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The concept of knowledge carries rich historical and linguistic roots. Indigenous knowledge systems, often holistic and interconnected, challenge the segmented approaches typical of Western science. Increasingly recognized in fields such as climate change, indigenous forms of knowledge offer insights that can enrich scientific debates and practices. However, integrating these into Western paradigms is complex due to differing ontological views and power dynamics.

Concept

The word *knowledge* first appeared in early 12th-century Old English as *cnowlece*, meaning acknowledgment of a superior, honor, or worship (Online Etymology Dictionary, 2024). In French, *connaissance* derives from the Latin *agnoscere*, itself rooted in the Greek *gignosko*. During the Middle Ages, this evolved into *cunoisance*, later becoming *connaissance* (Étymologie Française Latin Grec Sanskrit, 2025). Beyond these etymological origins, Ancient Greek already offered several words to distinguish types of knowing: *epistēmē* for theoretical understanding, *technē* for practical skill, *mētis* for strategic insight, and *gnōsis* for personal intellectual awareness (Allen, 2005).

In general terms, knowledge refers to our understanding of the world around us. Yet there is wide debate about how knowledge is acquired and how valid the claims derived from it can be. Within scientific discussions, epistemology — the branch of philosophy concerned with the theory of knowledge — explores the

nature, origins, and limits of human understanding (Acharyya et al., 2019; Fricker et al., 2020).

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Several major epistemological traditions coexist. **Positivism** conceives of reality as fixed and fully knowable, aligning closely with much of quantitative research that seeks to objectively measure and explain phenomena through statistical evidence. **Critical realism** broadens this view, recognizing a reality independent of human perception

but emphasizing our limited capacity to grasp it fully; our knowledge is thus always partial. **Interpretivism** shifts focus toward the idea that reality is open to multiple interpretations, viewing knowledge as a product of ongoing dialogue among subjective perspectives. **Constructivism**, in turn, argues that knowledge does not reflect an objective reality but is socially constructed through shared norms, values, and beliefs. Finally, **postmodern** and **postcolonial** thinkers extend this critique, contending that knowledge is shaped by cultural contexts and power relations, making “truth” both dynamic and situational (Ansoms, 2024).

In anglophone literature, further distinctions are drawn between *knowing that* and *knowing how*. “Knowing that,” along with “knowing where,” “why,” and “who,” refers to propositional knowledge — conceptual or theoretical understanding of how the world is. “Knowing how,” by contrast, concerns skill or competence (Roland, 1958). In French, this discussion parallels the distinction between *savoir* and *savoir-faire*, complemented by the notion of *savoir-être*. *Savoir* (or *savoirs*) designates theoretical or factual knowledge acquired through study. *Savoir-faire* refers to practical ability — applying knowledge in concrete actions. *Savoir-être* encompasses behavioral and relational qualities, reflecting attitude and interaction (Altet, 2010).

Recent research challenges strict separations among these forms of knowledge, proposing more integrated approaches that connect them (Gone, 2019). This is particularly evident in studies of Indigenous knowledge. Kimmerer (2013), for example, illustrates how ecological understanding of native plants, combined with sustainable harvesting practices and an ethic of reciprocity, fosters environmental sustainability. Similarly, Wilson (2020) highlights how Indigenous research methodologies — especially in North America and Australia — are grounded in respect and accountability to relationships. He portrays knowledge creation as a ceremonial act that deepens understanding while strengthening relational ties.



Indigenous knowledge has gained recognition in discussions of climate change and natural resource governance. Yet operationalizing such perspectives remains complex because Indigenous and modern ontologies often diverge. Kimmerer (2013), in her chapter *The Teachings of Grass*, humorously adopts the structure of a conventional scientific paper to expose how Indigenous knowledge resists the rigid procedures of scientific validation. Nonetheless, she emphasizes the potential for meaningful convergence between scientific and traditional systems of knowing.

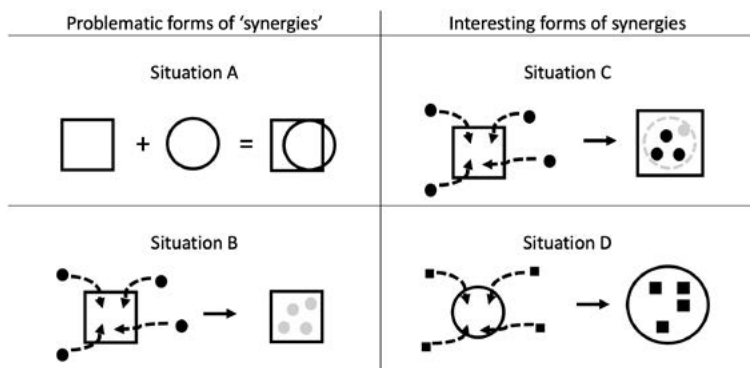
This convergence, however, is far from straightforward, as differing ontological foundations shape how each system conceives of reality. Let us illustrate this with a rather graphical and simplified representation.



Conventional
science-based inputs



Indigenous
knowledge-based inputs



Many policy and academic debates assume that knowledge systems can easily merge, with synergies naturally emerging (*situation A*). This assumption ignores the power relations embedded in knowledge production. In practice, Indigenous knowledge is often selectively appropriated or instrumentalized by dominant scientific frameworks (*situation B*), sometimes leading to commodification or privatization of what were once collective goods (Whit, 1998; Ratuva, 2009; Ramos, 2006).

More meaningful forms of synergy arise when initiatives explicitly address these power dynamics (*situation C*). Indigenous perspectives can genuinely enrich scientific inquiry when their holistic worldviews are given space and legitimacy — a goal still hindered by the underrepresentation of Indigenous scholars in academic institutions.

To truly deconstruct epistemic hierarchies, it is essential to recognize how the hegemonic infrastructures of Western science perpetuate both implicit and explicit discrimination. Nyenyezi (2025) describes this as the *infrastructure of coloniality*

underpinning Western knowledge systems. In *Afrocritique*, he identifies four recurring biases: the belief in a pure, detached knower; the assumption that researchers can uncover causal relations unknown to participants; the illusion that scholarship remains neutral and uninvolved in sustaining forms of violence; and the conviction that scientific inquiry inherently promotes truth and human well-being. Kimmerer (2013) adds a linguistic dimension to this debate, noting that English and other “modern” languages lack the grammatical capacity to express animist worldviews — perspectives that Indigenous languages, with their verbs of vitality and relational grammar, naturally convey. These oral and holistic traditions generate knowledge about the living world in ways that resist translation into the frameworks of Western science.

Even within ostensibly *decolonial* approaches, such biases persist — especially when these initiatives emerge from cultural and linguistic traditions within the Global North. Despite claims of inclusivity, Eurocentric reference models continue to define epistemological norms and preserve existing power structures. As Bisoka (2025) argues, the infrastructure of modern science is not designed to question privilege or center marginalized perspectives.

In conclusion, Indigenous knowledge systems challenge the segmented and hierarchical logic of Western epistemology. Increasingly acknowledged across disciplines, they offer rich insights that can deepen scientific understanding. Yet, integrating these perspectives requires more than inclusion — it demands confronting ontological differences and the power asymmetries that shape knowledge production. Only through such reflexivity can genuine and equitable synergies between diverse knowledge systems emerge.

Case study

Elsewhere in the *Lexico* series, the contribution on *nature rights* provides an excellent example of how inaccurate translations of Māori concepts into English have led to serious misunderstandings of Indigenous knowledge systems. Building on that insight, this section turns to the African context. Here, the notion of *indigenous* is broadened beyond the idea of *original settlers* to reflect on how African languages embody distinct *ways of knowing* that differ fundamentally from those anchored in Western cultural and linguistic traditions.

In many African contexts, including Rwanda and the Democratic Republic of Congo (DRC), the term *knowledge* does not have a direct equivalent in local languages. This linguistic gap opens an important avenue for reflection. If a concept is untranslatable, it may signal that its Western paradigm is not entirely relevant to local ways of being and living. Scholars thus face a choice: to perpetuate a form of neo-colonialism by transforming locally-embedded notions into Western languages and scientific traditions, or to embrace local expressions that more authentically reflect indigenous philosophies.

In Kinyarwanda, for example, *ubumenyi* broadly denotes knowledge, while *ubuhanga* refers to skill, expertise, or the capacity to act effectively within a given domain. Together, they encompass not only cognitive and technical abilities but also moral and social responsibilities — including the duty to share knowledge with others and transmit it to future generations. In Lingala, the word *boyebi* comes closest to the notion of knowledge, but it conveys an embodied form of knowing that extends beyond the purely intellectual. *Boyebi* includes both general and specific knowledge and relates equally to practical skills, relationships, and lived experience. It is situated, experiential, and profoundly relational.

These linguistic nuances reveal that conceptual understandings of *knowledge* are not universal but culturally situated. Translation, therefore, is not merely a technical exercise; it is an

ontological challenge. African languages encode ways of being that may not align with Euro-modern categories, exposing the limits of Western epistemological frameworks.

A striking example comes from a study on palm wine tapping. The second author of this paper sought to understand how this rural activity contributed to the *development* of palm wine tappers. Yet the very concept of *development* proved meaningless to participants — it did not exist within their worldview or linguistic repertoire. To overcome this impasse, the researcher drew inspiration from local discourse, adopting the expression *kozala malam*, a term roughly equivalent to *well-being*. The research question thus shifted from “How does palm wine tapping contribute to development?” to “How does palm wine tapping contribute to *kozala malam*?”



This linguistic and conceptual shift opened up an entirely new realm of *boyebi* — forms of knowledge that would have remained inaccessible within Western epistemological frameworks. Importantly, participants did not *explain kozala malam* in propositional terms; they *demonstrated* it. Knowledge was not spoken but *felt, witnessed, and experienced* — inviting the researcher into a relational and embodied understanding of well-being.

As Arturo Escobar (Conway & Singh, 2011, p. 701) reminds us, this experience reflects the *pluriverse* — a world of many worlds, composed of multiple ontologies rather than multiple perspectives on a single, universal reality. Universalist and globalist discourses, grounded in Eurocentric epistemologies, assume a single *knowable world* that can be managed through unified modes of thought. In contrast, the *pluriverse* acknowledges the coexistence of distinct and legitimate worlds of knowing and being.

In many African societies, knowledge is traditionally forged, preserved, and transmitted through mother tongues that embed learning in cultural expressions such as proverbs, songs, folktales, and daily practices. These oral traditions serve as repositories of ecological and social wisdom. In agriculture, for instance, generations have transmitted environmental knowledge and resource management strategies through lived experience rather than written records (UNESCO, 2003; Galabert, 2020).

A study on **sorghum cultivation in Rwanda** further illustrates this principle. The third author of this contribution used sorghum as a lens to explore how Rwandans articulate knowledge through the Kinyarwanda language, tracing its significance from precolonial times to the present. This decolonial approach re-centers oral histories and indigenous narratives as legitimate epistemological sources. Rather than reproducing external analytical categories, the researcher interrogates what has been silenced or omitted — revealing how local knowledge contributes to cultural continuity and citizenship.

Kinyarwanda emerges here as a rich cognitive-discursive universe. Indigenous classifications, such as the names for stages in the sorghum life cycle — from field preparation to post-harvest transformation — represent more than technical processes. They encode ecological, ethical, and social values expressed through songs, proverbs, anecdotes, and communal stories.

This research highlights a foundational truth: Rwanda's cultural heritage is not material in the Western sense. There are no monumental temples or ancient sculptures. The primary vessel of memory is the *word* — oral tradition as the essence of history, identity, and resistance. Despite the epistemic ruptures imposed by colonialism, this oral world remains the most authentic source for understanding Rwandan life. Through Kinyarwanda poetry, humour, and storytelling, one can access an imaginative and ethical world deeply connected to the landscape — to fields, pastures, forests, and beekeeping zones inhabited and shaped by the *Munyarwanda*.

Yet, much of this indigenous knowledge has been rendered invisible by colonial epistemologies that privileged written archives over oral transmission. Colonial and missionary systems, under the guise of *civilization*, devalued local languages and practices, asserting that Africans had *no history*. This dichotomy — between the *primitive and illiterate* and the *civilized and literate* — severed Rwandans from their own epistemic roots.

Reclaiming these indigenous ways of knowing is thus both an act of preservation and an ethical-political reintervention. Revitalizing local epistemologies challenges Eurocentric hierarchies of knowledge and invites a reimagining of how understanding is produced, shared, and validated.

These African examples demonstrate that knowledge in indigenous contexts is not compartmentalized but holistic, integrating spiritual, social, and ecological dimensions. It reflects a worldview that refuses to separate or hierarchize between human and non-human entities, viewing them instead as interconnected and interdependent. However, tensions persist around how these knowledge systems can relate to conventional forms of scientific scholarship, which remain largely shaped by Eurocentric paradigms. In this sense, embracing *boyebi*, *ubumenyi*, and *kozala malam* represents not just linguistic or cultural inclusivity, but a profound epistemological shift toward a *pluriverse* of knowledge — one that values many worlds, many truths, and many ways of being.

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