

Addressing unconscious coloniality and decolonizing practice in geoscience

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Unconscious coloniality reinforces inequity and exclusion of Indigenous peoples in STEM. Métis paleobiologist Az Klymiuk outlines ways individuals can become agents for cultural change by implementing decolonizing actions.



Geoscience is fundamentally based in Land. From the formation of cratons billions of years ago to ice sheets that grind rock to dust, we study processes that constitute the heartbeat of our planet. Not only are geosystems processes intrinsically linked, they are major catalysts of events ranging from mass extinctions to biogeographic speciation.

Like geoscience, Indigenous ways of knowing encompass an understanding of life, land, air and water as components of an integrated system. Global Indigenous cultures, while by no means monolithic, developed out of absolute reliance on intimate knowledge of Land. As geoscientists, we also value experience-based knowledge: there is a well-worn axiom in field geology that the best practitioners have seen the most rocks. Geoscience knowledge and systems thinking inherently accord with many Indigenous ways of knowing. Yet, Indigenous people are barely represented in geosciences.

There has been no increase in diversity in US geoscience programmes over the past 40 years. In 2019, Native American or Alaska Natives accounted for only 0.2% of doctoral degrees awarded in all physical and Earth sciences, despite comprising 2.9% of the US population. It is clear that comprehensive actions at national, state and institutional levels are necessary to improve representation of Indigenous peoples in STEM. ‘Decolonization’ has emerged as a buzzword in this context, but intended goals of decolonization movements are self-determination and sovereignty (of land, health care, education, justice and governmental structure), and the dismantling of colonial systems that fuel inequity. Individuals and nations may or may not be interested in economic parity or equity within a Eurocentric system of values, therefore EDI (equality, diversity and inclusion) enhancements are usually understood as anticipated results of decolonization, not ultimate goals themselves.

At institutional levels, decolonization requires individual learning and self-reflection to identify coloniality in systems of beliefs and values. Holding Western and/or Eurocentric behavioural and cultural norms as superior, objectification of the natural world and compartmentalization of human identities into context-based roles are

all examples of coloniality. Much as structural racism produces unconscious racial bias, living within colonial systems of value results in unconscious coloniality.

Unconscious coloniality is [endemic in geoscience](#). Because language is a window to worldviews, consider the word ‘colonization’ itself, widely used in historical geology and paleobiology (‘colonization of land by plants or animals’). Try flipping that language: what if plants invaded land? Invariably, I am told this is negative framing. Our [experiences](#) with colonization, however, involve genocide, dislocation, starvation, biological warfare, forced assimilation and incarceration of children in residential ‘schools’. Experiencing the word colonization as neutral reflects the privilege of not having these realities in your history.

Tackling unconscious coloniality involves learning Indigenous histories, cultures and worldviews. Here are some ways to begin a decolonizing practice.

Acknowledge Indigenous lands

Territorial acknowledgements can be an entry point for personal learning, but they can be problematic. Oral boilerplate and standardized additions to email signatures have become common. Although often explicitly meant to ‘honour and celebrate’ first peoples whose homelands and unceded territories are being occupied, for many Indigenous people, land acknowledgements are performative, and can even serve to [undermine understanding of treaties and land sovereignty](#). Naming nations can combat systemic erasure of Indigenous peoples from institutional dialogues, so there is value in doing them properly: learn whose lands you occupy or where you perform fieldwork; learn social and justice issues facing these nations; learn historic and ongoing impacts of colonization; and develop your own acknowledgment from a place of personal knowledge. This is work. That’s the point.

Be mindful of appropriating identity

Ancestral connection is not Indigenous identity. Citizenship requirements vary among nations, but commonly include ongoing relationships (or the realistic potential

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to develop these, such as for victims of the Sixties Scoop). These are lived experiences with family, broader communities of origin, and very often Land. I suspect many people citing an ancestral connection to Indigenous nations are trying to signal allyship. However, what we perceive is a claim to our cultures without lived experiences, and therefore a trivializing of our identities and the systemic inequities we continue to face. White-experienced scientists also weaponize their supposed Indigenous ancestry to validate their positions and silence our dissent. As an authentic ally to Indigenous peoples, be mindful that **culture is not genetic**.

Develop authentic relationships

Authentic relationships are not transactional but are **built and maintained** as long-term engagements. For geoscientists engaged in fieldwork and land-based research, learn how to respectfully consult, collaborate and disseminate research results to local stakeholders. These include Indigenous governments, landowners, community, Elders and activist groups. Be prepared to consider data sovereignty, and understand that Indigenous nations have the right to stipulate conditions for use of data or specimens collected in their jurisdictions. At minimum, research plans should include identifying and consulting with regional Indigenous stakeholders before work begins.

Curate representation

Geoscience is rife with what [Thomas King](#) calls the romance of Dead Indians — just as “popular culture is littered with savage, noble, and dying Indians” so too is our stratigraphy. Instead of passing over appropriated language, contextualize Indigenous words and histories. The ground beneath my feet, here at my home in

Treaty 8 territory (Canada), is predominantly glacial till situated atop the Notikewin Member of the Spirit River Formation. ᓃᓂᓴᓂᓴ (nôtinikewin) is nêhiyawêwin (Cree) for ‘battle’; the strata that crop out along the bed of the Notikewin River take their name from a battle fought between nêhiyaw and Danezaa peoples, who later agreed to a peace treaty in 1781, following a smallpox epidemic. You can also curate representation by discussing how historical surveys interacted with Indigenous peoples, and how extractive industry impacts our nations today. Good representation also provides role models: highlight the work of Indigenous researchers and scholars.

Centre Indigenous research

Include Indigenous scientists as **full participants in research endeavours**. Too often, our role in projects pertains only to our indigeneity instead of our scientific skill sets. This practice is, at its core, a form of visibility tokenism, not meaningful representation for science professionals. Researchers, institutes and disciplines cannot legitimately claim to be engaged in decolonial practice without enabling Indigenous peoples to share in resources and social capital, and to fully participate as decision-makers in structures of academic power and influence.

In addition to these individual decolonizing actions, you have a powerful role as a change agent, distributing power and holding your colleagues to account.

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