Duane & Marcine Fritz Scholarship, the Devon Scholarship, and a scholarship provided by the Wyoming Section of the Society of Petroleum Engineers. Edward worked in
Brianne Fagan, ‘14 (below) had the opportunity to spend her summer in a corporate laboratory operated by Newmont Mining Corporation. This facility has a variety of projects that include basic research, R&D for Newmont operations support, and even some pilot plant work. Brianne’s project was focused on biomining/biooxidation. She used special bacteria and archaea to oxidize high sulfur containing materials from Peru. As the Yanacocha property in Peru is mined further, engineers and other scientists have to find ways to deal with high levels of elemental sulfur in the ore that makes gold extraction difficult and expensive.

If Brianne’s work has promise, after much metallurgical and analytical testing, then biomining/biooxidation in this region may be a viable solution to a longstanding problem. Upper management has enough interest in the results of her work that they’re allowing her to continue in her research this semester.

Nicole Neals, ‘15 fulfilled her practicum requirement in the McBride Program by taking a course in Australia that was offered by the CSM EPICS Department in conjunction with the University of Wollongong. The project offered Nicole the opportunity to explore building efficiency standards, energy audits, zero energy buildings, and government policy with a mix of international students.

Kit Pfeiffer, ‘14 (below) used an honors enrichment scholarship to help fund a semester abroad at the University of Western Australia. He studied anthropology, liberal arts, and microbiology, and he also conducted research on methane hydrates. While in Australia, he was able to get out and explore the vibrant and wild western side of the continent, and meet the people that are as equally diverse and robust as the land they call home. "Between skydiving and manta ray swimming at the Ningaloo reef, debating Australia’s relationship with the world, aboriginal storytelling, and laboratory testing, the spring and summer were an inspiring, eye-opening, and truly rewarding experience," he noted.

Alex Truby, ‘15 (above right) interned for Marathon Oil in Cody, WY, working as a reservoir engineer over the summer. "I learned a great deal about my industry," Alex said. "My main focus for the summer was economic, a reserve analysis on a group of wells in the area. I loved the opportunity to work in Wyoming because it allowed me to get out into the field and see the production side of industry. Also, being just outside the east entrance of Yellowstone Park allowed me to partake in some pretty spectacular weekend activities!" A natural leader, Alex also received the 2013 Philanthropy award from the CSM Foundation.
Poverty and Privilege
Reflections on Service Learning

By Cortney Holles & Robby Schultheis, ‘14

Stepping into the world of poverty is not an easy task for one to undertake. You become aware of the prejudice and privilege you have lived with your whole life. You slowly learn that everything is a gift. Nothing should be wasted. Service becomes a matter of “what more can I do?” as opposed to “why am I doing this?”

So reflected Robby Schultheis, one of my students in the new service learning course offered by McBride in the spring of 2013. Together with my co-instructors Ed and Meridee Cecil, we explored with the students the meaning of poverty and privilege. Students studied and discussed these themes in a seminar format once a week, but most of their learning took place outside the classroom as they undertook a weekly service commitment at a community organization in the area. By interacting with the community, we learned much about the systems of privilege that perpetuate the cycle of poverty, and we expanded our notion of what poverty is to include much more than financial distress. Robby’s experience, described below, is a great example of the reactions students had:

I volunteered with the Denver Rescue Mission at the Crossing. Once a dilapidated hotel off I-70 near DIA, the Crossing now provides transitional housing for homeless families. It also provides various developmental programs for impoverished children. As a volunteer, my role was to provide tutoring for these kids. Anthony was my tutee, a boy in the 6th grade. I decided to read with him a book that was my favorite book at that age, The Hatchet, by Gary Paulsen. We discussed the book as well as the beauty of reading. I showed him articles about great speed-readers such as Theodore Roosevelt. Halfway through the semester he told me, Guess what we are reading in class... The Hatchet! He felt as though he had an academic advantage on his classmates, since we had been diligently reading that book for weeks now.

Anthony taught Robby an important lesson about perceptions of poverty and privilege. Other students in the course served at organizations such as Mt. St. Vincent’s home for abused and neglected children, St. Francis Center for the homeless in downtown Denver, and Lookout Mountain Youth Services Center in Golden. As students shared their experiences in class, they revealed many of the ways in which they had changed and grown as people. Many spoke about how their service had inspired them to be more involved their communities. A recurring theme was that students gained more than they gave, and that the people they met on their service projects taught them more than they learned on campus.

I was a product of my environment. Although I would not admit it at the time, I had preconceptions about the impoverished. On my first day at the Crossing, I placed my money clip in my front pocket. I knew that I would be tutoring kids that had been homeless for some time and I assumed they would know something about pick-pocketing. When I first met my tutee, he mainly wanted to talk of his violent past. However, we pressed on and focused mainly on his reading and math skills. On the final day of tutoring, much to our aston-
Honduras

Although local service projects were the defining aspects of the course, as instructors we also wanted to expose students to issues of privilege between nations and the problems of global poverty. We found that U.S. standards for the poverty level pale in comparison to the $1 a day on which many in the world try to survive. For the last few weeks of class, we studied various approaches to international poverty issues, including the U.N. Development Goals. We also read about the campesino movement in Honduras with the book Don’t Be Afraid Gringo. At the conclusion of the semester, nine of the students traveled with us to Honduras to work with Heifer International on community development projects there. Robby was among them:

Honduras is the 3rd poorest country in the western hemisphere. Our main focus was working with locals to build cinder block homes in the Trinidad de Copan region. The homes were typically composed of four rooms of seven feet by seven feet. Beds and running water were luxuries many families did not have.

We also worked in Cerro Azul, and our work there differed from the typical masonry in the Trinidad de Copan area. Our efforts were concentrated on developing a park in the center of their village. The village took the shape of a horseshoe design and in the center laid an overarching fig tree. I found it insightful that their focus was to develop a community center when many inhabitants still did not have running water or beds, yet they wanted, first and foremost, a place to come together. I came to see that Hondurans define community based on families’ proximity to one another rather than through organizations and programs as we often do.

The trip to Honduras showed us a model of working with a community to build understanding and trust — a reciprocal relationship. We met with the mayor and with individual community leaders to learn their history and goals before working on any project. This model emphasized what we had discussed in class: sustainable community development begins and ends with listening to the people who are impacted by the development. As citizens of a Western, industrialized country, we often believe we have the solutions to any problem a developing country faces, but we know nothing about the goals and priorities of the community until we engage in that dialogue. Robby saw this, too:

We carried bricks by hand up a hill for seven hours a day in Honduras. As an engineer I knew we could easily devise more efficient ways to get the bricks to the top. I tried to suggest some alternatives, but I was not a leader in their community and my voice did not carry any clout. I couldn’t just inject myself into the community and expect others to follow.

We’ll continue to build our relationships with the local community and learn about international struggles when we offer the service learning course again next spring. Our best ambassadors are the students who took the course and will continue to engage with their communities in meaningful new ways. By engaging in service, Robby learned more about the world, about his country, and about himself:

The main lessons I learned: know your community, be a minimalist, and lead a life dedicated to service.
McBride Wins Honors Symposium Competition!

By Katie Williams, ‘14

When my team and I strode on stage to the music “We are the Champions,” I knew that months of hard work had paid off. For an entire semester, we had met after hours to prepare our presentation for the first annual Rocky Mountain Honors Symposium. The event revolved around a contest pitting McBriders against honors students from seven other universities in Colorado. As the hosts for the event, held on the Mines campus last April, we felt added pressure to put our game on.

The symposium challenged us to develop a short presentation on a poorly understood environmental challenge. We decided that we wouldn’t just talk about the problem; we would do something about it.

Our team focused on the potential for grey water reuse on college campuses. We understood that utilizing grey water for irrigation and other non-potable uses was a relatively simple and inexpensive way to conserve water and energy. We also saw that putting grey water systems on college campuses would be a good way to raise public consciousness on the benefits of grey water reuse while at the same time making a positive change on our immediate environment.

At first, we zeroed in on the new Symposium Competition! We learned a simple lesson from this project: although the “powers that be” might be supportive of environmental reforms, real change comes slowly, and requires long-term planning at an early stage. Toward that end, we presented our grey water reuse proposal to President Scoggins, who agreed to consider grey water systems for future construction projects.

The other teams at the symposium delivered remarkable presentations on everything from wildfire mitigation to food waste. I was pleased and surprised when our team took first place, especially considering that the winner was selected by popular vote by all the other students. What set our presentation apart was our story about what we learned from our attempt to implement the system on campus. We talked about how our view of activism changed, and about what it takes to implement concrete changes for the future. It was a very informative experience, and I am looking forward to the next Rocky Mountain Honors Symposium. If all goes well, that “traveling trophy” we collected in April will stay right where it is: proudly displayed in the McBride House.
The Wolfram Dynasty:
Three Brothers, Three Miners, Three McBriders

By Lucy Orsi, ’15

Jeffrey Kluger, a senior writer for Time Magazine, gave a TEDx talk a couple of years ago in which he claimed, “over the arc of decades, there may be nothing that defines us and forms us more powerfully than our relationships with our brothers and sisters.” Our siblings are the only ones who, as Kluger puts it, “are with us for the entire ride.” Few better exemplify this unique bonding than the Wolfram brothers.

Edward, a junior in Petroleum Engineering, is now the third Wolfram to make his way through the McBride Honors Program. The “Wolfram dynasty,” as McBride Director Ken Osgood jokingly refers to it, began with Phillip. He graduated in 2008 with a B.S. in civil engineering and an Honors Minor in Public Affairs and is now pursuing a Ph.D. at Stanford University. Preston received two degrees from Mines: his B.S. in metallurgical and materials engineering in 2011, and this semester, his Master’s in the same field. Preston talks passionately about how McBride changed his life, and he is now giving back by serving as a volunteer alumni instructor in an Honors seminar on social media.

Their similar paths are not coincidences. Preston Wolfram recently explained that they each rather self-consciously learned from each other’s experience. When Phillip finished high school, Preston “looked at what Phillip had done and improved upon it and when I got done, I saw where I could improve...and gave that advice to Edward.” This mentoring facet of their relationship is apparent even to their professors. When asked about the dynamics of their relationship, Professor Mark Eberhart, who taught both Phillip and Preston in McBride classes, said it was clear that “Preston was following in his brother’s footsteps.”

Their effect on each other, however, goes beyond simple academic pursuits. Professor Chet Van Tyne, who taught Phillip and Preston in Math courses, said, “The Wolfram brothers are proof positive of Kluger’s theory that siblings can define our identities. The bond between Edward, Phillip, and Preston is indeed fundamental to who they are and, undoubtedly, who they will become.
Building Bridges in Nicaragua

By Kacie Wolverton, ‘14

Growing up in small town Nebraska, I wasn’t exposed to a lot of diversity or foreign culture. As a young child I never considered that people might live their lives in ways different from my own. A subscription to National Geographic in middle school showed me the wonders of the world and implanted a burning desire to discover far away cultures. So when I arrived at the Colorado School of Mines, I was primed to “see the world”. The allure of international travel opportunities served as a catalyst to apply for the McBride Honors program and encouraged me to join the Engineers Without Borders chapter at Mines (EWB-USA Mines).

At the time, the EWB chapter at Mines was relatively new. It had yet to take on any major development projects. That changed in 2012, when an opportunity to partner with Bridges to Prosperity in designing and constructing a suspended pedestrian bridge in Nicaragua arose. Our chapter had its first international project.

Restricted access to vital resources and services is an endemic obstacle for rural communities in Central America. Torrential downpours during the rainy season can isolate communities for days at a time. When I traveled to Nicaragua to complete social and technical surveys, community members spoke of floods that made crossing extremely dangerous during the rainy season. This prevented children from attending school and community members from reaching health-care facilities and markets. After designing the bridge, I returned to the region twice more to assist the community. I was thrilled when, in March of 2013, I saw the culmination of several years of passion and hard work come together when the Ochomogo Pedestrian Bridge was completed.

Although often unseen from the outside, a bridge is not the only benefit that comes such projects: engineering students gain technical expertise alongside communities in need; misunderstandings and challenges are overcome; communities are drawn together and empowered to improve themselves; leaders arise and the value of teamwork is realized; and cross-cultural relationships are forged from calloused hands and friendships found.

We worked alongside a community that shared many of our own dreams and aspirations. Yet we also had to overcome daunting challenges to successfully complete a project with a group of people halfway across the world. We entered a cultural context about which we had little detailed knowledge. The language barrier sometimes made us rely on pantomime and rudimentary sound effects. Community dynamics and politics further complicated matters, and we had to tread carefully to keep the project afloat.

Through McBride I have learned to step away from my own world-view, filled with preconceived notions about how the world works. I now examine and re-examine situations through diverse frameworks and paradigms. This skill has been invaluable while working in international development.
Light, Literacy, and Laptops: Teaching in Nepal

By Kyle Flanegin, ’16

As I walked out of the house, I sensed something different than the normal, quiet village life I had grown to expect. I walked towards the noise and noticed the hundreds, maybe thousands, of Nepali villagers crowding the streets. For two weeks, all had been silent. The village had been mourning the loss of an elder, a member of the family I was staying with. Now it was time for the feast, the “Buj”, as the Hindi of the Terai called it. Any moment, rice cakes and lentils on leaf plates would be served to celebrate the passing into the afterlife.

The celebration was just one of the remarkable cultural encounters I experienced during a summer spent in a rural Nepali village named Sisautiya. My objective in Nepal was to help a start-up NGO named Eejot, created by the founder of Red Hat, Prabhat Jha, who grew up in the village and now lives in the United States. In country, it is managed by his brother, Prashant Jha, who lives in Kathmandu, and a local teacher Rakesh, who is also Nepali.

The literal translation of the Nepali word “Eejot” means light. In the developing world, light has many indications. Light brings hope. Light extends the amount of working hours people have to complete necessary tasks and to study. Light inspires. Eejot wants to bring hope, teach life skills, and foster leadership skills in the village of Sisautiya.

For now, Eejot is pursuing this goal by opening up a computer literacy center. For many young people, basic computer skills can mean the difference between success and failure in high school and university. Unfortunately, the people with these skills usually leave rural Nepal. Few remain to teach computer literacy to the next generation. It was my job to pass on as many of these skills to the younger generation as I could, and set up a program to do so once I returned home.

My typical day started at about six in the morning, when I planned the day’s activities over a cup of chai tea before the 110 degree temperatures set in. In the morning, I would accompany the local teacher, a Nepali who worked at the Eejot center, to the schools in the surrounding area where I usually taught math. The afternoons were filled up by computer classes, cricket and soccer matches, and maintenance work. The evenings involved tutoring students in math and English.

Before the trip, I assumed that the language barrier would be the most difficult obstacle. I was mistaken. Navigating the Hindu caste system and Nepali cultural expectations proved a far bigger challenge for me. I was surprised to learn, for example, that I could not interact with women in the village because their culture prohibits such socialization. I came to admire Hindu culture, which stresses doing one’s own duty at all times. My task was complicated by this: computer literacy was not one of their duties. The adults were very busy with household work such as caring for their animals and farming. Learning and computing was not as important to them as it was to me. Although many students enjoyed the computer center, it was hard to get the local businessmen and adult leadership, who would benefit the most from these skills, to come to class.

My experiences in Nepal revolutionized how I view service. I will leave my “me and them” mentality behind. I realized that I needed to spend more time getting to know the people in the community. I needed to understand their priorities. I came to see, for example, that I could best help my students, who studied by candle-light, by installing an operating electrical system for the center, including a generator, inverter, stabilizer, fan, and lighting system. Bringing this “Eejot” to the students will be one of my favorite memories of the trip.

To me, this life-changing trip highlighted the very real impact of experiential learning, a key component of the McBride Honors Program. Stepping outside the classroom to explore global issues transformed my worldview. As a result, it inspired confidence in my strivings to become a true global citizen, to lead from where I am, whether in the classroom, or the far reaches of the world.

To all, shubh-ria-atryil Good journey!
The Boundaries of Life: Observations and Lessons from an Aspiring Physician

By Aya Angstadt, ’15

My journey was inspired by a personal goal and a quote. The goal: to become a physician. The quote, courtesy of Plato: “The greatest mistake in the treatment of diseases is that there are physicians for the body and physicians for the soul, although the two cannot be separated.” The philosopher’s words struck me as profound, and not just because they were Plato’s, although that certainly carried some weight.

I already had a plan to become a physician for the body. I’m studying the sciences, I’m doing the research, and I’m reading page after page of text, diagrams, and charts. But shouldn’t I also consider the second part of Plato’s formula; the physician for the soul is the one who looks at the patient as more than a scientific case study; who first sees the human. So I was curious: how could I start cultivating this aspect as a student?

I saw an opportunity in the McBride practicum requirement, which challenges us to do something “extra” and experiential for the honors minor. To understand a bit more about the role of the two physicians Plato imagined, I embarked on a comparative study of healthcare differences between two cherished groups in our society: the very young and the terminally ill – those people who are at the boundaries of life. Beginning last fall, I spent six hours each week volunteering and shadowing in different healthcare facilities – one that specializes in the care of children, and another that tends to those in the dying process.

Initially, I was just an observer, noting interactions from afar. But as I became more familiar with the environment, my experience morphed into something much greater that I did not originally anticipate. I became a member of that healthcare team. One moment I would hold a patient’s hand, offering a simple human presence. The next, I would be darting around tending to the telephones, call lights, and blaring bed alarms. From my newfound responsibilities came my first takeaway from this project. I discovered how to contribute meaningfully and I learned to neither overestimate nor underestimate my abilities.

I also learned that despite the unique needs of each group of patients, there is a common thread that pieces together the care for those at the brink of life’s adventure and those who are departing. That exists in the interconnectedness between members of a healthcare team. Patient well-being might look entirely different for each group, but the way in which the final goal is achieved is fundamentally the same: with a strong foundation of physicians, nurses, family and friends, counselors, and even a student volunteer.

I started this experience having a circumscripted perspective of healthcare, derived from common phrases like the “doctor-patient relationship.” Now I understand how two-dimensional and static that perspective is. Being a doctor involves more than medically treating a patient; it is about enriching a community.

My practicum began as an experiential learning opportunity, but it has become a part of my routine and really, part of who I am. The continuation of my practicum work ultimately defines its success – its purpose was to establish a foundation for me to learn that “other side” of medicine, to start becoming Plato’s physician for the soul. I now have no doubt that this project, which began in McBride, will continue long beyond my formal education.

“There is a common thread that pieces together the care for those at the brink of life’s adventure and those who are departing.”

“One moment I would be holding a patient’s hand, offering a simple human presence. The next, I would be darting around tending to the telephones, call lights, and blaring bed alarms.”
The Web Log:
Engine for the 21st Century Philosopher

By Brianne Fagan, ‘14 and Catherine Jimenez, ‘14

What is revolution? How does it occur and within what context? A few weeks ago, these would not be the questions we would address online. For us, as for many Americans of our generation, social media such as Facebook and Twitter are forums for discussing lighter thoughts, those that can be communicated in one-liners and short blurbs.

But our McBride professors this semester have challenged us to bring our classroom debates about the meaning of revolution to a broader audience. We are sharing our thoughts and reactions to anyone who visits our class blog, inviting them (and you) to join us in our discovery and understanding of revolution.

Our blog stems from our innovative course – “From the Lab to the Page: Revolutions in Science, Literature, and Society” - offered as part of the McBride curriculum this fall. Co-taught by professor and theoretical physicist Lincoln Carr, and poet and professor of literature and creative writing Toni Lefton, the class takes an all-embracing approach to the idea of revolution. We’re exploring poetry, philosophy, and science through the likes of Marie Curie, Plato, Albert Einstein, Virginia Woolf, Anna Akhmatova, and Gertrude Stein.

Writing in the blog encourages us to make key discoveries and explore broader connections between these multidisciplinary readings. It also allows us to continue our discussions even after 9 pm arrives, signaling the end of class.

We have been especially fascinated by the use of literature and art to make important scientific ideas accessible to non-experts. After reading Einstein’s original publication introducing his theory of special relativity, for example, we read the novella Einstein’s Dreams by Alan Lightman, and we, especially the non-physicists in the class, were able to use Lightman’s metaphors to understand the science and brilliance in Einstein’s work and its implications for our everyday lives.

On our blogs, we have been exploring ideas raised in seminar as well as new ideas related to course themes. One of our classmates, Aya, said in one of her blog posts, “I would argue there is actually a third class of revolution that occurs within individuals – one that is not visible through slogans or a neatly packaged product.” Other students posted comments asking if a personal revolution should, in fact, be considered a revolution at all.

On another occasion, Lincoln asked us to consider if cultural relativism could function as a disguised form of racism. Throughout our digital debate between moral and cultural relativism, Deborah Good confessed “with regards to relativism, I must admit I had never thought of the issue in terms of racism, though I find the argument very intriguing.” Like the rest of us, she is wrestling with provocative ideas.

In our blogs, as in the course itself, we are exploring linkages between past, present, and future paradigms. We’re discussing personal accounts of people who have experienced revolutions, and we’re reflecting on revolutions in poetry, science, and philosophy. Through it all, we are discovering the much-needed connection between the arts and sciences in our society. Visit our blog, and join the conversation!

Visit our blog at: http://labtothepage.blogspot.com