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Key lessons learned when supporting Indigenous scholars and communities during co-creation of knowledge

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Abstract

This paper addresses the call, made by Indigenous scientists and knowledge keepers, for transformative change in western science by creating a new model of science based on relationships and reciprocity (Hird et al. 2023, David-Chavez et al. 2024). This transformation focuses on the rights of Indigenous communities and Nations when they co-create/co-generate/co-produce knowledge with non-Indigenous partners. Indigenous governance of research and practice includes development of relation-based scientific models, clear data sovereignty and governance, full inclusion of communities in all aspects of the research, cross-cultural learning, and development of safe spaces on science-community teams (Hird et al 2023, David-Chavez et al 2024). Here, I describe key lessons of doing this work, reflecting on western science and Indigenous approaches, using examples from pastoral lands in Africa and Asia and non-pastoral lands in the United States.

Introduction

Western scientists encounter many challenges when 'co-producing' knowledge with communities and other societal partners, attempting to blend western scientific knowledge with the broader knowledge of traditional knowledge keepers, Indigenous scientists, policy makers, practitioners and others in society (Chambers et al. 2021, Wyborn et al. 2019, Reid et al. 2016). Many co-production (often called co-generation or co-creation) initiatives face imbalances in power concerning whose knowledge or worldview counts, who generates knowledge and how, and who has access to that knowledge. In lands where colonial powers stole Indigenous land and forcibly assimilated Indigenous cultures (as in North America, Australia, New Zealand), these power imbalances are particularly acute when Indigenous and non-Indigenous participants attempt to blend their knowledge systems today. These power imbalances also appear in western scientific institutions and academia, where 'the colonial science paradigm' often devalues Indigenous knowledge, science and practice (David-Chavez et al. 2024). The objective of this paper is to describe lessons learned when blending Indigenous and non-Indigenous participants on teams who co-create knowledge about pastoral and non-pastoral peoples and their lands in Africa, Asia and North America.

Approach: Positionality and reflection on current practice

In this paper, my positionality matters. I am a female Caucasian, non-Indigenous social-ecological scientist from the land currently called the United States. This paper is based on my experience working for 25 years with Indigenous pastoral people in Kenya, Tanzania, and Mongolia. More recently, it is based on a decade working on mixed Indigenous and non-Indigenous teams of scholars and practitioners on coproduction/ cogeneration in North America. Here, I summarize lessons learned from these experiences and refer to selected published works by Indigenous scholars and practitioners, codes of ethics, and international agreements. I

organize the next section according to key core values and actionable methods described in Dominique David-Chavez and colleague's *relational science model for Indigenous research* (David-Chavez et al. 2024) and Coen Hird and colleague's 'recovery guide for settler-colonial scientists' (Hird et al. 2023). I then reflect on the practice of my research teams in relation to these Indigenous models, drawing out key lessons that would deepen our current practice. Due to text limitations here, I include some additional important quotes from Indigenous and non-Indigenous scholars and a few additional selected references in Table 1. See key papers cited here as a taste of the breadth and richness of current Indigenous scholarship.

Table 1. Key quotes from Indigenous scholars and Elders and selected additional references.

Key quotes from Indigenous scholars and Elders	
Hikuroa et al. 2011 (comparing Maori traditional knowledge and western science)	'Both mātauranga Māori and science are bodies of knowledge methodically created, contextualised within a world view…. While there are many similarities between mātauranga Māori and science, it is important that the tools of one are not used to analyse and understand the foundations of another (Hikuroa et al. 2011).'
Liboiron. 2021	'Every morning when I put on my lab coat, I have decisions to make. How will we do science today? How will we work against scientific premises that separate humans from Nature, that envision natural relations as universal, and that assume access to Indigenous Land, especially when so much of our scientific training has primed us to reproduce these things?'
Watego. 2021 in Hird et al (2024)	Watego (Mununjali, South Sea Islander) writes: 'We simply don't need more texts that teach whitefullas about us on their terms'.
Hird et al. 2023	• 'Academic knowledge systems….preserve a power imbalance with Indigenous ways of knowing and being, often by omitting, misinterpreting, extracting from and devaluing Indigenous knowledges' • 'Prioritising community collaborations, relationships and trust as indicators of researcher success, as well as working with and empowering Indigenous communities to make sure they are upholding community expectations, can increase ethical science among scholars (AIATSIS 2020)'. • '….when Indigenous scholars are 'forced into roles as 'harmonisers', 'facilitators' and 'translators' to accommodate the need to bring people with us to effectively disrupt colonial norms, Indigenous scholars can experience 'translation exhaustion.' • 'Settler-scholars should realise they work on occupied lands and move past land acknowledgements, instead asking what is required of them should they want to become 'proper guests' (Stewart-Ambo and Yang, 2021).' • **'Derridean flip…:** Did that recent 'scientific' finding really prove ancient knowledge was right?' • **'Columbusing knowledges :** Claiming scientific 'discovery' of concepts, practices, species, etc., while failing to credit or acknowledge long-standing Indigenous knowledge and understandings thereof.' • 'Interrogate how your work upholds settler-colonial capitalist institutions which exist and benefit off the continued oppression of Indigenous peoples and their lands.'
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A Call for Change and the Relational Science Model for Indigenous Research

The need for transformative and profound change in western science

While there are many calls to broaden science to include interdisciplinary and transdisciplinary approaches, calls from Indigenous scholars ask non-Indigenous scientists to dig much deeper (Hird et al. 2023). They ask that western scientists recognize that their science is a construct of Western European culture and thus is only one way to create knowledge. They ask us to challenge our assumptions about the superiority of western science by recognizing that Indigenous knowledge is often the basis of western science. More specifically, they ask that western scientists ask permission whenever we work on (often stolen) Indigenous lands, treat their more-than-human research subjects as relations not objects, stop attempting to extract or assimilate Indigenous knowledges, and give full credit to longstanding Indigenous understandings. They ask us to resolve power imbalances between our knowledge systems by building equitable partnerships and uncovering how our 'work upholds settler-colonial capitalist institutions which exist and benefit off the continued oppression of Indigenous peoples and their lands' (Hird et al. 2023, p. 3). Answering this call can unleash innovation and problem solving potential (David-Chavez et al. 2024).

Commit to change: Deep listening, study, and learning

Here, Hird and colleagues (2023, p. 3) say, 'Continue to educate yourself and others, participate, and commit to working with Indigenous peoples towards an anti-colonial and inclusive science paradigm. Centre Indigenous rights as a responsibility.' In our work in Africa and Mongolia (where colonial history is different than in North America), this meant constructing, learning and working on teams with equitable participation of local/Indigenous scientists and community members. These teams were led by foreign researchers with decades of experience working with local communities as individual scientists and then on large, interdisciplinary/transdisciplinary teams (Fernández-Giménez et al. 2019, Reid et al. 2021). In North America, the non-Indigenous scientists on our teams embarked on a continual practice of deepening our understanding of settler colonialism, Indigenous knowledge/philosophy, intergenerational trauma, and extractive relationships scientists still have with Indigenous peoples. Despite these efforts, we found that we will never 'know' or fully understand, but we are clear that it is our job to educate ourselves as deeply as possible.

Integrity: 'Honor ethical responsibilities to communities impacted by research'

The first core relational value of the relational science model of Indigenous research is *integrity*. Here, David-Chavez explains: 'By explicitly centering relational values, we are emphasizing the fundamental importance of building, nurturing, and sustaining relationships between researchers and community to enable more ethical and effective science research practice…'. This value asks all researchers to 'cause no harm' and follow more formal ethical protocols (David-Chavez et al. 2024). Ethical protocols are based on the UN Declaration of the

Rights of Indigenous Peoples which include rights to equality, self-determination, self-government, liberty, security of person, secure access to traditional lands and waters, and restitution for stolen lands (UNDRIP 2007). These protocols expand on the Belmont ethical principles for transdisciplinary research (justice, beneficence, respect for persons) to include appropriate representation, self-determination, reciprocity and deference, as well as beyond-human ethics (Wilmer et al. 2021). Actionable methods include understanding and abiding by the Indigenous rights, obtaining 'free, prior and informed consent' before embarking on research, following the CARE principles (Carroll et al. 2020) and Indigenous/customary data protocols, and working with tribal advisory councils. One formal ethics code is the Australian AIATSIS Code (AIATSIS 2020); see others in (David-Chavez et al. 2024).

When working in Africa and Asia, our teams did not encounter Indigenous communities with formalized ethical protocols, and thus followed Western European-dominated ethics in these cases. I wish we had known about much of the work described here, like the engagement in ethical spaces (Ermine 2007) and the expansion of the Belmont principles (Wilmer et al. 2021). More recently, working with Alaska Native communities, we adopted the Circumpolar Inuit Protocols for Equitable and Ethical Engagement (ICC 2022) in our sustainable harvest research (Heeringa et al. 2019). In our current work with global Indigenous mountain communities, we are following the guidelines laid out in David-Chavez et al. (2024).

Respect: 'Sustain or restore Indigenous governance of Indigenous research and data'

Next, David-Chavez and team (2024) lay the foundation for fundamental change in western science by emphasizing the value of *respect.* They suggest western scientists stop extracting and assimilating Indigenous knowledges, instead deferring to Indigenous knowledges and knowledge keepers. Western scientists need to ensure Indigenous Peoples control the research process and its outputs and benefit from its outcomes. Actionable methods include listening deeply to community needs, using classic participatory action methods, uncovering barriers to community leadership, and establishing formal research agreements. Our western science approaches to co-production were deeply built on this core value. However, we did not always establish community advisory bodies. We also found 'outcome mapping' to be particularly useful where outcomes desired by community members drive the research goals (Reid et al. 2016).

Humility: 'Support opportunities for shared learning'

Humility is a third core relational value that helps 'us to observe…and support dialogue between worlds, rather than holding one above the other' (Ermine 2007, David-Chavez et al. 2024). It allows deep social learning and capacity building among researchers and communities alike. Examples of actionable methods include adaptive experiential learning through discussions during field hikes, storywork through focus groups, critical reflexivity practice, and participatory mapping.

In our work, we encouraged our graduate students to use classic ethnographic techniques to learn how to adapt their research to community needs (see Pickering in (Reid et al. 2021)). Some students arrived in an Indigenous community with a research topic based on deep reading, but then recreated their research topic and methods after months of consultation and multiple seasons working with community members. Also, in my experience, this is the most exciting and rewarding part of flipping the classic western science model, where I have found the deepest learning and most profound innovation.

Reciprocity: 'Ensure research process, outputs and outcomes benefit community'

A fourth core relational value is *reciprocity*. David-Chavez and team (2024) describe how research can ensure Indigenous communities are primary beneficiaries of research process, outputs and outcomes. Key actionable methods here include developing formal community research governance roles (e.g., community advisory groups); sharing funding equitably; and adopting Indigenous methodologies including data governance protocols (which control the collection and application of data about Indigenous lands and peoples). They also involve engaging Indigenous youth who will be future stewards of the land (see (Pickering Sherman and Sherman 2010)); community review of raw data and discussions of interpretation; Indigenous authorship of

outputs; providing accessible data and outputs that are desired by Indigenous communities; and partnership benefits like workshops with story sharing/focus group discussions and local presentations.

These approaches are where the western science model of co-production, when implemented fully, most resembles David-Chavez and team's model. In our work in Africa, we flipped the usual approach to western science so that it was not driven from the needs of the researcher's intellectual development or an outside institution, rather it was driven by the needs of the community our research sought to serve (Reid et al. 2016, Reid et al. 2021). Of course, this approach applies more broadly than work with Indigenous Peoples alone, and includes our approach with communities of fish or trees, policy makers or farmers, and others. From a western science perspective, this means developing the focus, questions, methods, protocols of the research, data visualization, interpretation and products with Indigenous communities. It means spending significant time in community before finalizing the research topic to have many community consultations to ensure that research outputs and outcomes benefit the community. It can also mean aiding Indigenous Peoples as they serve as guardians for our more-than-human relatives. We also collected information together with and under the advice of community members. We interpreted what we found and designed and co-authored outputs together (journal articles, films, policy briefs, stories, etc.). We also discussed and anticipated possible short- and long-term outcomes and impacts and planned for them. Our graduate students often focused their efforts on initial community consultations and then returning results in feedback workshops (Reid et al. 2021).

A last key lesson: Do the hard work of providing safety for all involved

Finally, one the of the most important actions for western scientists to take is to stand up when non-Indigenous scholars are offensive to Indigenous scholars. This is particularly important when speaking up is hard to do. In our work, we faced this need when a western scientist colleague lashed out when they were asked to listen and no longer dominate. It also occurred when a powerful scientific institution removed an Indigenous colleague from a national committee when they spoke out about inappropriate consultation with Native American tribes (Mervis and Ortega 2024). Doing so not only provides support to Indigenous colleagues and community members, but also relieves them of the burden of speaking out themselves. Our current team practice is to work with indigenous facilitators to ensure safe cross-cultural interactions among our scientific team and agree on and adhere to joint community values for all our work.

Conclusions/Implications

In my view, co-production/braiding of knowledge among different knowledge systems is a pathway to begin to repair past and current harms caused by our approach to western science. It also unlocks great problem solving potential. The deep trauma caused by colonization (and western science approaches) created the dire need to establish ethical standards for all interactions of non-Indigenous scholars with Indigenous scholars. These wise values and methods could be applied, in principle, to interactions with all Indigenous and local peoples, including pastoral peoples. As such, 'business-as-usual' in western science is now old thinking, thanks to the leadership of a new generation of Indigenous scholars and their supporting communities.

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