A Geologist on the Rocks

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Breaking the Ice: Women, Science, and Antarctica,Series

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I am not someone who ever dreamed of going to Antarctica. Many of my friends are, and most have succeeded in those endeavors. So when the opportunity came for me to take part in a 3-week leadership course on the Antarctic Peninsula, I was…cautious. The people I knew went there with purpose: to understand ice stress and strain, examine the formation of our planet through studying the geology, interrogate the influence of humans on the environment of Antarctic base stations, and recovering ice cores, which I refer to in my research to look at global climate change. But I was only going for a "jolly." Did I really need to go to the end of the earth to do a leadership program? How could I justify the time and expense—not to mention greenhouse gas emissions—involved in getting me there? What right did I have to go?

So this was a journey for women in science. A chance to meet other great minds and surely, with three weeks afloat in a confined space in a majestic setting, we would solve all of the world's problems. That would justify my going there! Getting on the plane from Buenos Aires to Ushuaia, I was not comforted—but rather awestruck—to meet the woman who was headhunted to be the first female Dean of Engineering at The Australian National University (truly splendid person, by the way). I was way out of my depth. Who am I to be doing this?

Crossing the Drake Passage—the narrowest point of the Southern Ocean—I began to get a sense of the scale of where we were and what we were doing. We entered "The Convergence," where the cold waters of the circumpolar current crash against the mighty Southern Ocean. The swirling, grey mist obscures the distinction between the sea and the air. The intensity of life feasts on the riches of the intersections of the currents. This is both the messiest and most turbulent part of the Southern Ocean. It is uncertain, edgy, and exciting.

I couldn't help but be excited once we made landfall—not about the penguins and seals, or the glaciers and icebergs…but the rocks.

At last I understood why so many of my geology friends were keen to get down south—the rocks are pristine! The geological heritage here is truly frozen in time. If only I had hand specimens like this in my practical exams, I would have got much better marks. Perfectly crystalline rocks with no sign of weathering, as if they had just formed before your eyes.

For in Antarctica there is no rain and little vegetation—two of the key elements that enable rocks to "rot" to form regolith and then soil, not to mention warmth and a cocktail of bacteria. Granites, basalt, schist…all with beautiful textures. They were a delight to behold.

As wonderous as this was, I also found it disconcerting. The weathering on rockfaces is one of the features I use to orient myself. I am accustomed to the north-side of a rockface being more exposed to sun, whereas in the southern hemisphere the south is the darker and wetter side. But where was north? Other features that I use—the length and direction of shadows and the position of the sun in the sky—provide a sense of time and season. But what if it is always daylight? When not downwind of a penguin colony, there is very little smell—even close to the waters, where you would expect that salty, seaweedy smell. All of these features were missing. This is not a hospitable place. It is not a place for humans.

The humans who have come here have clung to the edge. They have come to conquer and exploit, but without significant outside assistance, subsistence here is almost impossible. Many who have come here have lost their lives or their minds. Yet many have also come to understand and protect this place, but even they have left more than their footprints behind. Is this a corner of the Earth that we can leave to itself? Can we value and protect it, without having to claim it—even in the pursuit of science? If we leave it as a home for scientists, is it then a place without a heart, only a head? Is the only way to understand and protect a place through analysis? Or can we admire it from afar? Do we need to see and touch something to want to protect it? I realize the irony in this, having had the

privilege to visit Antarctica myself, and then suggesting others should not, but it is hard not to consider the impact of the flotilla of tourist vessels that increases each year.

We were scientists who visited Antarctica on an expedition, not to study Antarctica but rather to study ourselves—our potential, our vision, and our ability to influence—and how we can use this for the benefit of the planet and, in particular, this vast and majestic white space. Perhaps the aspect of this adventure I found most satisfying was that with a boatload of scientists, if anyone had a question, there was someone to answer it. From a species of whale to the mating behavior of penguins, growth rates of lichen, the name of cloud formations, and the difference between soil and sediment, there was always someone delighted to be able to share their knowledge. I would say that at the time, our collective wisdom and the potential to apply our brains' trust to the truly wicked problems our world is facing, missed the mark. But because we asked the big questions, listened and shared, our collective expertise have become a rich resource to draw on and assist in forming our ideas and priorities going forward. It created a shift in the frame of our converging conscious—and knowing that 75 other women shared this experience, with many more since, gives me hope that this collective of individuals together will make a difference. Even if we had to travel to the end of the world to realize it.