# Not All Penguins Are Clean

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

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Geography always made sense to me. I'd learn about how a river meanders in a lecture, for example, and then I'd go outside, find a river, and see it for myself. There's far less reliance on imagination in geography compared to other subjects where you learn about the small or the large at scales you can't see for yourself.

I spent my undergraduate and postgraduate studies learning about the environment and how things worked from the perspective of a physical geographer—trying to understand how the atmosphere and the land interact to whip up sand dunes, how trees stabilize the soil, what happens to different pollutants when they enter watercourses, and about how environmental characteristics impact things like agricultural yields. My favorite aspect was always the fieldwork, getting out there and seeing how it was, smelling the scents, listening to the sounds of nature, and immersing myself in the environment.

By the time I got to my PhD studies though, I had started to realize that things aren't always as they seemed. Even by studying a discipline like geography, which is pretty varied, I was still only getting part of the story. Yes, the environment does work the way the theories say, and you can go and see the outcomes from those processes. However, there are other factors at play too: people, for example. By purely focusing on the environment, I realized I'd neglected to pay enough attention to one of the major influences on what was going on. People could change the flow of rivers, the movement of sand dunes, the properties of soil, and so on… and not always for the better. People make decisions that can completely alter a landscape.

Heading to Antarctica nevertheless reawakened the geographer in me, as I dug deep into my brain to remember all the things I'd learnt about polar environments. Again, the power of the visual came through: I could see the ice calving; I could see the snow; I could see the treeless landscapes, the ice melting, the penguins, the icebergs, and the rocks.

We still often think that people don't have an influence on such far flung parts of the world, yet from time to time there was visible evidence of human impacts on Antarctica: bits of plastic on the shoreline, other ships, the research bases we visited, the marks of humans past at old whaling stations. It made me think there's no such thing as the untouched, the pristine.

Something else I noticed was what I couldn't see: the actions and decisions taking place in other parts of the world, hundreds and thousands of miles away from Antarctica, which would ultimately impact the Antarctic environment, wildlife, and people. I realized my training as a geographer had taught me to think about all these different things at different scales. However, by doing an interdisciplinary PhD that brought together different elements of physical geography, human geography, and more (policy analysis, agriculture, development studies, politics, anthropology, soil sciences, and ecology), the way I now understand the environment is much more joined up. It's a system (or rather, a collection of systems operating at different scales, all of which are interlinked to some degree), with people as a central component within, not external to, that system.

On board the ship too, I could see various systems at play, not least the disparate disciplines of the participants, ranging from engineering, microbiology, sociology, environmental education, psychology, and economics to geography, coming together to form a new, emergent system, across disciplines and individuals: a system of action motivated to change the world for the better, to improve the environment, and protect the Earth for future generations.

Both the differences and similarities between the women on the ship were apparent when we interacted with the landscape. Some were drawn to the small, such as the lichens on the rocks, while others were drawn to the large: the rock formations and the ice masses. And yet others were drawn to the human reactions to our Antarctic surroundings. Despite these differences, in many of our conversations it was surprising how many overlaps there were between those of us with different expertise. Those involved in environmental education had been talking about capturing the imaginations of children, inspiring them to care for and protect nature. Others talked about citizen science as a research method where scientists and the public collaborate to collect and analyze data. This resonated with my own research, which these days is grounded in participatory approaches and perceptions of environmental change. We often use different words in our science, based on our disciplinary training, but we are essentially talking about the same things. The boundaries and the divides are not always so clear cut, and there are many perspectives that bring different shades and tones to the picture.

Even the penguins reinforced my perceptions. The penguins on television, "Attenborough's penguins," were always nice and clean. In the real world, it's more complicated, more nuanced, and the interactions of penguins with their environment mean that there are a good many grubby ones out there that aren't so black and white!

Overall, I think my trip to Antarctica underscored a few things that are important as I continue with my research and daily life, which I will continue to reflect on as I take a solutions-based approach to trying to understand and improve the world.

First, ***the unseen is as important as the seen***.

Although we can't immediately feel the impact that governmental decision-making is having on Antarctica, principally due to the lack of humans in this part of the world, it is clearly having an impact. This can be seen from global conservation successes to accelerated ice melt around the Antarctic Peninsula as a result of climate change. How the world is governed and the influence our underlying values and perceptions play in shaping our decision-making will be vital for the future of the planet.

Second, ***decisions and actions in one place can have far reaching impacts in far off locations***. What we buy and how we dispose of it matters. Plastic debris on Antarctica's beaches has come from far away places. This made me question whether we really know what is happening to our rubbish and think about what I'm consuming more carefully. At the same time, my experience in Antarctica underscored the power of collective action and the positive impacts it can have.

Third, ***even amongst the differences there are similarities***. The disciplines, the scales of interest, the ages, nationalities, etc., of the women differed. However, our shared goal to improve the planet emphasized our common ground. In the current era, which seems all too divisive, looking for and building from these similarities seems an important way forward.

Fourth, ***not all penguins are clean***. We are presented with a select interpretation of nature through television and media which necessarily can't capture all its diversity. Being aware of the nuances and that any information about nature is partial and based on particular interpretations of the world can help us to contextualize what we are seeing, whilst still providing inspiration to care for the planet. At the same time, it's important to appreciate different points of view and to ensure we don't neglect "dirty penguins."

Fifth, like the penguins ***the world isn't so black and white or clear cut.*** Acknowledging the fuzziness of what we know and don't know, what we value and prioritize, how we think and act, can be helpful in moving towards improved sustainability. Our worldviews sit on a wide-ranging spectrum and active engagement with the shades of grey in between, the different values, perspectives and

attitudes, the interlinkages across scales, geographies, between past, present, and future, in an overall systems approach, is going to be vital to successfully navigating the current planetary emergency.

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To learn more about Lindsay's reflections on her trip to Antarctica, check out this lecture she delivered at the University of Leeds.