"Working with": The ethics and practices of engaging Indigenous peoples in scientific research

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Indigenous peoples' contribution to science is increasingly recognized in academia. Cross-disciplinary approaches in past environmental change research provides a holistic picture of climate and justice issues. There needs to be ethical engagement of Indigenous peoples in research, with two-way benefits.

Indigenous peoples' contribution to scientific research is increasingly recognized in academia, policy, climate change research, and conservation management (Delgado et al. 2017; Hill et al. 2020). Past environmental change research combined with traditional knowledge can provide innovative perspectives to conservation, climate impact and justice issues (Lyver et al. 2015). By working with Indigenous peoples, paleo-ecological scientists can enhance their data collection and analysis, but also contribute results that support Indigenous rights and management decisions. To meaningfully engage with Indigenous peoples, academia needs to encourage approaches that engage with diverse knowledge systems.

Here we outline the increasing recognition of Indigenous people's contributions to academia. This is followed by the ethics of engagement recommended by Indigenous researchers themselves, and finally we examine the "two-way" relationship between "researcher" and "participant" covering issues such as data ownership and benefits, and its relevance to paleoecological researchers.

Indigenous contribution to scientific research, environmental policy, and management

Current scientific research is rooted in curiosity and the need to find innovative solutions in today's rapidly changing climatic, economic, environmental, and ecological circumstances. Scientific research, historically and currently, relies on Indigenous knowledge in many aspects of fieldwork and research. This contribution and collaboration has not always been accredited, but, today there is increasing recognition of Indigenous knowledge in academia and among practitioners who work with diverse knowledge systems (Delgado et al. 2017). This recognition is across fields in different disciplines and includes, but is not limited to: climate change adaptation and risk reduction (Mercer et al. 2010), biodiversity conservation (Robinson and Wallington 2012), and environmental policy and landscape management (Milgin et al. 2000; Hill et al. 2020).

Top-down environmental policies often clash with realities on the ground; for example, in Canaima National Park, Venezuela, fire suppression policies led to increased occurrences of destructive fires and marginalization of the Indigenous Pemon land management techniques using patch burning in a flammable landscape (Bilbao et al. 2010). Thus, there is an increasing need to support the development of appropriate policies that integrate local governance systems and ways of making decisions about environmental management (Delgado-Serrano et al. 2017).

There are tensions surrounding the engagement of Indigenous peoples in scientific research; namely, these tensions surround issues of ethical engagement, data sharing, acknowledgement of contribution, and benefits for Indigenous peoples in providing support to science.

Ethics of approaching and engaging Indigenous peoples in research

Engagement with Indigenous peoples can lead to a more holistic understanding of land-use practices, but also creates a risk for perpetuating colonial approaches. Merging paleoecology, archaeology, and oral histories can support Indigenous land struggles (Oetelaar 2002; Hogg and Welch 2020). Paleoecology provides past environmental data about land that people occupy and use, which can contribute to decisions regarding land management for the future. These types of data can strengthen claims to land, showing historical use of customary lands, and can aid in presenting a case to the government and relevant authorities, but challenges exist regarding how this can be done in an ethical manner (Chilisa 2020).

Indigenous representatives and allies have raised questions about data governance and advocated for research that benefits Indigenous agendas and needs (Tsosie et al. 2021). Some researchers have diversified their methodologies, using more participatory approaches such as participatory video, where participants in research create their own films about the issues or topics they are concerned with as part of a collaborative approach with the researcher. These new approaches have the potential to transform collaboration, put the research process more in the hands of Indigenous peoples, and be used to assert identity and raise awareness on issues such as land rights (Mistry et al. 2015).

Some Indigenous representative organizations, like the South Rupununi District Council (SRDC) in Guyana, have created internal guidelines on how researchers, and others seeking to work with Indigenous communities, should ethically engage. Key messages include the need for contemporary research with Indigenous peoples to engage on principles of trust and relationship building, reciprocity, and clarity on what results from the research will be used, and who will be acknowledged as owners of the final product. A local grassroots conservation organization, the South Rupununi Conservation Society's (SRCS) approach incorporates local design and initiatives in planning for conservation activities.

Figure 1: Conscious research ensures that the process is not "academic mining", but respectful and active engagement. By ethically engaging with Indigenous peoples, researchers in paleoecology, and related fields, can enhance scientific research by working with diverse systems and considering innovative approaches to tackling today's environmental issues, but also contribute to Indigenous rights and self-determination (photo credit: Angelbert Johnny/South Rupununi District Council).

Community Researcher Rangers are trained to collect data in support of their conservation activities on their customary lands, help design research approaches, and identify what key areas the SRCS should focus on.

Steps to encourage ethical engagement with Indigenous peoples
For the steps outlined in Table 1, the principles of Free, Prior, and Informed Consent (FPIC) should continuously be employed throughout engagement with Indigenous peoples (see ohchr.org/en/indigenous-peoples for more information).

Table 1 summarizes a guide for ethically engaging with Indigenous peoples, one of the outcomes of a webinar promoted by the PAGES DiverseK working group and the Leverhulme Wildfires Centre (pastglobalchanges.org/calendar/128488).

A two-way relationship: Data ownership and benefit sharing
Kwaymullina (2016) states that there are three "thresholds" that non-Indigenous scholars should take into consideration when thinking about working with Indigenous peoples: if the research should be conducted, power dynamics and impact of the fieldwork, and the ethical principles, such as FPIC and intellectual property rights, used in research. Researchers who benefit from Indigenous knowledge and experience, or rely on Indigenous peoples' support in data collection, have a responsibility to ensure ethical engagement during research, appropriate methodologies to approach research with Indigenous peoples, and clarity on data ownership and who benefits from what aspects of the research (Tsosie et al. 2021). Indigenous peoples have historically been misrepresented in research, and steps

to correct this have been taken in the form of acknowledgement or co-authorship on manuscripts (Smylie et al. 2020).

The co-production of knowledge through research with Indigenous peoples should be based on trust and agreed reciprocity (Milgin et al. 2000; Carroll et al. 2020). This is a process that takes time, and researchers' expectations for timelines must be adapted to allow for authentic engagement with Indigenous communities. Researchers often have their own aims to achieve and should consider what is meant by a "two-way" relationship. Thus, the expectations for researchers working with diverse knowledge systems within academia should be adjusted to reflect this. Paleoecologists and other scientists can strive to engage in research that builds local capacity, encourages local governance, contributes data towards Indigenous peoples' needs, and create a space for local decisions. For example, shown in Figure 1, within the SRDC there are people who create maps for their own territory that are used in land-rights discussions or management planning as a product of engaging in previous research that promoted skills and knowledge exchange.

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REFERENCES
Bilbao BA et al. (2010) Hum Ecol 38: 663-673

Carroll SR et al. (2020) Data Sci J 19: 1-12

Chilisa B (2020) Indigenous Research Methodologies. SAGE Publications Inc, 392 pp

Delgado-Serrano ME et al. (2017) Ecol Soc 22: 4

Hill R et al. (2020) Curr Opin Environ Sustain 43: 8-20

Hogg ER, Welch JR (2020) J Soc Archaeol 20: 214-241

Kwaymullina A (2016) Alternative 12: 437-449

Lyver PO'B et al. (2015) Hum Ecol 43: 681-695

Mercer J et al. (2010) Disasters 34: 214-239

Milgin A et al. (2020) People Nat 2: 1210-1212

Mistry J et al. (2015) Cult Geogr 22: 689-712

Oetelaar GA (2002) Can J Archaeol 26: 217-220

Robinson C, Wallington T (2012) Ecol Soc 17: 16

Smylie J et al. (2020) Can J Public Health 111: 826-830

Tsosie KS et al. (2021) Am J Phys Anthropol 174: 183-186

Before the research

- Be familiar with the cultural and environmental context of chosen research site.
- Contact community to introduce self and ideas, and to seek consent.
- Share research idea/topic and engage in discussion to collaboratively design research question and methodology.
- Be clear which data will be collected, how they will be collected, and how they will be used.
- Negotiate and be clear on who owns what data, and which data can be published or kept for community use.
- Negotiate to determine appropriate compensation for research assistants and the community.
- Understand and respect existing processes for permission and data ownership in the community.
- Acquire all other necessary permits nationally.

During the research

- Make knowledge and skill exchange part of your approach.
- Spend quality time in the community, building trust and understanding of customary systems.
- Be flexible in your methodology; if you are working with more than one community, they may not all want to be engaged in the same way. FPIC is a continuous process, and there should be opportunities for people to ask questions throughout the research.

After the research

- Validate your results at a community meeting. Share preliminary results and ensure that the community agrees that what you have collected or discerned is correct.
- Make final agreements on how to properly acknowledge assistants and the community.
- Make final agreements on data sharing; if no data storage system exists in community, share your data in multiple formats: for example, in-person presentations, brochures, audio recordings explaining the results, and/or a hard copy of the research.

Table 1: Steps to encourage ethical engagement

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