


Chapter 5

Bridging Traditions: Indigenous Knowledge Management in the age of Open Science

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ABSTRACT

This chapter provides an in-depth exploration of the synergies and tensions between indigenous knowledge systems and the principles of Open Science. In an era where the democratisation of knowledge is paramount, it is crucial to understand how indigenous knowledge – often transmitted orally and held communally – can be preserved, shared, and integrated into the global scientific community without compromising its integrity or the rights of indigenous peoples. This chapter serves as a blueprint for a thought-provoking and necessary exploration of indigenous knowledge management within the rapidly evolving context of Open Science. It provides recommendations of how the two traditions may be ethically bridged to co-create knowledge in the modern era.

INTRODUCTION

In an era shaped by rapid advances in digital scholarship, data-driven innovations and inclusive knowledge systems, the intersection between Indigenous Knowledge Systems (IKS) and Open Science presents both challenges and transformative opportunities. IKS—rooted in community, experience, cultural heritage, and oral traditions—often remain marginalised within the mainstream scholarly commu-

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nication landscape. Open Science—characterised by transparency, accessibility, and collaboration—holds promise for amplifying indigenous voices. This chapter explores how traditionally stewarded knowledge can engage meaningfully with global research norms without compromising its essence. As the global research landscape shifts towards Open Science and conversations around epistemic justice gain momentum, the ethical integration of indigenous knowledge into scholarly ecosystems calls for frameworks that honour data sovereignty, protect intellectual property rights, and resist commodification.

Grounded in the broader goals of sustainable development and knowledge equity, this chapter offers a balanced view of how IKS can enrich Open Science with diverse worldviews and methodologies, while also critically addressing the risks of assimilation and exploitation. Through conceptual analysis and practical case insights, it aims to contribute to the reimagining of research paradigms and harmonising the two traditions into one that values reciprocity, transparency, and diversity.

BACKGROUND

Indigenous Knowledge Management (IKM) refers to the structured stewardship of traditional knowledge systems that have evolved over generations through community interactions with environment, culture, and spirituality (Ocholla, 2025). Unlike conventional scientific frameworks, IKS are dynamic, context-specific, and often orally transmitted (Ngulube, 2024). Their survival and authenticity depend on respectful custodianship and community-led preservation practices.

Meanwhile, Open Science champions openness, collaboration, and universal access to research outputs. While these principles align with equity and inclusivity, they also present significant tensions for indigenous knowledge holders: data sovereignty concerns arise as open repositories may undermine the autonomy of communities over their own knowledge (Funk & Guthadjaka, 2020; Traynor, 2017); intellectual property challenges are encountered as existing intellectual property laws are often ill-suited for the collective and ancestral nature of indigenous knowledge (Funk & Guthadjaka, 2020; Traynor, 2017); and there are dangers of knowledge commodification where market-driven platforms can distort the sacred and lived dimensions of IKS (Flor, 2013).

Existing literature highlights efforts to develop ethical metadata standards, community consent protocols, and culturally sensitive data infrastructures (Funk & Guthadjaka, 2020; Flor, 2013; Traynor, 2017). However, much remains to be done in crafting policies and frameworks that are not just inclusive but deeply dialogical. To navigate this landscape, the chapter adopts a dual lens: identifying synergies for mutual enrichment and illuminating tensions that require principled negotiation. In

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