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Towards decolonial IS: Insights from applying pluriverse and conviviality to analyse a co-production intervention in Peru

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Abstract

While there is a growing interest in applying decolonial approaches within the field of information systems (IS), effective avenues for engagement remain largely unexplored. To this end, our paper introduces a framework focused on decolonial IS research informed by the notions of the pluriverse and conviviality. These concepts emphasise a focus on ontological, epistemological and methodological dimensions, with a strong orientation to justice. We illustrate the application of the framework through a re-analysis of our own research project, the co-production of the Metropolitan Water Observatory (MWO) in Lima, Peru. Applying the framework to learn new insights about the MWO, this paper contributes to the IS field by providing a framework from which to examine IS interventions from a decolonial perspective. In addition to advancing theoretical understanding, our framework serves as a valuable resource for scholars navigating the complex landscape of decolonial approaches in IS.

KEYWORDS
conviviality, decolonial, information systems, justice, pluriverse

1 | INTRODUCTION

The decolonial turn highlights how colonial ideologies and power structures have influenced knowledge production, perpetuating inequality and marginalisation (Mignolo & Walsh, 2018; Maldonado-Torres, 2016; Moosavi, 2020). Information systems (IS) scholars, particularly in critical IS and Information and Communication Technologies for Development (ICT4D), have long understood IS as intricately intertwined with historical, political, and cultural contexts (Avgerou, 2019; Davison & Martinsons, 2016). However, it has also been shown that IS reinforces colonial legacies (Chughtai, 2023; Jimenez & Roberts, 2019; Khene & Masiero, 2022), and only recently has research explicitly demonstrated how Indigenous approaches can provide a more localised understanding of IS (Abubakre et al., 2021; Davison, 2021; Díaz Andrade et al., 2021).

Decolonial IS scholars argue that it is important to remove colonial legacies in order to build "the future world we aspire to be in" (Chughtai, 2023, p. 242). The intricate process of decolonising IS research is no easy task. As Chughtai (2023) argues, the subordination of non-Western ideas has led to a tragedy that stops us from perceiving post-colonial realities other than through the Western gaze. The pervasive dominance of Western worldviews reflects Escobar's (2018) observation that "[it] is easier to imagine the end of the world than the end of modernity" (p. 209). Although this area of research is still emerging, scholars have begun to provide recommendations for how to engage with decolonising and decolonial approaches: for example, exhorting researchers to reflect on power differentials and colonial power dynamics in the research setting, while also acknowledging the impact of their own positionality on their work (Chughtai, 2023; Abbott, Dasuki, & Jimenez, 2022). Furthermore, decolonial scholars propose breaking away from Western theoretical frameworks and incorporating local and Indigenous epistemologies (Chughtai, 2023; Khene & Masiero, 2022; Masiero, 2023).

In this paper we propose a decolonial framework for IS research. This novel framework is underpinned by the concepts of the pluriverse (Escobar, 2018; Kothari et al., 2019; Querejazu, 2016; Reiter, 2018) and conviviality (Illich, 1973; Krauss, 2021; Nyamnjoh, 2017). These two concepts, when combined, emphasise the importance of acknowledging diverse worldviews and knowledge systems, and they offer ways to engage with them collaboratively and convivially. The pluriverse acknowledges the coexistence of different worldviews and ways of being in the universe (de la Cadena & Blaser, 2018; Querejazu, 2016). Conviviality is commonly acknowledged as promoting cooperative and harmonious interactions based on mutual respect (Ameripour et al., 2010; Nowicka, 2020; Shedid & Hefnawy, 2021). This latter concept has lately gained traction in decolonial studies, highlighting how convivial interactions contribute to justice (Krauss, 2021; Valencia & Courtheyn, 2023). Together, the concepts of the pluriverse and conviviality provide a comprehensive framework that encompasses ontological incompleteness, epistemological pluralism, methodological co-production and multi-dimensional justice.

We explore how the framework can provide insights into a co-produced IS intervention by drawing on the Observatorio Metropolitano de Agua (Metropolitan Water Observatory [MWO]) in Lima, Peru. The MWO is a co-produced digital platform created as part of a research project that seeks to achieve justice by highlighting existing water inequalities in the city of Lima, and collaborating with residents and stakeholders to identify joint solutions (Authors REFs). The framework was developed as part of the final stage of our co-production process, which involved re-analysing the MWO findings to examine how effectively it aligned with a decolonial research agenda. Our research question is

> "How can the decolonial concepts of pluriverse and conviviality provide insights into a co-produced IS intervention?"

This paper is structured as follows. Section 2 provides an introductory overview of the existing body of scholarly work pertaining to decolonial research in the field of IS. Section 3 provides an exploration of the topic of decoloniality, focusing on the two fundamental concepts of the pluriverse and conviviality. Section 4 presents the conceptual framework for IS research from a decolonial perspective. Section 5 delineates the methodological process

by which the MWO was co-produced, the framework was conceived and the MWO was evaluated. Section 6 presents an overview of the findings derived from the evaluation of the MWO. Finally, Section 7 provides an analysis of the findings in connection with the current literature, highlights the theoretical contributions, and proposes practical guidelines for IS researchers interested in adopting the framework.

2 | LITERATURE REVIEW

Chughtai (2023, p. 242) argues that the IS field "[…] emerged in the West and is being primarily expanded by the ideas of Western thinkers", and that this "has roots in the history of colonialism." This growing recognition has led to a focus on decolonising IS research by challenging dominant narratives and power dynamics, and engaging in more inclusive and diverse research practices (Khene & Masiero, 2022). Much of this work stems from ICT4D literature, with a focus on marginalised communities and non-Western contexts (Masiero, 2022). Our literature review highlights studies that contribute to our understanding of decolonial IS research. That is, they might not be explicitly positioned as decolonial, but they decentre the Western canon by focusing on other forms of knowledge, including Indigenous knowledges and post-colonial contexts.

We make a distinction between scholarship which decentres the Western canon in IS research and scholarship which contests the Western canon in IS research. While these two categories do not encompass the entirety of IS research, they illustrate the diverse ways in which scholars are contributing to the decoloniality debate in IS. The first strand, where most studies to date are found, plays a vital role for understanding IS research from a decolonial perspective. The second strand is still in its early stages and requires further attention and development. Our study is positioned within this second strand, as we are actively working towards decolonial IS research.

2.1 | Decentring the Western canon

The first strand focuses on how existing IS is adapted and reinterpreted to fit local contexts in the global South. Although not always explicitly framed as decolonial, this body of work contributes to expanding our conceptualisation of IS research beyond Western cases, with a focus on post-colonial contexts, Indigenous knowledges and more.

Some studies in this strand illustrate how Indigenous people are making use of IS to meet their own needs. Díaz Andrade et al. (2021) observe how Māori IT professionals in Aotearoa New Zealand use digital technologies for self-affirmation, transitioning from passive receivers to active owners of their content and representation. Similarly, Pérez-García (2021) explores how the Wixárika Indigenous people of Mexico use ICTs to protect their sacred land from development projects and advocate for environmentally friendly practices. While these studies demonstrate how IS can be adapted to fit local agendas, they also highlight inherent tensions and contradictions. For example, de Castro Leal et al. (2021) illustrate how a Brazilian community in Pará uses digital technologies to enhance autonomy and livelihoods, yet these technologies are also linked to environmental degradation, health risks and potential loss of income.

Studies in this strand also illustrate the ways in which digital entrepreneurs draw on local or Indigenous concepts. Abubakre et al. (2021) demonstrate how digital entrepreneurs engage the notion of Ubuntu, which centres values of reciprocity, moving beyond the individualistic and competitive narrative of digital entrepreneurship. Similarly, Xiao et al. (2021) found that digital entrepreneurs in China are influenced by the Indigenous concept of Qinghuai, which embodies qualities such as selflessness, solidarity, balance, harmony, self-cultivation and adventurism.

Other scholars have emphasised how research in the global South reveals Western model adaptation processes. Ravishankar et al. (2013) explore how personnel working in an Indian IT outsourcing company demonstrate

inventiveness and strategic ability, taking Western models that match their business plans and implementing them as effective control mechanisms. Elbanna and Idowu (2022) reveal how crowdworkers in Nigeria experience and respond to employment conditions in crowdwork, challenging the notion that such conditions invariably lead to precarity, as much of the literature on the global South suggests.

Overall, these studies focus on interpreting how people are making use of IS in ways other than the dominant Western approaches. These instances aid our understanding of people's interactions with IS. Importantly, they remind us not to assume the challenges in the global South are the same as those in the West. People do not simply accept technology as it is; they modify and use it to suit their own needs. Also, what may appear to be problematic from a Western perspective might not be experienced as such in the global South (Elbanna & Idowu, 2022).

2.2 | Critiquing the Western canon

The second strand of literature focuses on critiquing the Western canon in IS research. Khene and Masiero (2022), for instance, define decolonial ICT4D as "a practice of research, which deconstructs Western-based concepts and rebuilds them through Indigenous value systems" (p. 446). Masiero (2023) reveals how Western supremacy in critical IS literature silences other knowledges and objectifies individuals and offers a subaltern method which accounts for the inclusion of marginalised perspectives. Chughtai (2023) challenges the Western gaze embedded in qualitative IS research by demonstrating researchers' biases and shortcomings in relation to the theories they use and the lack of engagement with Indigenous perspectives and proposes a set of guidelines for addressing these issues.

Other studies expand this to propose new ways of thinking about IS. Some of this work has concentrated on how IS promotes an individualistic frame of mind that is incompatible with cultures characterised by collectivist norms. The pan-African concept of Ubuntu is particularly significant, as many authors have drawn inspiration from it to comprehend how IS might be rethought to better match local contexts. van Stam (2019) proposes a collectivist approach to thinking about research in ICT4D and focuses on local knowledge and community values. Similarly, Tsibolane (2016) provides a holistic view of social wellbeing based on Ubuntu to explain the interdependence of ICTs aimed at uplifting marginalised people. In a similar vein, Jimenez and Roberts (2019) highlight how technology and innovation hubs reinforce a colonial logic of individualism and economic growth and propose an alternative way of thinking about these organisations by adopting the Andean concept of Buen Vivir, which prioritises collective wellbeing and environmental justice. Collectively, these studies provide insights into potential avenues for aligning IS with a decolonial agenda. This entails shifting focus from analysing local adaptations (i.e. Strand one) to actively conceptualising new modes of thinking about IS beyond Western perspectives.

Existing literature highlights the need to redirect the Western gaze in IS research, by tailoring IS to local contexts. However, further attention is required to contest the Western canon and propose new modes of thinking about IS. For us, expanding the second strand is crucial for the IS research community, as it offers novel insights and views for scholars who want to contribute to a research agenda focused on promoting fairness and justice (Escobar, 2018; Reiter, 2018). Building on the second strand of scholarship, we propose a framework based on two key concepts from decolonial literature.

The next section introduces key concepts associated with decolonisation and decoloniality more specifically.

3 | LATIN AMERICAN DECOLONIAL SCHOLARSHIP

The temporal and geographical scope of colonialism has led to a wide range of diverging and overlapping perspectives on its impact (Jimenez et al., 2023). Theories of postcolonialism, decolonisation, anticolonialism and decoloniality are influenced by historical conditions, spatial locations, temporalities, intellectual legacies, and contemporary geopolitics of knowledge (Lyons et al., 2017). While they share certain commonalities and are sometimes used interchangeably, they also diverge in their focus and political proposals (Bhambra, 2014).

Latin American decolonial literature provides a rich and insightful body of work that examines the enduring effects of colonialism on knowledge, power, and identity (Asher, 2013). This work gives rise to various important themes and discussions, related to authors such as Aníbal Quijano, Walter Mignolo, Arturo Escobar, Nelson Maldonado-Torres, Maria Lugones, Gloria Anzaldúa, Silvia Rivera Cusiqanqui and Rita Segato. Attempting to encompass all the various principles and ideas that arise from Latin American decolonial scholarship is beyond the scope of this paper. Nonetheless, we will outline some of its most significant discussions.

While "decolonisation" refers to the process of returning Indigenous land, repatriation of resources and rebalancing of power (Tuck & Yang, 2012), "decoloniality" focuses on the aftermaths of colonialism, which have resulted in asymmetrical logics, power, and knowledge structures (Maldonado-Torres, 2007). Indigenous rights and repatriation of stolen land, as highlighted by Liboiron (2021), is especially crucial within settler-colonial contexts where powerful institutions are often built on Indigenous territories. Decolonial thought encompasses not only these concerns but also delves into the cultural, epistemological, and ontological dimensions.

A major contribution in Latin American decolonial thought is its understanding of modernity as inextricably linked to coloniality. Modernity has often been presented as a progressive narrative based on universal principles and dualist logics that separate subject and object, reason and emotion, human and nature (Mignolo, 2011). Latin American decolonial scholars, however, highlight how modernity also encompassed a darker side, built on the violence of slavery, colonialism, and racism (Mignolo, 2011; Quijano, 1993, 2007). For these authors, to be modern ultimately means to be colonial. One cannot be conceived without the other.

This scholarship also highlights the complex and multi-dimensional legacy of colonialism, which comprises divisive, exploitative, and hierarchical forms of power, knowledge, (inter)subjectivity, and relationships. Concepts like the coloniality of being (Maldonado-Torres, 2007) and the coloniality of power (Quijano & Ennis, 2000) demonstrate how colonial legacies are deeply ingrained and persist through structures, practices, discourses, knowledges, institutions, hierarchies, and cultural manifestations (Grosfoguel & Georas, 2000; Quijano, 2007).

Inherent to modernity are Eurocentric perspectives, which dominate knowledge production and, consequently, our understanding of the world (Escobar, 2018; Mignolo & Walsh, 2018). Although Eurocentrism stems from the specific territorial location of its authors, their own worldviews have been transmitted as universal (Mignolo & Walsh, 2018). The dominance of Eurocentrism and its assumed universality is understood as a form of epistemic coloniality that discriminates against those whose knowledge is deemed non-scientific or irrelevant (Grosfoguel, 2015; Mignolo, 2009; Quijano, 2000).

Latin American decolonial authors have proposed alternatives influenced by the wisdom and experiences of those who have been marginalised owing to modernity/coloniality. Concepts such as border thinking (Anzaldúa, 1999) and trans-modernity (Dussel, 1993) centre diverse cultural and philosophical traditions to rethink existing phenomena. More recently the literature has focused on shaping alternative paradigms to Western-centric development models. The Andean concept of Buen Vivir, for example, is proposed as a way of thinking about collective wellbeing through reciprocity, complementarity and relationality (Jimenez, Delgado, Merino, & Argumedo, 2022).

Within this body of literature, two concepts offer significant possibilities for reimagining existing phenomena in the pursuit of a decolonial future. First, the concept of the pluriverse has been adopted to propose alternative ways of thinking about sustainability (Velasco-Herrejón et al., 2022) and design (Escobar, 2018). Second, the concept of conviviality has been engaged to think differently about innovation (Robra et al., 2023) and conservation efforts (Krauss, 2021), with a focus on decolonial thinking. The next section explores these concepts in more detail.

3.1 | Pluriverse

The pluriverse is employed by Latin American scholars who draw on Indigenous cosmovisions (Hutchings, 2019). It is defined as "[the] understanding that reality is composed of not only many worlds, but by many kinds of worlds, many

ontologies, many ways of being in the world, many ways of knowing reality, and experimenting those many worlds" (Querejazu, 2016, p.3). The pluriverse is considered a decolonial political vision of the world which transcends Western claims of superiority and instead views the world as pluralistically composed (Reiter, 2018).

This approach attempts to recognise, from an ontological perspective, that societies are defined more by change and disruption than by neoclassical assumptions of self-equilibrium (Adésínà, 2002). As a result, the dualistic/binary approach to knowledge that characterises much dominant/Western knowledge should be reconsidered in light of the Zapatistas' concept of "a world where many worlds suit" (Mignolo and Walsh, 2018; Escobar, 2018). The notion of relationality is key, as it acknowledges the need for various knowledges to coexist with mutual regard.

Moreover, the pluriverse should not be confused with cultural relativism or the addition of non-Western epistemologies from diverse cultures. Instead, it refers to a distinct ontological approach in which all knowledge is "bound by the place, time, and positionality of the knowledge producer and hence ideographic" (Reiter, 2018, p. 5). This involves an understanding of partial knowledge not as a limitation, but as constitutive of how the world is formed and, consequently, how theory should be constructed (Nyamnjoh, 2017; van Stam, 2019). This shift in perspective emphasises the importance of relationality, becoming, and incompleteness, rather than the notion of a universal, all-encompassing knowledge (Guma, 2020).

The pluriverse is not necessarily a harmonious thing (Hutchings, 2019). Knowledges can be contradictory at times. Yet it is preferable to acknowledge divergences of worldviews and positionality than to marginalise or subordinate some for the dominance of others (Chaves et al., 2017). This follows what Adésínà calls the "mutual self-embeddedness of contradictory states of being" (2002, p. 105); that is, the notion that two concepts can coexist even if they conflict with each other. This can be understood through the inherent contradictions left by colonialism, in which the colonised can coexist in a colonial context while also maintaining their values and cosmologies. Another way of understanding this is through observing how decolonial movements today are inevitably shaped by many of the processes they oppose and must make use of colonial platforms to further their agendas (Simpson & Pizarro Choy, 2023).

To summarise, the pluriverse is a decolonial concept that depicts the ontological nature of the world, acknowledging the world's relationality and the existence of multiple knowledges. As a result, the pluriverse encourages us to think of our understanding of the world as incomplete, not as a restriction, highlighting the necessity of acknowledging that multiple knowledges coexist without imposing hierarchies.

3.2 | Conviviality

In his 1973 book *Tools for Conviviality*, Ivan Illich offered a critique of a society that has relied on efficiency and accelerated growth, as exemplified by the tools/technologies of industrialisation and mass production, negatively affecting people's relationships with nature and with each other, stifling independence and creativity. He proposes an alternative based on a convivial society, where everyone has access to the community's tools if they do not interfere with the equal freedoms of others. Conviviality, according to Illich, is "individual freedom realised in personal interdependence" (Illich, 1973, p. 24) and centres on the quality of human relations and collective self-determination.

The concept of conviviality has been applied in a variety of disciplines, including sociology (Valluvan, 2016), urban studies (Shedid & Hefnawy, 2021), philosophy (Nowicka, 2020) IS (McKenna, 2020) and decoloniality (Krauss, 2021; Valencia & Courtheyn, 2023). In IS research, conviviality has been adopted to expand the focus of an IT artefact to a broader range of factors, including training, organisational arrangements, and policies (Ameripour et al., 2010). The emphasis is placed on involving users in the production and contribution of the technology. Additionally, scholars have argued that a convivial lens would foster the formation and growth of communities and inspire creativity. McKenna (2020) proposes a convivial affordances framework as a means of considering how individuals make sense of technologies designed by others. This reveals the importance of considering both the design of

technologies, and users' interpretation of those technologies and outcomes. In other words, users should be involved in the design of technologies, and their interpretation is crucial to the achievement of convivial outcomes.

Conviviality has been explored to analyse the ways in which violence stemming from colonialism is being addressed through peaceful self-organisation (Valencia & Courtheyn, 2023), solidarity (Carrillo et al., 2010), and the promotion of autonomous and caring relationships (Arora et al., 2020). Conviviality has been approached to examine the connection between Indigenous peoples and their territories, promoting harmony and coexistence (Gahman, Quintero-Weir et al., 2023). Overall, conviviality literature emphasises the importance of relationships founded on nurturing and compassion rather than hierarchical power dynamics. An important aspect of this work is the connection between convivial relationships and justice (Arora et al., 2020; Krauss, 2021; Massarella et al., 2021; Robra et al., 2023). Scholars have argued that conviviality places attention on power structures and focuses on transformative change (Massarella et al., 2021). To be convivial, then, is to hold justice as an ultimate outcome. Moreover, justice is multidimensional and requires context-specific solutions, which are identified as the result of participatory engagement (Mabele et al., 2022).

In the following section we will unpack how conviviality and the pluriverse can be adapted into a framework to examine IS research through a decolonial lens.

4 | TOWARDS DECOLONIAL IS RESEARCH

Building on the pluriverse and conviviality, we propose a framework for conducting IS research from a decolonial perspective. These concepts acknowledge diverse worldviews and are pluralist in their nature. We present four dimensions that IS researchers could consider when thinking through their research initiatives from a decolonial perspective.

4.1 | Ontological incompleteness

To address the question of how we can understand the nature of IS in our research, we must first define our ontological positionality. The notion of the pluriverse entails accepting the inherent constraints of our understanding of the world, not as a mistake, but as constitutive of reality (Querejazu, 2016). Ontological incompleteness implies that there are multiple ontologies shaping our world and that reality is marked by ambiguity, change and disruption (Guma, 2020; Nyamnjoh, 2017).

The notion of incompleteness is not unfamiliar in IS research. Authors following an Actor-Network Theory (ANT) approach have highlighted the ever-changing and ambivalent nature of digital artefacts (Ekbia, 2009). Garud et al. (2008) propose incompleteness as something to strive for when thinking about design, illustrating this with the example of Wikipedia and the Linux operating system. For these authors, assuming completeness implies endorsing a single ideal design approach which restricts potential for unanticipated uses and implementations, and which may lead to unintended consequences. Instead, the perpetual incompleteness of digital artefacts suggests an ambivalent ontology, presenting both opportunities and challenges (Kallinikos et al., 2013).

In our framework, ontological incompleteness is informed by the pluriverse, and goes beyond describing the attributes of IS to more fundamental questions about our understanding of the world and the role of IS in representing it. We propose two ways in which ontological incompleteness relates to IS. First, ontological incompleteness assumes that IS is inherently non-neutral and always shaped by its surrounding context and people's experiences (Zheng & Stahl, 2011). Thus drawing on incompleteness as an ontological dimension would coincide with calls for resisting neutral assumptions of IS (Monteiro et al., 2022). Second, the nature of IS itself could be seen as embracing ambiguity, ambivalence, and change. That is, rather than aiming to represent a fixed, neutral snapshot of reality, decolonial IS research might acknowledge an inherent and present continuous mode of being. Thus,

instead of viewing patching, reconfiguring, and reassembling IS as errors or failures, these are considered an inherent part of the design process (Guma, 2020; Hoefsloot & Gateri, 2024). Moreover, the starting point is not steadiness but uncertainty, as we actively produce phenomena through ongoing processes.

4.2 | Epistemological pluralism

To address the issue of ontological incompleteness, the exploration of knowledge about IS in our research requires embracing epistemological pluralism. We draw on the pluriverse to interpret epistemological pluralism as the recognition and acceptance of various modes of knowing and comprehending as integral to IS. This builds on the notion that knowledges can be divergent and coexist at the same time, on an equal basis (Escobar, 2018; Kothari et al., 2019; Savransky, 2021).

The idea of multiple knowledges coexisting has been explored previously in IS research. Puri (2007) argues that IS design in the global South involves building knowledge alliances between scientific and Indigenous communities. The focus is on meaningfully integrating Indigenous and scientific knowledge, with an emphasis on the participation of Indigenous communities. Decolonial scholars, however, go a step further, suggesting that researchers should resist using Eurocentric frameworks and instead take a pluriversal perspective that is grounded in local contextualisation (Chughtai, 2023). Guided by these scholars, we suggest moving past the notion of integration of various knowledges to acknowledging pluralism and the permanence of differences (as needed). This involves identifying which epistemic traditions are pertinent to the context (Chughtai, 2023) and striving to incorporate multiple viewpoints in research planning and implementation.

Epistemological pluralism recognises that epistemic violence takes place when one dominant knowledge is prioritised over others, and as such goes beyond attempting to represent the knowledge and/or viewpoint of a powerful voice (e.g., the principal investigator, the policymaker) to recognising the value of multiple perspectives (Escobar, 2018; Reiter, 2018). Recognising the existence of power dynamics allows us to contemplate ways to prevent their influence from affecting our research.

4.3 | Methodological co-production

In this framework, we propose conviviality as a methodological practice, which would strive to include those involved in the research so they can experience freedom and autonomy in the process (Illich, 1973).

While not all decolonial research requires the use of participatory methods, our framework draws from scholars who adopt participatory approaches in their own decolonial research (Fahlberg, 2023). Some of this work is influenced by methods where research participants are involved and inform the research process, such as Indigenous methodologies (Tuhiwai-Smith, 1999), and Participatory Action Research (PAR) (Lenette, 2022). These methods are often adopted because they enable the co-production of knowledge between researchers and participants (Wilkens & Datchoua-Tirvaudey, 2022).

These methodological approaches are well known in IS research, from PAR (Baskerville & Myers, 2004; Davison & Malaurent, 2018; Davison et al., 2022) to co-design (De la Harpe et al., 2015; Sabiescu & Cantoni). Although diverse, these approaches coincide in engaging potential users in the identification of a problem and solution (Costanza-Chock, 2021). However, the tyrannies of participatory methods have long been recognised in IS (Roberts, 2017). As noted by Faik et al. (2024), some participatory approaches are problematic, remain symbolic, and do not necessarily influence IS design. Therefore, participatory approaches should not be idealised, but rather recognised for their capacity to either improve or reinforce unequal social interactions (Roberts, 2017).

Our framework proposes a methodology that draws on conviviality and aims to involve participants in the research process. Methodological co-production aspires to do research "that benefits the communities at the

margins of society" (Chughtai, 2023, p. 250), seeking to remove that which causes marginalisation in society. For us, this entails representing participants' views and experiences and offering opportunities to make their voices heard, by asking them: Who should participate in the design and use of IS? What features should IS have? What purpose does it serve? And how will people interact with it? (Young & Kitchin, 2020).

4.4 | Multi-dimensional justice

As a final component of the framework, we ask what the outcome of our research could be. Following conviviality, and aligned with previous calls to centre justice in IS research and design (Hoefsloot et al., 2022; Masiero, 2022) we take up an explicit focus on justice. This focus encompasses efforts to avoid harm and reduce marginalisation (Chughtai, 2023; Krauss, 2021).

In taking up justice as the guiding aim for decolonial IS research we acknowledge that justice is a multi-faceted and multi-dimensional concept (Berry et al., 2022). Scholars identify at least four categories of justice: procedural justice, distributive justice, compensatory justice and neoliberal justice (Khan et al., 2020). Moreover, multiple concepts of justice have emerged in recent years: for example, environmental justice (Gonzalez, 2015), data justice (Taylor, 2017), water justice (Sultana, 2018), design justice (Costanza-Chock, 2021), and more emphasise the importance of acknowledging the distinct features of injustice experienced depending on the context.

To ensure clarity around which structural factors are at play, we believe that the approach to justice needs to be explicit in the research. What justice means will depend on the context, and how those within understand and experience injustice (Costanza-Chock, 2021). Careful consideration should be given to those that experience marginalisation or have less power (Chughtai, 2023), and to building relations based on care and solidarity with them (Arora et al., 2020; Valencia & Courtheyn, 2023).

Figure 1 provides a summary of the framework for conducting IS research from a decolonial perspective. We recognise that aspects of these dimensions have been previously studied in IS. However, we consider that this framework contributes to examining IS research from a decolonial perspective when all four dimensions are interlinked. For example, ontological incompleteness by itself does not lead to decoloniality, as it requires an explicit approach to justice. Simultaneously, aiming for justice also requires understanding that we operate in a state of constant change, as ontological incompleteness suggests. Co-production may be suitable for identifying different knowledges, but it requires awareness around epistemic violence, as considered through epistemological pluralism.

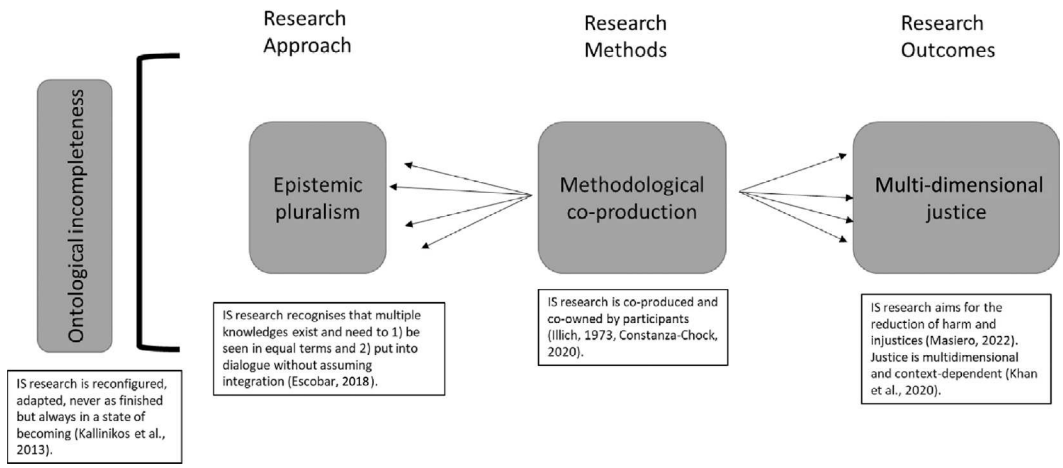

FIGURE 1 A framework for conducting information systems (IS) research from a decolonial perspective.

5 | METHODOLOGY

Our paper aims to examine the insights that the decolonial concepts of the pluriverse and conviviality could offer to an IS intervention. In this section, we will begin by describing the research setting of water in Lima, Peru, which motivated the idea of the MWO. Next, we provide a description of the MWO and its co-production stages, including the final stage, which includes the development of the framework. We then explain how we analysed the findings in relation to the framework.

5.1 | Research setting

The history of Lima's water infrastructure highlights that, since colonial times, water has been treated as a resource reserved for the privileged, with access for Lima residents prioritised over rural areas. Permits to access water pipelines were predominantly granted to high-ranking individuals and powerful religious orders, leaving most of the population to rely on public fountains, rivers, or water vendors for their supply (Bell & Ramon, 2019).

Many of these inequities persisted during Peru's neoliberal era (Bell, 2022). During this period, Lima's water system underwent neoliberalisation, leading to the adoption of commercial principles in water governance and the outsourcing of parts of the water distribution system to private entities (Ioris, 2012). This historical context has resulted in water access and distribution becoming a highly contested issue in Lima.

The government-owned water operator in Lima employs various IS to collect both structured and unstructured data on water consumption and distribution. According to these systems, 95% of the urban population is reported to have water services. However, significant inequalities in Lima's water distribution are widely recognised (Miranda et al., 2016). Many residents lack water access in their households, while others only receive water at specific times of the day or on certain days of the week. Furthermore, repeated requests for data from the water operator regarding water connection, consumption, reliability and quality across neighbourhoods are often ignored, compromising transparency in government service provision.

5.2 | The MWO

Within this context, the MWO was proposed as a digital tool to enhance the voices of citizens of Lima who are facing water disparities because of being inadequately represented in official government databases. We adopted a qualitative research design informed by Turnhout et al. (2020)'s approach to co-production, defined as participatory and collaborative processes that integrate different ways of knowing and jointly develop actionable knowledge contributing to effective solutions and societal transformation (Turnhout et al., 2020, p. 15). This approach aligns with existing decolonial research adopting participatory methods (Fahlberg, 2023; Lenette, 2022; Strand et al., 2022). Turnhout et al. (2020) problematise Western biases in knowledge production and emphasise producing knowledge with real-world impact, resonating strongly with our work and research aspirations.

Before we began, we wanted the MWO to contribute to a decolonial research agenda. We acknowledged the colonial legacies in the context and we believed it was important to co-produce with those experiencing these legacies unfairly.

We worked with residents from three districts in Lima that represent distinct socioeconomic realities: Jose Carlos Mariátegui, Barrios Altos, and Miraflores. José Carlos Mariátegui is a peri-urban locality, which suffers from high poverty and a fragmented water service delivery. This district has a significant amount of water infrastructure that is built, managed and maintained by residents themselves. Barrios Altos is in the historic centre and houses low-income residents in unstable housing. The water connections in this district are unreliable owing to an overburdening of the system, frequent rupture due to lack of maintenance and public investment, and a high degree of clandestine

connections. Miraflores is an affluent and popular suburb, which has a high level of water service provision, access to water, and security. However, some residents still experience water shortages. Together, residents from these three districts give us a rich picture of different experiences around water infrastructure, service provision and access.

The MWO's early leadership consisted mostly of the second and third authors, with the first author joining during stage 2. As a result, we received ethics permission from the second and first author's academic institutions. All residents were invited voluntarily, and their informed consent was obtained prior to each focus group and discussion. All the data was transcribed, anonymised and stored in a safe drive.

5.3 | Co-production stages

5.3.1 | Stage 1: Exploration and identification of the main challenges with residents (December 2019–February 2020)

The purpose of this stage was to develop a thorough understanding of the water concerns that residents faced. We chose focus groups because they allow for collaborative brainstorming and the collection of diverse viewpoints (Morgan, 1996). Through these focus groups we hoped to identify the various forms of information already in use, how this knowledge is communicated, and what the present knowledge gaps are. In total, four focus groups were implemented.

5.3.2 | Stage 2: Defining the indicators and features of the MWO with residents (February–March 2020)

This stage focused on exploring residents' preferences around the platform's features, functionalities and usage possibilities. Because of Covid-19 lockdowns, this stage was held online using WhatsApp groups. We organised three WhatsApp groups, one for each district, and each had around 10–13 residents. To organise the discussion we created a protocol for the WhatsApp discussions based on the MWO. We posed questions each week for residents to discuss (e.g., What indicators would you like the MWO to have? What would you like to use the MWO for?). After completing the questions, we paused during the months of April and May to complete other tasks.

5.3.3 | Stage 3: Analysis and systematisation of MWO functions and features (June–August 2021)

This stage involved meetings with the project team and developer to design the MWO based on the analysis of the previous co-production stages. It first involved securing funding for the next stage of the MWO and working with a developer with experience of co-production. We held 8 meetings to discuss the design of the MWO, following what residents had told us they wanted, and following the data justice principles of invisibility, non-discrimination and engagement (Taylor, 2017).

5.3.4 | Stage 4: MWO design with project coordination team (November–December 2021)

This stage involved a series of online meetings between the coordination team with a full-stack developer to design the MWO prototype. Our meetings focused on ensuring that all the MWO features were based on residents'

responses. For example, the features include storage of various types of GIS information; a form where people can input data about their water access, which is recorded into the system with a buffer area of 20–50 metres to protect people's locations; and an interactive map where users can select which data and indicators are mapped, allowing users to explore multiple datasets (e.g., daily consumption per district; meterless connections). There is also a download option for the data in various file formats (.csv /.pdf /.geoJSON), with detailed information on how the data can be used for various purposes, a chat option where users can exchange information and a social media section that gathers posts from Twitter and Instagram by following key hashtags.

5.3.5 | Stage 5: Internal evaluation of MWO and meetings with stakeholders (policymakers and experts) (January–March 2022)

We conducted three interviews with stakeholders to explore the possibility of the MWO supporting their work. Stakeholders included a representative from the water operator, a representative from the municipality of Lima, and a representative from the National Institute of Engineers. This stage provided us with an opportunity to ask them questions about the benefits and drawbacks of the MWO, as well as gain a better understanding of what they believe leads to Lima's water inequities and how they may be addressed.

5.3.6 | Stage 6: Evaluation of MWO within project coordination team (April–September 2022)

This stage involved a series of meetings with the coordination team to discuss the next stages of the MWO after the interviews with stakeholders. During these meetings, we reflected on our discussions with the stakeholders and considered to what extent we would incorporate their views into the MWO design. This stage also involved securing further funding to organise an official launch of the MWO to the public.

5.3.7 | Stage 7: Launch of the MWO to the public (December 2022)

The final stage involved the launch of the MWO in December 2022, with the attendance of representatives of the collaborating communities, the water operator, the metropolitan municipality of Lima, and the UN special rapporteur for the right to water. This was an opportunity for several residents who had helped to co-produce the MWO to share their stories regarding water access in front of an audience. The launch coincided with the early days of the political unrest and the months of anti-government protests that followed, limiting our activities and outreach possibilities.

5.3.8 | Stage 8: Reflection and learning from the MWO with project coordination team (January–August 2023)

Our final stage involved reflecting and learning from the MWO experience. We were particularly interested in learning to what extent the MWO contributed to a decolonial research agenda. To do this, we considered that we needed a decolonial framework that could help us re-analyse the MWO in a comprehensive way. We conducted a series of meetings between the research team and discussed ways to develop a framework. During these meetings, we recognised the importance of addressing ontological, epistemological and methodological aspects, as the foundations of a research project. To design the framework, we reviewed literature that offered a decolonial perspective on these

dimensions. This review guided us towards the concepts of the pluriverse and conviviality. Additionally, our deeper exploration of these concepts highlighted justice as a critical dimension for framing research.

We then formulated the framework's dimensions based on the following questions: 'what ontological and epistemological implications do the pluriverse and conviviality bring?', 'what methodological lessons can we derive from these concepts?' 'What could be the ultimate outcome that derives from the pluriverse and conviviality?'

5.4 | Analysis

We illustrate the application of the framework through an analysis of the MWO project. This was done through team meetings where we returned to research notes and data, discussed the choices we made, and analysed the MWO based on the framework. Table 1 summarises the data sources that were reviewed. We rely on a combination of primary data sources and notes taken during project team meetings. Thematic analysis was conducted to analyse the data, beginning with a process of thorough familiarisation with the data. Initial open codes were then identified relating to ideas emerging from the datasets, highlighting similarities as well as divergences of views. This led to four initial codes ('tensions', 'concertation', 'design challenges', 'powerful views'), which are summarised in Table 2.

We followed an abductive approach (Díaz Andrade, 2023), iteratively moving between the codes and relevant literature. This process led to the grouping of codes into two overarching themes aligned with our framework: 'Ontological Incompleteness and Epistemological Pluralism in Action' and 'Navigating Co-production in Pursuit of Justice.'

TABLE 1 Overview of data sources and corresponding co-production stages.

Data source	No.	Participants	Recording	Co-production
Exploratory focus groups to identify main challenges related to water access.	4	Residents of José Carlos Mariátegui, Barrios Altos and Miraflores	Focus group protocols, personal notes of the authors	Stage 1
Online focus groups with participants focused on defining indicators and features of MWO	3	Residents of José Carlos Mariátegui, Barrios Altos and Miraflores	Focus group protocols, personal notes of the authors	Stage 2
Online chats for continuous communication and feedback during design process	3	Residents of José Carlos Mariategui, Barrios Altos, and Miraflores	WhatsApp chat record, personal notes of the authors	Stage 3
Interviews with expert stakeholders to evaluate the MWO and explore collaborations	3	Representatives of water operator, municipality of Lima and professional regulatory association.	Recorded, transcribed and coded interviews	Stage 5
Public launch of the MWO	1	Residents of José Carlos Mariátegui, Barrios Altos and Miraflores, representatives of water operator, regional government, civil society and UN. Open to public, including Q&A.	Live stream, meetings notes from authors and photos during the event.	Stage 7
Continuous meetings with project team		Academic researchers, computer programmer, and designer	Notes from team meetings from exploratory, evaluative and reflective stages. Exchange emails.	Stages 1 through 8

Abbreviation: MWO, Metropolitan Water Observatory.

We considered how the themes related to each other, ensuring they were relevant to the overarching topic and research question (Maguire & Delahunt, 2017).

6 | FINDINGS

This section is structured into three parts. The first part describes the various water experiences and perceptions of injustice that we discovered through discussions with participants. The second part describes the insights we learned through ontological incompleteness and epistemological pluralism. The third and last part presents insights based on the dimensions of methodological co-production and multi-dimensional justice.

6.1 | Water experiences and injustices

As mentioned previously, official government numbers indicate that most Lima residents have access to water in their households. However, this contradicts the empirical research conducted by numerous scholars examining the realities of marginalised communities (REF authors). It also contradicted many of the experiences shared by residents. Some frequently lacked a consistent supply of running water in their households or had intermittent water availability. Often, the water operator was responsible for providing water on an irregular basis. A resident from Barrios Altos explained:

> "The water is cut off at ten in the morning and the water does not come back until six in the afternoon. And there is no warning that they will do this."
>
> (Focus Group, Barrios Altos)

Residents were likewise frustrated by their monthly water bill. Some people in the same location were paying twice as much as their neighbours for the same amount of water, and they had no idea why.

Due to insufficient water availability, some residents took the initiative to construct their own water infrastructure, including self-built wastewater pipes, and sourcing water from public streets. Alternatively, some residents were compelled to purchase bottles of water for their daily consumption, resulting in exorbitant costs.

We also identified that water was not only used as a material resource (for drinking/washing) but also held cultural significance owing to its spiritual connotations based on ancestral practices (Alencastre Calderón, 2013; Bleeker & Vos, 2019). An excerpt from the second author's research diary illustrates this:

TABLE 2 Initial codes.

Codes	Description
Concertation	Multiple views and things that participants asked to include in the MWO (focus groups)
Tensions	Participant's request for collecting data and being able to download it (focus groups) Knowledge of clandestine data usages (research diary) Deciding how to harmonise these two (research meetings)
Design challenges	What indicators to include and whether to include spiritual practices of water (team meetings)
Powerful views	Stakeholders' views contradicting participants views (interviews) Water operator mentioned repeatedly by participants as having all the control (focus groups) Our own belief that we would not be taken seriously by water operator (team meetings)

Abbreviation: MWO, Metropolitan Water Observatory.

> "The community in [community name] explained that for them, water is not a resource but their main source of life. This is also noticeable in the traditions of the community, such as water festivals that are organised every year at the beginning of the rainy season. During the water festival, the community pays tribute to the powers that bring the rain season."
>
> (Second author research diary)

Despite their divergent experiences of water access, most residents expressed similar frustration with the ways the government behaved. Some explained that repeated requests for access to government data regarding the connection, consumption, reliability and quality of water across neighbourhoods were continuously ignored by the government and the water operator. In other cases, the water operator refused to recognise that there was a water shortage. For example, a resident recounted an experience of calling the water operator to complain about lack of water access in their street, only to be told by the operator that water was indeed circulating in their area:

> "From two in the afternoon to six in the afternoon we called by phone [to the water operator], 'there is no water, what happened? There's no water.' [resident] No, she says [the water operator], the water is circulating well."

Similar experiences were shared by many of the residents, which left them sceptical of the provision of water services. Moreover, some residents believed that the water scarcity they experienced was a direct action by the government to reduce their water consumption, as reflected in this summary from an exploratory focus group:

> "The [resident] said that the lower parts have water and with a pretty strong pressure, but that during the summer the pressure drops a lot. She said this is because [the water operator] introduces scarcity measures. They said that [the water operator] thinks they consume too much during the summer so they already lower the pressure [...] Later in the conversation they also said that [the water operator] is worried that when they have water 24 hours per day, they will consume too much."
>
> (Focus group summary, second author notes)

To summarise, we identified various encounters with and applications of water, influenced both by individuals' access to water resources and their epistemic backgrounds. Additionally, there is a collective acknowledgment of the inequitable distribution of water by governmental authorities. A prevalent perception emerged that the issue of water disparity did not stem from a scarcity of water itself, but rather from a deliberate governmental strategy to restrict access while informing the public that water was readily available.

6.2 | Ontological incompleteness and epistemological pluralism in action

In designing the MWO, we departed from the knowledge that it would be difficult to collect factual data on water access and distribution given high levels of informality and low levels of transparency (Cerna Aragon, 2021). We decided from the beginning that the MWO was not designed to conceive a full representation of water access and distribution. Our approach was to acknowledge that data is always incomplete, and therefore the MWO is always incomplete. The MWO recognised the need for balancing and integrating diverse discourses and experiences into data creation/collection. Importantly, the MWO was not presented as neutral, but with a focus on highlighting the existing water inequalities experienced by those with higher levels of marginalisation. The MWO's website includes the following mission:

> "The purpose of the Metropolitan Water Observatory is to contribute to a fairer distribution of water resources among urban residents, through the collection and dissemination of data on the access, quantity and quality of water for human consumption in the metropolitan area of Lima and Callao. This data collection will allow us to make visible the inequalities regarding the distribution of water through the platform and implement a dissemination campaign. With this, we will ensure that citizens have a space to submit data on water access, raise awareness about existing inequalities and ensure that data is available to contribute to a fair and safe water distribution system policy."
>
> (MWO website)

During the co-production stages, residents shared their views about what features they wanted the MWO to have. We noted that the different features they wanted were based on their experiences and perceived injustices. For example, residents from Barrios Altos, who would often experience water shortages, were interested in having access to downloadable data to advocate for infrastructural improvements from their local municipalities. Conversely, Miraflores residents, who would often have water available, were more interested in raising awareness and promoting water conservation at a household level. As Miraflores residents stated:

> "I mean, with everything that is happening, it makes me very sad and very afraid of how we waste water. Of course we wasted it, and now I feel like we wasted a lot of water and that I haven't taken much care of it."
>
> (exploratory focus group)

> "In Miraflores' buildings there is no concept of saving water or electricity to heat the water. The dishes and pots are also not washed properly to save water. Nor is water saved in showers, or in washing bathrooms or clothes of inhabitants of each apartment. There is also no custom of reusing water to water plants."
>
> (MWO features WhatsApp group conversation)

To accommodate these diverging problems and priorities, the MWO has the option both to download the data (with a clear explanation of how to do this) and to connect to social media to share information related to saving water and the increasing importance of sustainable water consumption.

Although our aim was to engage with multiple perspectives in the development of the MWO, there was a conflict between engaging with data infrastructure as created by the government and incorporating understandings of water that cannot be quantified (Zwarteveen & Boelens, 2014). The government primarily gathers data in quantitative form (e.g., litres of water per day, hours when water is accessed, etc). However, as previously mentioned, we had identified spiritual practices and usages of water that some residents adopted. We noted that these experiences cannot be easily quantified or incorporated into a digital format. Moreover, since our aim was to engage with stakeholders so they can see the existing water inequalities, we questioned to what extent they would take the MWO seriously if it contained spiritual practices and usages of water.

This led us to consider the trade-offs between our ambition for the MWO to lead to more justice for those experiencing water inequalities, and the importance of engaging pluralistic views of water. Acknowledging this, the decision was made to not include these spiritual practices and instead focus mainly on quantitative data. Attempts were made to find a compromise by making it possible for people to upload photos and send messages to a forum page within the platform, allowing for more diverse ways of expressing and sharing knowledge. Moreover, we ensured that the indicators were formulated and defined by the participants and not solely by the researchers.

As a result, ontological incompleteness has demonstrated our inability to capture the full scope of data in Lima. Additionally, through epistemological pluralism, we can see that our focus on quantitative data for MWO indicators meant excluding spiritual and ancestral practices.

In the following section we delve into some of the tensions regarding different approaches to justice and our collaboration with stakeholders.

6.3 | Navigating convivial co-production and the pursuit of justice

We began the project by seeking to identify what experiences of injustice and marginalisation were prominent. Our initial focus groups had revealed the importance of recognising that water scarcity was being caused by unequal distribution and power relations (Sultana, 2018). Residents expressed frustration at the fact that more affluent neighbourhoods always had access to water while their areas did not. The following quote by a participant in the exploratory focus group explains the differences between poorer and more affluent neighbourhoods:

> "There are hospitals that are open and do not have water services. […] We have done several residential projects: where wealthy people live, they have huge swimming pools and pay a pittance. However, here in the neighbourhoods there is no water. The water is brown. But in the summer, you can find those portable pools on the street. Full of wasted water. What's going on? There is corruption, there is laziness, there is no administration."

Therefore, we determined that the MWO should address the inequitable distribution of water by adopting the notion of water justice (Sultana, 2018). To illustrate this, we decided to include a map of Lima that highlights water availability and access. Different shades on the map indicate varying levels of water availability, with darker shades representing areas with higher water availability and lighter shades representing areas with less. This visual representation shows that affluent areas have more water resources compared with poorer areas.

Recognising both the empowering potential and the associated risks of data and mapping, we turned to data justice literature. Drawing on Taylor's (2017) definition of data justice as "fairness in the way people are made visible, represented and treated as a result of their production of digital data" (Taylor, 2017, p. 1), we considered data justice pillars of visibility, engagement with technology, and non-discrimination (ibid.) and sought to integrate these into our design principles for the platform.

While residents sought to draw the government's attention to the inadequate water supply in their localities through data, we faced the ethical implications of mapping their water access methods. As mentioned before, water scarcity has led some residents to build their own clandestine water connections. We reflected on the fact that including this information in the MWO would be harmful to residents depending on these for their daily water access, as they might face legal repercussions.

This created a tension between the need to collect data promptly and the need to gather data responsibly. Residents wanted timely data collection to demonstrate the water shortage to the water operator. However, this urgency conflicted with the principles of data justice, which require careful and responsible data collection. Similarly, we had to balance the accuracy of the collected data with the need to protect the privacy of individuals using the platform. To safeguard individual privacy, we implemented a method where the location of each data point is randomly dispersed within a donut-shaped buffer around the user's actual location, and the original location is never recorded in the platform's database or visualised on the map (REF authors). Although this approach makes it more challenging for residents to use MWO data to advocate with the water operator, it ensures that residents are protected from any potential repercussions.

Once there was an initial design for the MWO, we presented the prototype to different stakeholders. Our intention was to involve them in the MWO, given that they had the power to influence policy and make changes. While our discussions were positive overall, they expressed concerns about the MWO overlapping with their existing programmes. Furthermore, one stakeholder raised concern about the consequences of data that shows glaring disparities, which could lead to more social unrest in a city already dealing with political and social issues.

These discussions also revealed the conflict between the perspectives held by stakeholders regarding Lima's water problems and the acknowledgement that water injustices result from unequal water distribution and uneven power relations. These stakeholders disagreed with the views of residents around water injustices. One of them believed that water shortages were caused by rural-to-urban migration and the consequences of overpopulation. This individual described a person from a rural area who moves to the city in a state of poverty and then has children without contemplating the financial consequences. Another person explained that the fact that people from more affluent areas had more access to water was not a flaw in the system; rather, they explicitly provide more water to people who can afford to pay more money, thus seeing water as a monetary resource.

These diverse experiences revealed tensions between methodological co-production and multi-dimensional justice. While residents wanted timely data collection, we recognised that this could compromise the MWO's commitment to data justice. Anonymisation—though ethically necessary to protect residents—significantly dilutes the data's impact and undermines efforts to hold the government or water operator accountable, thereby reinforcing the status quo. Additionally, although we aimed to involve stakeholders in the MWO as we considered them able to influence policy and change, their perspectives on water access and distribution often conflicted with our aim for water justice. Thus our engagement with stakeholders became uncertain.

7 | DISCUSSION

This paper seeks to address the question, "How can the decolonial concepts of pluriverse and conviviality provide insights into a co-produced IS intervention?"

Evaluating the MWO through our framework affords us interesting insights about the possibilities of decolonial IS research. There were many instances where the MWO did not contribute to a decolonial research agenda. While some of these might be due to limitations in our approach, many speak to the impossibility of decoloniality in a context where structures are inherently colonial.

To begin with, our emphasis on gaining credibility for the MWO among stakeholders led us to prioritise the collection of quantitative data, resulting in the exclusion of spiritual practices of water. This exclusion might be seen as a form of epistemic violence (Chughtai, 2023). We addressed disadvantaged perspectives, albeit with limited coverage. Our findings also reveal ethical dilemmas at the crossroads of co-production and justice. Residents' interest in utilising the MWO to demand changes from government institutions revealed to us the risks of data collection without consent (Taylor, 2017) and/or mapping areas that needed to be protected.

By anonymising some of the data to safeguard residents, we inadvertently restricted the residents' capacity to use this information for advocating for their rights and holding the government accountable. Furthermore, aiming to co-produce with stakeholders required us to consider their opinions; this contradicted the project's sense of justice, which is at the core of decoloniality. As it stands, the current structures seem to create a tension between ethical research practices and the goals of decoloniality, and highlight the moral implications of research practices, particularly when working with marginalised populations.

These findings demonstrate the intricate nature of decolonial IS research (Simpson & Pizarro Choy, 2023). The MWO can be seen as an illustration of how the difficulties in implementing the concept of a pluriverse represent challenges to a decolonial research agenda. Furthermore, it also demonstrates the complex methodological challenges associated with conviviality. We contend that this implies that the current structures hinder our ability to implement a decolonial IS research agenda.

7.1 | Theoretical contributions

Our research offers two key contributions for decoloniality in IS. First, we have shown how the pluriverse and conviviality could be applied jointly to explore IS interventions. IS scholars have cited these concepts as important for

decolonial IS research (Chughtai, 2023; Masiero, 2023), but to the best of our knowledge, there has been no joint exploration of them. We consider that the concepts of the pluriverse and conviviality work better together to contribute to decolonial IS. The pluriverse offers insights into the essence of knowledge in IS research, while conviviality serves as a roadmap for its direction and outcomes. These two perspectives combined suggest that IS research aims to capture multiple perspectives, understanding that it is unlikely to capture them all. They also suggest that decolonial IS research would focus on building relationships of care rather than imposition, allowing us to consider IS as designed with an aspiration for justice, while recognising the intricate and complex features thereof.

This framework is consistent with existing IS research, which emphasises the importance of incorporating diverse knowledges into IS while also taking power dynamics into account (Puri, 2007). It is also consistent with IS research, which has demonstrated ontological incompleteness (Ekbia, 2009; Kallinikos et al., 2013). The framework also addresses recent concerns among the IS research community for a stronger emphasis on justice (Masiero, 2022). We expand on these concerns by viewing justice as a complex and multi-dimensional issue that must be identified in context and by individuals who have experienced injustice (Shklar, 1990).

Second, we have illustrated the difficulties of embracing decoloniality in light of overarching power structures. The insights learned through the application of the framework makes us consider how decolonial efforts are often required to rely on modern structures that do not allow engagement with other epistemologies. To challenge what is fundamentally an unjust system, sometimes we must use dominant language and tools and work with decision-makers (Simpson & Pizarro Choy, 2023). This implies a structure or system where certain types of data (quantitative) are valued more highly for credibility. Conversely, certain types of knowledge, specifically spiritual knowledges, are not considered valuable or credible within the established structure. Being disregarded by the government had the potential to disappoint residents, but we also acknowledged the presence of our own personal prejudices. Overall, this indicates the inadequacy of the current structures for enacting decolonial research in IS.

We suggest that this should not hinder efforts to engage with decolonial approaches. Instead of focusing solely on the shortcomings of the MWO, this framework provides insightful perspectives for envisioning its future trajectory. Drawing on the MWO as an exemplar allows us to understand that current structures of power make decolonial research difficult to enact. However, this should not deter our efforts; rather, it should guide us to examine how we can continue to contribute to, learn from, and reflect on our work, with the hope that future structures will make decolonial research possible. Adopting a decolonial perspective could be viewed as an ever-evolving objective which, while perhaps unattainable in its entirety at present, drives continuous progress and advancement.

7.2 | Guidelines for applying the framework

We believe the framework can help IS researchers seeking to engage with decolonial approaches. We have formulated the following guidelines, or recommendations, for adopting the framework. These are not exhaustive, nor are they fixed. They are intended to serve as a point of departure and to catalyse discussion and reflection.

7.2.1 | Acknowledge partial and diverse representation

We suggest it is important to think first about the understanding or representation of reality in IS research. The framework suggests that reality is inherently partial and never fully complete, and this should be represented in the IS. In this respect, ontological incompleteness encourages researchers to consider that IS is always changing and adapting. Any attempt to fully capture or describe reality through IS will inevitably fall short. This contributes to a decolonial research agenda as it encourages things to be context-sensitive, emerging from engagement with participants.

Another important aspect is to avoid the suggestion that the IS project/research is representing reality. Instead, we suggest researchers explicitly state that what is being represented is always a snapshot of reality and there is always a chance that some perspectives might not be represented, or that what is being represented could change.

An example of how this is done is the Environmental Justice Atlas (https://ejatlas.org/), an online interactive platform that documents and catalogues social conflicts related to environmental issues across the world. The Atlas main website explicitly states that it is "a work in progress. Newly documented cases and information are continuously added to the platform. However, many are still undocumented and new ones arise. Please note that the absence of data does not indicate the absence of conflict" (website).

7.2.2 | Adopt a flexible and reflexive approach

Researchers must adopt a flexible approach to the IS, considering how it can be adapted and transformed based on what participants express and how the context changes. Researchers could be sensitive to this by designing the research as an iterative process, organising moments where the content and findings are revisited and revised. In this respect, reflexivity could be a useful tool that can offer researchers the possibility of accommodating new insights or unexpected findings that may emerge during the study (Sultana, 2007).

While it is important to represent multiple perspectives, researchers should recognise that there might be contradictions between these. Instead of seeking integration, researchers should consider whether they can coexist: this will mean embracing complexity and recognising how contradictions, where they arise, may provide deeper insights into the research.

7.2.3 | Respectfully represent marginalised and indigenous knowledges

Decolonial research places strong attention on decentring dominant knowledges (Chughtai, 2023). In this endeavour we advise researchers to begin by exploring which perspectives and knowledges exist in the research setting. We recommend that researchers embrace an inquisitive mindset and actively seek out alternative ideas that may not be readily apparent.

Once different perspectives have been identified, we suggest that researchers explore how they can be represented in the research. In our case, they were represented through the MWO platform, but other researchers could have other means of representation (e.g. a research article, an infographic, etc.). When being represented, make sure it is made explicit that they represent a snapshot and not full reality (as suggested above).

Finally, we recommend that researchers reflect on which knowledges are most dominant and which might be less heard. It is crucial to ensure that marginalised knowledges are not further sidelined owing to the research process. Instead, consider the value of centring these voices. In our case we found it important to foreground the voices not represented in the official datasets. Finally, we also suggest taking note of knowledges informed by Indigenous perspectives, where relevant (Chughtai, 2023). This involves not only acknowledging these perspectives but also integrating them into the research framework in a respectful and meaningful way.

7.2.4 | Engage participants from the start

Our framework is particularly relevant for researchers aiming to engage in participatory and co-production methods. While these methodologies align with decolonial approaches, they do not inherently result in decolonial research. Therefore, researchers interested in these methods should start by reflecting on how participants are involved in the design of the research. Could participants be engaged from the project's inception? While there are situations where

this might not be possible, it is crucial for researchers to consider this aspect to ensure that the identification of the problem and the solutions are informed by participants' perspectives and experiences.

7.2.5 | Select contextually appropriate methods

To understand participants' perspectives, various methods can be employed. In our study we used focus groups, but other methods may be more suitable depending on the context. For instance, walking dialogues (Wilson, 2008), art-based methods (Seppälä et al., 2021), and other participatory techniques can provide valuable insights.

It is essential for researchers to select methods that are contextually appropriate and effectively capture the experiences and viewpoints of the participants, ensuring the research aligns more closely with decolonial principles. However, care should be taken when choosing to adopt Indigenous methodologies when there are no Indigenous participants, as tokenistic approaches to decolonial research should be avoided (Tuhiwai-Smith, 1999).

7.2.6 | Address power dynamics

We suggest that researchers become aware of the power dynamics present in co-production processes and actively seek to address these in their projects. Although completely removing power imbalances might be an impossible task, researchers should do their best to ensure they do not reinforce existing inequalities.

To mitigate these dynamics, researchers can implement several strategies. This could be done through regular check-ins with participants, organising moments of reflection between team members, and creating spaces where participants can voice concerns and suggestions freely. In our case, we considered the focus groups and WhatsApp group discussions helpful for this, but other researchers might consider other methods more appropriate. Researchers should also consider cultural sensitivities and contexts to ensure respect for all participants.

7.2.7 | Explicitly address justice

For IS research to follow a decolonial approach, we suggest there should be a direct attempt at contributing to justice. This involves making explicit which dimension of justice is being addressed in the project and why. In our case, our engagement with residents allowed us to consider water justice and data justice as two approaches that were relevant to the issues being explored in the project.

To effectively address justice, researchers should define what justice means within the context of their study and articulate clear goals and actions to achieve it. This may involve collaborating with marginalised communities to understand their specific needs and perspectives, ensuring that their voices are central to the research process. Researchers should also critically assess the potential impacts of their work, aiming to produce outcomes that promote equity and fairness. Documenting and reflecting on justice-related practices and outcomes can provide valuable insights and guide future research endeavours.

8 | CONCLUSION

This paper highlights the importance of developing effective avenues for engagement with decolonial approaches in IS research. We hope that this framework may be useful for IS researchers interested in engaging with decolonial approaches, but we also recognise existing limitations in our approach. Further research could apply the framework to IS interventions before they have been designed and implemented, and in doing so improve or expand the

framework. Moreover, further studies could include a reflection around positionality of the researcher, which is becoming increasingly important in IS research (Abbott, Dasuki, & Jimenez, 2022) and decolonial research (Gani & Khan, 2024).

Envisioning a future devoid of injustices often appears challenging. However, decolonial approaches provide a framework for conceptualising a future free from such inequities. We conclude by stating that adopting a decolonial perspective requires us to view ourselves as laying the foundation stones for a more equitable future. To use a well-known metaphor, we are 'planting seeds for trees we might never be able to see', and emphasising our commitment to long-term transformative change.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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REFERENCES

Abubakre, M., Faik, I., & Mkansi, M. (2021). Digital entrepreneurship and indigenous value systems: An Ubuntu perspective. *Information Systems Journal*, *31*(6), 838–862.

Adésínà, J. O. (2002). Sociology and Yorùbá studies: Epistemic intervention or doing sociology in the 'vernacular'? *African Sociological Review/Revue Africaine de Sociologie*, *6*(1), 91–114.

Alencastre Calderón, A. (2013). Las amunas: Recarga del acuífero en los Andes. La gestión social del agua en Tupicocha. In *Cambio Climático, Crisis Del Agua y Adaptación En Las Montañas Andinas* (pp. 311–334). AGUA-C.

Ameripour, A., Nicholson, B., & Newman, M. (2010). Conviviality of internet social networks: An exploratory study of internet campaigns in Iran. *Journal of Information Technology*, *25*(2), 244–257.

Anzaldúa, G. (1999). *Borderlands*. Aunt Lute Books.

Arora, S., Van Dyck, B., Sharma, D., & Stirling, A. (2020). Control, care, and conviviality in the politics of technology for sustainability. *Sustainability: Science, Practice and Policy*, *16*(1), 247–262.

Asher, K. (2013). Latin American decolonial thought, or making the subaltern speak. *Geography Compass*, *7*(12), 832–842.

Avgerou, C. (2019). Contextual explanation: Alternative approaches and persistent challenges. *MIS Quarterly*, *43*(3), 977–1006.

Baskerville, R., & Myers, M. D. (2004). Special issue on action research in information systems: Making IS research relevant to practice: Foreword. *MIS Quarterly*, *28*(3), 329–335.

Bell, M. G. (2022). Overlooked legacies: Climate vulnerability and risk as incrementally constructed in the municipal drinking water system of Lima, Peru (1578–2017). *Geoforum*, *132*, 205–218.

Bell, M. G., & Ramón, G. (2019). Making urban colonial Lima (1535–1650): Pipelines and plazas. In E. A. Engel (Ed.), *A Companion to Early Modern Lima* (pp. 103–126). Brill.

Berry, B., Farber, B., Rios, F. C., Haedicke, M. A., Chakraborty, S., Lowden, S. S., Bilec, M. M., & Isenhour, C. (2022). Just by design: Exploring justice as a multidimensional concept in US circular economy discourse. *Local Environment*, *27*(10–11), 1225–1241.

Bhambra, G. K. (2014). Postcolonial and decolonial dialogues. *Postcolonial Studies*, *17*(2), 115–121.

Bleeker, S., & Vos, J. (2019). Payment for ecosystem services in Lima's watersheds: Power and imaginaries in an urban-rural hydrosocial territory. *Water International*, *44*(2), 224–242.

Carrillo, R., Moreno, M., & Zintsmaster, J. (2010). Cultural production of a Decolonial imaginary for a Young Chicana: Lessons from Mexican immigrant working-class woman's culture. *Educational Studies*, *46*(5), 478–502.

Cerna Aragon, D. (2021). On not being visible to the state: The case of Peru. In *In Covid-19 from the margins: Pandemic, invisibilities, policies and resistance in the datafied society*. Institute of Network Cultures.

Chaves, M., Macintyre, T., Verschoor, G., & Wals, A. E. J. (2017). Towards transgressive learning through ontological politics: Answering the "call of the mountain" in a Colombian network of sustainability. *Sustainability*, *9*(1), 21.

Chughtai, H. (2023). Decolonial critical hermeneutics. In *Handbook of qualitative research methods for information systems* (pp. 240–256). Edward Elgar Publishing.

Costanza-Chock, S. (2021). *Design justice: Community-led practices to build the worlds we need*. The MIT Press.

Davison, R., & Malaurent, J. (2018). Information systems action research: Debunking myths and overcoming barriers. *Information & Management*, *55*(2), 177–187.

Davison, R., & Martinsons, M. G. (2016). Context is king! Considering particularism in research design and reporting. *Journal of Information Technology*, *31*(3), 241–249.

Davison, R., Martinsons, M. G., & Wong, L. (2022). The ethics of action research participation. *Information Systems Journal*, *32*(3), 573–594.

Davison, R. M. (2021). Special issue: Indigenous theory. *Information Systems Journal*, *31*(6), 767–768.

de Castro Leal, D., Bustamante Duarte, A. M., Krüger, M., & Strohmayer, A. (2021). Into the mine: Wicked problems in the age of tech. In *Proceedings of the 10th international conference on Communities & Technologies - wicked problems in the age of tech (Seattle, WA, USA) (C&T '21)* (pp. 269–280). Association for Computing Machinery.

de la Cadena, M., & Blaser, M. (Eds.). (2018). *A world of many worlds*. Duke University Press.

De la Harpe, R., Korpela, M., & Van Zyl, I. (2015). Co-design for Development: Lessons learnt from an information systems project in underserved communities. In H. Oinas-Kukkonen, N. Iivari, K. Kuutti, A. Öörni, & M. Rajanen (Eds.), *Nordic contributions in IS research* (pp. 61–74). Springer International Publishing.

Díaz Andrade, A. (2023). Dancing between theory and data: Abductive reasoning, chapters. In R. M. Davison (Ed.), *Handbook of qualitative research methods for information systems, chapter 16* (pp. 274–287). Edward Elgar Publishing.

Díaz Andrade, A., Techatassanasoontorn, A. A., Singh, H., & Staniland, N. (2021). Indigenous cultural re-presentation and re-affirmation: The case of Māori IT professionals. *Information Systems Journal*, *31*(6), 803–837.

Dussel, E. (1993). Eurocentrism and modernity (introduction to the Frankfurt lectures). *Boundary*, *2*, *20(3)*, 65–76.

Ekbia, H. R. (2009). Digital artifacts as quasi-objects: Qualification, mediation, and materiality. *Journal of the American Society for Information Science and Technology*, *60*(12), 2554–2566.

Elbanna, A., & Idowu, A. (2022). Crowdwork, digital liminality and the enactment of culturally recognised alternatives to Western precarity: Beyond epistemological *terra nullius*. *European Journal of Information Systems*, *31*(1), 128–144.

Escobar, A. (2018). *Designs for the Pluriverse: Radical interdependence, autonomy, and the making of worlds*. Duke University Press.

Fahlberg, A. (2023). Decolonizing sociology through collaboration, co-learning and action: A case for participatory action research1. *Sociological Forum*, *38*(1), 95–120.

Faik, I., Sengupta, A., & Deng, Y. (2024). Inclusion by design: Requirements elicitation with digitally marginalized communities. *Management Information Systems Quarterly*, *48*(1), 219–244.

Gani, J., & Khan, R. (2024). Positionality statements as a function of coloniality: Interrogating reflexive methodologies. *International Studies Quarterly*, *68*(2), 1–13.

Garud, R., Jain, S., & Tuertscher, P. (2008). Incomplete by design and designing for incompleteness. *Organization Studies*, *29*(3), 351–371.

Gonzalez, C. G. (2015). Environmental justice, human rights, and the global south. *13 Santa Clara Journal of International Law*, *13*(1), 151–195. https://papers.ssrn.com/abstract=2573190

Grosfoguel, R. (2015). Epistemic racism/sexism, westernized universities and the four genocides/epistemicides of the long sixteenth century. In M. Araújo & S. R. Maeso (Eds.), *Eurocentrism, racism and knowledge: Debates on history and power in Europe and the Americas* (pp. 23–46). Palgrave Macmillan.

Grosfoguel, R., & Georas, C. S. (2000). "Coloniality of power" and racial dynamics: Notes toward a reinterpretation of Latino Caribbeans in new York City. *Identities*, *7*(1), 85–125.

Guma, P. K. (2020). Incompleteness of urban infrastructures in transition: Scenarios from the mobile age in Nairobi. *Social Studies of Science*, *50*(5), 728–750.

Hoefsloot, F. I., & Gateri, C. (2024). Contestation, negotiation, and experimentation: The liminality of land administration platforms in Kenya. *Environment and Planning D Society and Space*, 02637758241254943.

Hoefsloot, F. I., Jimenez, A., Martinez, J., Miranda Sara, L., & Pfeffer, K. (2022). Eliciting design principles using a data justice framework for participatory urban water governance observatories. *Information Technology for Development*, *28*(3), 617–638.

Hutchings, K. (2019). Decolonizing global ethics: Thinking with the Pluriverse. *Ethics & International Affairs*, *33*(2), 115–125.

Illich, I. (1973). *Tools for conviviality*. Harper & Row.

Abbott, P., Dasuki, S., Jimenez, A., (2024). The 4Rs: A collective reflexive methodology for realising critical self-transformation in ICT4D research practice. *Information Systems Journal*. 1–52. https://onlinelibrary.wiley.com/doi/10.1111/isj.12561

Jimenez, A., Delgado, D., Merino, R., & Argumedo, A. (2022). A Decolonial approach to innovation? Building paths towards Buen Vivir. *The Journal of Development Studies*, *58*(9), 1633–1650.

Jimenez, A., & Roberts, T. (2019). Decolonising neo-liberal innovation: Using the Andean philosophy of 'Buen Vivir' to reimagine innovation hubs. In *Information and communication technologies for development. Strengthening southern-driven cooperation as a catalyst for ICT4D*. IFIP advances in information and communication technology.

Jimenez, A., Vannini, S., & Cox, A. (2023). A holistic decolonial lens for library and information studies. *Journal of Documentation*, *1*, 224–244.

Kallinikos, J., Aaltonen, A., & Marton, A. (2013). The ambivalent ontology of digital artifacts. *MIS Quarterly*, *37*(2), 357–370.

Khan, M., Robinson, S., Weikmans, R., Ciplet, D., & Roberts, J. T. (2020). Twenty-five years of adaptation finance through a climate justice lens. *Climatic Change*, *161*(2), 251–269.

Khene, C., & Masiero, S. (2022). From research to action: The practice of decolonizing ICT4D. *Information Technology for Development*, *28*(3), 443–450.

Kothari, A., Salleh, A., Escobar, A., Demaria, F., & Acosta, A. (2019). *Pluriverse: A post-development dictionary*. Tulika Books.

Krauss, J. E. (2021). Decolonizing, conviviality and convivial conservation: Towards a convivial SDG 15, life on land? *Journal of political. Ecology*, *28*(1), 945–967.

Lenette, C. (2022). *Participatory action research: Ethics and decolonization*. Oxford University Press.

Liboiron, M. (2021). *Pollution is colonialism*. Duke University Press.

Loris, A. A. (2012). The Persistent Water Problems of Lima, Peru: Neoliberalism, Institutional Failures and Social Inequalities. *Singapore Journal of Tropical Geography 33*(3), 335–350.

Lyons, K., Parreñas, J. S., Tamarkin, N., Subramaniam, B., Green, L., & Pérez-Bustos, T. (2017). Engagements with decolonization and decoloniality in and at the interfaces of STS. *Catalyst: Feminism, Theory, Technoscience*, *3*(1), 1–47.

Mabele, M., Krauss, J., & Kiwango, W. (2022). Going back to the roots: Ubuntu and just conservation in Southern Africa. *Conservation and Society*, *20*(2), 92–102.

Maguire, M., & Delahunt, B. (2017). Doing a thematic analysis: A practical, step-by-step guide for learning and teaching scholars. *All Ireland Journal of Higher Education*, *9*(3), 3351–33514.

Maldonado-Torres, N. (2007). On the Coloniality of being. *Cultural Studies*, *21*(2–3), 240–270.

Maldonado-Torres, N. (2016). *Outline of ten theses on coloniality and decoloniality*. Frantz Fanon Foundation.

Masiero, S. (2022). Should we still be doing ICT4D research? *The Electronic Journal of Information Systems in Developing Countries*, *88*(5), e12215.

Masiero, S. (2023). Decolonising critical information systems research: A subaltern approach. *Information Systems Journal*, *33*(2), 299–323.

Massarella, K., Nygren, A., Fletcher, R., Büscher, B., Kiwango, W. A., Komi, S., Krauss, J. E., Mabele, M. B., McInturff, A., Sandroni, L. T., Alagona, P. S., Brockington, D., Coates, R., Duffy, R., Ferraz, K. M. P. M. B., Koot, S., Marchini, S., & Percequillo, A. R. (2021). Transformation beyond conservation: How critical social science can contribute to a radical new agenda in biodiversity conservation. *Current Opinion in Environmental Sustainability*, *49*, 79–87.

McKenna, B. (2020). Creating convivial affordances: A study of virtual world social movements. *Information Systems Journal*, *30*(1), 185–214.

Mignolo, W. (2009). Epistemic disobedience, independent thought and decolonial freedom. *Theory, Culture & Society*, *26*(7–8), 159–181.

Mignolo, W. (2011). *The darker side of western modernity: Global futures, decolonial options*. Duke University Press.

Mignolo, W., & Walsh, C. (2018). *On decoloniality: Concepts, analytics*. Duke University Press.

Miranda Sara, L., Jameson, S., Pfeffer, K., & Baud, I. (2016). Risk perception: The social construction of spatial knowledge around climate change-related scenarios in Lima. *Habitat International*, *54*(Part 2), 136–149.

Monteiro, E., Constantinides, P., Scott, S. V., Shaikh, M., & Burton-Jones, A. (2022). Qualitative research methods in information systems: A call for phenomenon-focused problematization. *MIS Quarterly*, *46*(4), i–xvi.

Moosavi, L. (2020). The decolonial bandwagon and the dangers of intellectual decolonisation. *International Review of Sociology*, *30*(2), 332–354.

Morgan, D. L. (1996). *Focus groups as qualitative research* (2nd ed.). SAGE Publications.
Nowicka, M. (2020). Hospitality, Cosmopolitanism. In *And conviviality: On relations with others in hostile times* (pp. 233–247). Brill.
Nyamnjoh, F. B. (2017). Incompleteness: Frontier Africa and the currency of conviviality. *Journal of Asian and African Studies*, *52*(3), 253–270.
Pérez-García, L. (2021). The ICT-Buen Vivir paradox: Using digital tools to defend indigenous cultures. Proceedings of the 1st IFIP 9.4 Virtual Conference on the implications of information and digital technologies for development.
Puri, S. K. (2007). Integrating scientific with indigenous knowledge: Constructing knowledge alliances for land Management in India. *MIS Quarterly*, *31*(2), 355–379.
Querejazu, A. (2016). Encountering the pluriverse: Looking for alternatives in other worlds. *Revista Brasileira de Política Internacional*, *59*(2), 1–16.
Quijano, A. (1993). Modernity, identity, and utopia in Latin America. *Boundary*, *2*, *20*(3), 140–155.
Quijano, A. (2000). Coloniality of power, eurocentrism, and Latin America. In *Nepantla: Views from South* (pp. 553–580). Duke University Press.
Quijano, A. (2007). Coloniality and modernity/rationality. *Cultural Studies*, *21*(2–3), 168–178.
Quijano, A., & Ennis, M. (2000). Coloniality of power, eurocentrism, and Latin America. *Nepantla: Views from South*, *1*(3), 533–580.
Quintero-Weir, J., Mansilla-Quiñones, P., & Moreira-Muñoz, A. (2023). The exile of Juyá: Decolonial geonarratives of water. *GeoHumanities*, *9*(1), 24–44.
Ravishankar, M. N., Pan, S. L., & Myers, M. D. (2013). Information technology offshoring in India: A postcolonial perspective. *European Journal of Information Systems*, *22*(4), 387–402.
Reiter, B. (2018). *Constructing the pluriverse: The geopolitics of knowledge*. Duke University Press.
Roberts, T. (2017). Participatory technologies: Affordances for development. In J. Choudrie, M. S. Islam, F. Wahid, J. M. Bass, & J. E. Priyatma (Eds.), *Information and communication technologies for development* (pp. 194–205). Springer International Publishing.
Robra, B., Pazaitis, A., Giotitsas, C., & Pansera, M. (2023). From creative destruction to convivial innovation—A post-growth perspective. *Technovation*, *125*, 102760.
Savransky, M. (2021). *Around the day in eighty worlds: Politics of the pluriverse*. Duke University Press.
Seppälä, T., Sarantou, M., & Miettinen, S. (2021). *Arts-based methods for decolonising participatory research*. Routledge.
Shedid, M. Y., & Hefnawy, N. H. (2021). An approach to convivial urban spaces: A comparison between users' and experts' perception of convivial urban spaces. *Journal of Engineering and Applied Science*, *68*(1), 18.
Shklar, J. N. (1990). *The faces of injustice*. Yale University Press.
Simpson, M., & Pizarro Choy, A. (2023). Building decolonial climate justice movements: Four tensions. *Dialogues in Human Geography*, *14*(2), 269–272.
Strand, M., Rivers, N., Baasch, R., & Snow, B. (2022). Developing arts-based participatory research for more inclusive knowledge co-production in Algoa Bay. *Current Research in Environmental Sustainability*, *4*, 100178.
Sultana, F. (2007). Reflexivity, positionality and participatory ethics: Negotiating fieldwork dilemmas in international research. *ACME: An International Journal for Critical Geographies*, *6*(3), 374–385.
Sultana, F. (2018). Water justice: Why it matters and how to achieve it. *Water International*, *43*(4), 483–493.
Taylor, L. (2017). What is data justice? The case for connecting digital rights and freedoms globally. *Big Data & Society*, *4*, 1–14.
Tsibolane, P. (2016). Towards a conceptual framework for social wellbeing through inclusive frugal ICT innovation in postcolonial collectivist contexts. *CONF-IRM 2016 Proceedings*.
Tuck, E., & Yang, K. W. (2012). Decolonization is not a metaphor. *Decolonization: Indigeneity Education & Society*, *1*(1), 1–40.
Tuhiwai-Smith, L. (1999). *Decolonizing methodologies*. Bloomsbury.
Turnhout, E., Metze, T., Wyborn, C., Klenk, N., & Louder, E. (2020). The politics of co-production: Participation, power, and transformation. *Current Opinion in Environmental Sustainability*, *42*, 15–21.
Valencia, Ó. E., & Courtheyn, C. (2023). Peace through coca? Decolonial peacebuilding ecologies and rural development in the territory of conviviality and peace of Lerma, Colombia. *Third World Quarterly*, *44*(5), 1077–1097.
Valluvan, S. (2016). Conviviality and multiculture: A post-integration sociology of multi-ethnic interaction. *Young*, *24*(3), 204–221.
van Stam, G. (2019). Method of research in a we-paradigm, lessons on living research in Africa. In P. Nielsen & H. C. Kimaro (Eds.), *Information and communication technologies for development. Strengthening southern-driven cooperation as a catalyst for ICT4D* (pp. 72–82). Springer International Publishing.
Velasco-Herrejón, P., Bauwens, T., & Calisto Friant, M. (2022). Challenging dominant sustainability worldviews on the energy transition: Lessons from indigenous communities in Mexico and a plea for pluriversal technologies. *World Development*, *150*, 105725.

Wilkens, J., & Datchoua-Tirvaudey, A. R. C. (2022). Researching climate justice: A decolonial approach to global climate governance. *International Affairs*, *98*(1), 125–143.
Wilson, S. (2008). *Research is ceremony: Indigenous research methods*. Fernwood Publishing.
Xiao, X., Tan, B., Leong, C., & Ter Chian Tan, F. (2021). Powered by "Qinghuai": The melding of traditional values and digital entrepreneurship in contemporary China. *Information Systems Journal*, *31*, 769–802.
Young, G. W., & Kitchin, R. (2020). Creating design guidelines for building city dashboards from a user's perspectives. *International Journal of Human-Computer Studies*, *140*, 102429.
Zheng, Y., & Stahl, B. (2011). Technology, capabilities and critical perspectives: What can critical theory contribute to Sen's capability approach? *Ethics and Information Technology*, *13*(2), 69–80.
Zwarteveen, M. Z., & Boelens, R. (2014). Defining, researching and struggling for water justice: Some conceptual building blocks for research and action. *Water International*, *39*(2), 143–158.

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