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Jan Hendrik Kroeze PhD (IT)
University of South Africa, jan.kroeze@gmail.com

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Digital Coloniality

An Ubuntu perspective

Jan H. Kroeze
University of South Africa (School of Computing)
kroezjh@unisa.ac.za; jan.kroeze@gmail.com

Abstract. One of the dark sides of information technology artefacts is the phenomenon that Western value systems are often built deeply into software programs without any realisation that these applications do not necessarily reflect indigenous value systems. When these systems are rolled out without adaptation to African and other indigenous environments, it may have unintended consequences by enforcing cultural constructs that are typical of the Global North onto communities in the Global South. Consequently, these information systems constitute a new form of coloniality, namely digital coloniality. The main research question that this article addresses is: How does the sub-Saharan African philosophy of Ubuntu bring the concept of digital coloniality to light? The main aim of the article is to define the concepts of digital colonialism and digital coloniality, to provide clear examples thereof and to provide some guidelines for corrective interventions and future theorisation on the phenomenon. The research is a conceptual study and concludes that the intended enforcement of Eurocentric software to maintain a postcolonial state can be regarded as digital colonialism. While unintended, the use of global software in indigenous communities can also often have negative effects.

Key words: digital colonialism, digital coloniality, dark side of information technology, decolonisation, Ubuntu, Africanisation, information systems.

1 Introduction

Eurocentric values are being advanced and endorsed through software design as one of the dark sides of information technology (IT) artefacts. Western values are often implicit in software programs (Myers et al., 2020), with designers and coders being unaware that these applications (nowadays often just called *apps*) may not necessarily align

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with indigenous value systems. When these systems are subsequently deployed without modification to African and other indigenous contexts, they can unintentionally impose cultural constructs typical of the Global North onto communities in the Global South, thus perpetuating a state of coloniality (Myers et al., 2020). "[T]he great majority of information systems design occurs in just a few particular cultural or sub-cultural milieux, such as Silicon Valley … 'compelling'/requiring users to think and work in culturally incongruent ways" (Pauleen et al., 2006, p. 363). This constitutes a new form of colonialism known as digital coloniality. The primary research question is: How does the sub-Saharan African philosophy of Ubuntu highlight the concept of digital coloniality? The article aims to define digital colonialism and digital coloniality, provide clear examples, and offer suggestions for corrective interventions and future theorisation on the phenomenon. Trauth (2017) calls for theoretical work regarding social inclusion in the information systems (IS) field and provides a historical overview of the sub-discipline: "We need research that theorizes processes that can explain inclusion/exclusion" (Trauth, 2017, p. 15). Taking cultural diversity into account during the lifecycle of information systems is one of the items on Trauth's proposed research agenda: "[t]he influence of various aspects of human diversity (e.g., gender, sexual orientation, *ethnicity,* disability) on the design, development, and deployment of information systems [emphasis added]" (Trauth, 2017, p. 13). One example of a suitable, foundational theory for such research is a subaltern theory with South Asian roots, which Masiero (2023) successfully applied in Ghana to an African environment. This approach builds theory in a bottom-up fashion by giving voice to marginalised groups.

According to Pauleen et al. (2006) and Trauth (2017), ingrained cultural values (bias) affect all aspects of research, i.e., topics, design, execution, writing, review, publication and reading. Furthermore, in IS practice, cultural bias leads to a universal solution fallacy (the one-size-fits-all syndrome) (Pauleen et al., 2006). Since cultural values are deeply ingrained in people, it is important for IS researchers and practitioners to reflect on their own cultural background, knowing that it affects their viewpoints (Trauth, 2017). This form of cultural intelligence (CQ) is essential for successful cross-cultural work (Pauleen et al., 2006). Therefore, the author of this article, who regards himself primarily as an African—born and raised in South Africa—must acknowledge his European descent, which inevitably shaped and framed the views presented in this article to some extent (metacognitive CQ). Hence, critique, especially from fellow African IS scholars, is necessary to validate, amend and improve the developing ideas expressed in this article. The research is an honest attempt to get to grips with indigenous, African perspectives (cognitive CQ), driven by a wish to enrich the IS arena with African thought constructs (motivational CQ) to eventually impact the way software is conceptualised and

implemented on the continent (behavioural CQ) (cf., Myers et al., 2020; Pauleen et al., 2006). As an IS researcher, the author is listening to, reflecting on, recontextualising and importing African voices and values into the discipline. By accepting the article for publication, the editors of the special edition of the *Scandinavian Journal of Information Systems* (SJIS) on the dark side of information-system artefacts also contribute "to make the mainstream more diverse, more inclusive, and less culturally biased" (cf., Myers et al., 2020; Pauleen et al., 2006, p. 360).

The study is conceptual and follows a critical, philosophical approach as an initial step in developing an interim theory. The paper collects, analyses and synthesises information collected from published sources. In an article on problematic smartphone use, which is regarded as one of the dark sides of IS, Busch and McCarthy (2021) identify a gap in terms of a lack of data from Africa. Some of the chapters in a recent collection on *African Values, Ethics, and Technology: Questions, Issues, and Approaches* discuss the challenges of the use of smartphones and social media in Africa, partially filling this gap (Chirongoma & Mutsvedu, 2021; Konyana, 2021; Mujinga, 2021; Nkohla-Ramunenyiwa, 2021; Okyere-Manu, 2021a; Sande, 2021). However, there is also a lack of literature on the ethical use of other digital technologies in Africa. According to Metz (2021), there is no existing literature illustrating how unique, indigenous sub-Saharan African values can be used to guide the ethical use of software driven by artificial intelligence (AI) in Africa. The chapters in the collection referenced above and many of the other contributions in the book also shine the spotlight on various positive and negative aspects of digital technologies used on the continent. The book makes a variety of African voices heard, and many of the ideas have, therefore, been referenced in this essay. African authors do not agree on all aspects of African ethics in the digital era, and this article reflects this diversity. Debate, disagreement and diversity are important in the academic discussion about the positive and negative impacts of information and communication technology (ICT) (Myers, 2021).

The insights borrowed from these African authors are synthesised with the more Eurocentric ideas in the reading list suggested for authors contributing to the special issue. The integration of ideas from the Global North and the Global South shows that, while people in all cultures often battle with similar problems and challenges, there are often unique perspectives in indigenous cultures that could be used to inform the IS field. The author hopes that some of the ideas expressed in this article will not only benefit IS researchers and practitioners in Africa but may also enrich global IS theory and practice.

Since the special edition focuses on the dark side of ICT, the article especially explores the threats posed by modern IS, while their positive contributions are acknowl-

edged but not discussed in depth (cf., Cibangu, 2020; Myers, 2021). The reflection challenges preconceived ideas about the universal benefits of IS and information and communication technology for development (ICT4D) and seeks to provide useful guidelines for corrective measures.

Section 2 provides definitions of the concepts of digital colonialism and digital coloniality, as well as a few examples thereof, linking it to the theme of the dark side of IS. It also discusses the differences in IS design, implementation and usage. Section 3 reflects on digital decolonisation as an objective of IS research, namely the need to counteract any oppressing acts of digital colonialism and the harmful consequences of a state of digital coloniality. Section 4 then introduces Ubuntu as an alternative lens to guide software development and use. Both the strengths and weaknesses of Ubuntu are discussed, followed by an illustration of the feasibility of implementing Ubuntu values in practice. Section 5 delves deeper into the theorisation of digital coloniality and decolonisation, while Section 6 concludes the article by highlighting the contributions and impact of the article.

2 Digital colonialism and coloniality

This section clarifies and differentiates the concepts of colonialism and coloniality, as well as digital colonialism and digital coloniality. It provides examples to illustrate these phenomena. Furthermore, it reflects on the effect of time on the design, implementation and use of IS.

2.1 Characterisation of digital colonialism and coloniality

Colonialism is a system of domination in which a powerful country governs and controls a weaker geopolitical unit. It enhances the colonising country's political influence and provides strategic benefits such as access to important trade routes and important military positions while disadvantaging the dominated country, which loses its political independence and often gets ethnically fragmented. The dominating country usually benefits economically, while the subordinate entity experiences economic setbacks and struggles to uphold its unique cultural identity and social fabric. Colonialism affects not only social milieus but even ecosystems: "Colonialism has marginalized many Indigenous people (also sometimes known as First Nation people, Aboriginal people, or Native people) who continue to face threats to their sovereignty, wellbeing, and natural environment" (Myers et al., 2020, p. 383).

178 Kroeze: Digital Coloniality

The effect of colonisation is often ongoing even after the governing entity has withdrawn and the political independence of the subjugated country has been restored: "Colonialism as a political, economic, and social event that altered the way Africa was moving, did permanent harm that may be impossible to reverse …" (cf., Matolino, 2021, p. 74). The process of ongoing economic, cultural or social oppression is called neocolonialism (Lamola, 2021a). Globalisation is a more recent phenomenon, often driven by new technologies, which tends to converge cultures into a homogenised version with the same detrimental effects on diversity (Pauleen et al., 2006).

Coloniality is the term that describes the condition which is the consequence of the lingering effect of colonialism. The ongoing impact of historical colonialism continues to shape political and social structures even when there is no more aggressive military interference from geopolitical superpowers: "Coloniality … instead, refers to long-standing patterns of power that emerged as a result of colonialism, but that define culture, labor, intersubjective relations, and knowledge production well beyond the strict limits of colonial administrations" (Maldonado-Torres, 2007, p. 243).

IT-driven neocolonialism is one of the dark sides of IT and can also be called *digital colonisation.* It refers to the intentional process of exploiting African communities economically by means of electronic devices and software, not only to make money out of selling these products but even more so by mining the related usage trails to improve the profits and market share of the institutions who own or control the apps. When external companies or geopolitical forces impose their cultural norms on other cultural groups using ICT, suppressing indigenous cultures, it may be regarded as another form of digital colonialism. Digital colonisation is defined by Etori et al. (2024, p. 4) as follows:

> Digital colonization is a form of dominance where data and digital technologies, primarily owned and controlled by entities from developed countries, are used to exert influence or control over developing countries. This concept mirrors historical colonization, where powerful countries imposed their control over other territories for economic gain. And it manifests through the control over digital infrastructures, platforms, and data, leading to imbalances in power, wealth, and knowledge. The historical context of digital colonization traces back to the early days of the internet and digital technology proliferation, where most of the infrastructure and platforms that dominate the digital landscape were developed and controlled by companies and institutions from the Global North and Africa being used as a Guinea pig to test new solutions.

Recently, mobile technology has been used to continue the economic exploitation of previously colonised groups:

> Business networks implied the idea of market-oriented or profit-driven business leading to an extractive, monetary, or commercial perspective of cell phone era [sic], with the goal to obtain or extract from poor individuals as much money (i.e., fees, prepaid cards, cell phone devices, etc.) as possible. (Cibangu, 2020, p. 354)

International political and economic priorities often determine technical and software development, culminating in geopolitical tensions in Human-Computer Interaction (HCI) (Abdelnour Nocera et al., 2024). IS researchers and practitioners can easily stumble into the pitfall of expropriating the content that software users generate to serve their own purposes or to satisfy the economic and political goals of the companies they work for (Myers et al., 2020).

Digital coloniality refers to the phenomenon where ICT is used to continue coloniality (Oyedemi, 2021). Isanović (2023, p. 81) uses the term to describe a "computational regime" that quantifies and digitises all aspects of human life. In this article the term refers to the unintentional harmful effects of software. Digital programs may be rolled out—often with good intentions to support the development of previously colonised, disadvantaged countries—without realising that the technology continues to impose Eurocentric values on indigenous cultures. In such cases, the political and social status quo is maintained by means of ICT in post-colonial countries. To illustrate the concepts, some examples of both digital colonialism and coloniality are discussed in the following paragraphs.

2.2   Examples of digital colonialism and coloniality

Health informatics provides examples of both digital colonialism and digital coloniality. Due to the high cost of proprietary health informatics systems, developing countries are often forced to opt for open-source systems to record and use electronic health records (Shaikh et al., 2022). They are usually designed based on global health standards that reflect Eurocentric medical systems but can often be adapted for other environments. If such a system is adopted in a postcolonial country as is, it unintentionally continues to impose the colonial health system on the indigenous communities who may have their own (pre-colonial) health concepts and systems. This is a form of digital coloniality.

However, Shaikh et al. (2022) recommend that under-resourced countries adopting these systems revise their health policies to align them with international standards. Such an expectation changes an unintentional effect into an intentional factor. Enforcing a global medical ecosystem by means of a related ICT system onto a country with a different medical indigenous knowledge system constitutes a form of deliberate globalisation in the health industry—this is, therefore, a form of digital colonialism. Due to a history of being subjugated, it is quite possible that citizens of postcolonial countries could even experience digital coloniality as digital colonisation if an adopted health system does not align well with their indigenous values, even if the misalignment is unintended.

The theoretical foundations of biotechnological paradigms rest on Western philosophy and ethics, namely, either deontology (what is right or wrong according to a single ethical principle) or utilitarianism (what endeavour facilitates the needed results). It is based on the value of individualist self-determination (Lajul, 2021). The African social dimension of communalism is missing in these axiological principles. African ethics would, for example, not allow biotechnical interventions such as genetic modification in living organisms when it can lead to social and environmental imbalances (Lajul, 2021). From an African perspective, it is wrong to control living nature mechanistically when it ignores the view that people are part and parcel of nature and are connected to the spiritual world.

Although reproductive technology used for the sex selection of babies is, in essence, not a digital process, various digital support systems are used to administrate and manage the process. Awuah-Nyamekye and Oppong (2021) are of the opinion that artificial insemination is irreconcilable with the Akan ethics in Ghana because it does not reflect the religious belief that a person has a soul, a spirit, a father-spirit and mother-blood. Moreover, it excludes the community from solving the issue of a childless marriage. The central bioethical value of the Nso' people of Cameroon is linked to nature, which challenges the creation of synthetic life and implies that people should not manipulate human life (Lajul, 2021).

Okyere-Manu (2021b) investigates the ethical aspects of sex robots (sexbots) from an African perspective. She believes that some indigenous values, such as communitarianism, are common to all Africans, even if there are many different cultures on the continent. She uses Ubuntu to shine an indigenous light on sexual phenomena made possible by ICTs. Two of the relevant Ubuntu values can be presented as follows: 1) Sexual practices are viewed as sacred and primarily aimed at procreation; 2) Since intercourse is reserved for a married man and woman, other practices are improper. Therefore, using a sexbot for sexual stimulation and satisfaction does not align with African ethics. Moyo

(2021) supports Okyere-Manu's conclusion, stating that sexbots are a threat to the Isintuist value of communalism among the Ndebele since it promotes individualism. The Ndebele sexual culture emulates the circle of life in nature, and, therefore, the use of sexbots would also disturb the cycle of life and death.

Dataveillance (data surveillance) is another example of harmful behaviour in the digital space (Cinnamon, 2017). It is often practised in Western countries for financial gain at the expense of established morals, in which case it is called surveillance capitalism: "In addition to privacy harms, corporate personal data practices also threaten a diverse range of intersecting values and rights including autonomy, fairness, equality, democratic sovereignty, due process, and property" (Cinnamon, 2017, p. 611). The same threat is a real possibility regarding African indigenous values. Coleman (2019, p. 417) calls the threat of data exploitation "digital colonialism", i.e., obtaining and abusing marginalised groups' digital data for market advantage and financial profit, especially when the local political entities do not have proper legal measures in place to protect their citizens in this regard:

> Digital colonialism refers to a modern-day 'Scramble for Africa' where larges-cale tech companies extract, analyze, and own user data for profit and market influence with nominal benefit to the data source. Under the guise of altruism, large scale tech companies can use their power and resources to access untapped data on the continent. Scant data protection laws and infrastructure ownership by western tech companies open the door for exploitation of data as a resource for profit and a myriad of uses including predictive analytics. (Coleman, 2019, p. 417)

Masiero (2023, p. 306) calls this type of abuse "data colonialism". If racial demographics were to be used to categorise users, it could even be regarded as a new form of segregation or apartheid as a racial embodiment of colonialism. Cinnamon, for example, refers to "*opaque* practices of automated *group classification*, which can lead to sociocultural discrimination [emphasis added]" (Cinnamon, 2017, p. 615).

The phenomenon of the fourth industrial revolution (4IR) provides further opportunities for digital colonisation and coloniality. The 4IR is infused with Western norms, which may affect African perspectives on reality. According to Lamola (2021b, p. 3), the 4IR is a globalising force which affects traditional values negatively: "A historicist African perspective observes the 4IR as an avalanche of technology-driven human-ontological transformations and sociological changes that are catalysed by globalisation, and the latter's promotion by a neoliberalist globalism." The 4IR-driven transformation

of traditional industries induces some risks such as "ethical controversies that cannot be easily ignored" (Chemhuru, 2021, p. 24), e.g., reducing work opportunities in areas with high unemployment rates and narrowing the ethical realm.

It is already clear that the effects of digital coloniality are not limited to the economic sphere, reaching into all aspects of indigenous cultures. This is even true of religion. Mujinga (2021) believes that ICTs have changed the concept of God and religion—religion has become a form of fun in the digital era. For the Shona people of Zimbabwe, enhancement technologies such as cognitive enhancement challenge traditional Shona values where knowledge is transferred by proverbs and idioms, as well as elders sharing their life experience by means of stories (Sande, 2021). Although the Shonas also believe in the enhancement of human beings, they do so from a different ethical perspective. This poses a further question, namely if and to what extent such digital enhancement technologies—including external AI-based IS such as ChatGPT and internal devices such as electronic chips implanted into someone's brain—can be justified from a sub-Saharan African ethical perspective.

Smartphones and apps are probably the most generally available ICTs. It poses, therefore, a real hazard of affecting indigenous cultures negatively. Smartphone addiction is but one example. It affects family relations globally: "Studies investigating the influence on family relations found that PSU [problematic smartphone use] increased users' technology-family conflict … and impacted personal relationships … It further impacted adolescent users in terms of reduced trust in their parents and increased parent alienation" (Busch & McCarthy, 2021, p. 12). If this is true in Eurocentric communities, the effect on communitarian cultures is probably similar or could even be more detrimental. Okyere-Manu (2021a), who discusses the need for an African ethical perspective on ICT and other recent technologies, is concerned about the possible erosion of communalist African values by digital technologies. For example, face-to-face communication, a salient feature of African society, is already being replaced by emails, text messages and voice notes, which are facilitated especially by smartphones.

The misalignment of social media with local cultures is indeed one of the main culprits that affect African communities negatively: "While social media group communication is the current worldwide means of human communication, it has destroyed the erstwhile valuable social fabric of some of the traditional communities such as the Ndau people of Chipinge" (Konyana, 2021, p. 174). In traditional communication, conversation partners had to talk clearly to make themselves audible while their gestures assisted understanding. While social media promotes diversity by giving all members of a discussion group the same status, it ignores traditional hierarchies in communities to resolve family disputes. It impacts traditional roles and encourages individualism.

The Ndau community is even replacing respectful names for family members with the equivalent of Western-influenced terms like "you".

Furthermore, smartphone technology enables digital gaming and cyberbullying. In the Shona community, children are replacing outdoor games with online interaction. Cyberbullying can cause emotional problems that eventually affect the whole family (Chirongoma & Mutsvedu, 2021). It can be concluded that the penetration of ICTs into African societies weakens the spirit of Ubuntu, which is the greatest common divisor in sub-Saharan African ethics (Chirongoma & Mutsvedu, 2021).

The next sub-section will delve a bit deeper into the nature of the IS artefact and how it is related to time.

2.3 Design, implementation and use of the IT artefact, and the issue of time

To contextualise the issue of digital colonialism and coloniality within the realm of the scholarly debate in the field of IS, it is necessary to differentiate between IT design, implementation and usage, and to reflect on the importance and effect of the course of time. Wambsganns et al. (2021) give an overview of literature that is relevant for the value-based design of conversational agents (CAs) (chatbots) to fill a knowledge gap in existing research. They propose value-sensitive design principles which may be relevant to the IS field in general to embody human-centredness, transparency and accountability in software.

Lamola (2021a) opines that the epistemic traditions of the Global North have dominated scientific research and technological innovation since the first industrial revolution. In the 4IR, AI-driven technologies are usually designed and built in areas outside Africa and imported to the continent. Africans have little, if any, input in the designs and are often limited to being mere consumers of the technology. Such designs can be regarded as digital colonialism when the institutions that create and implement the technologies see potential benefits for their own agenda and strategies:

> [T]he processes of the innovation and production of technological artefacts, as well as the flows of their distribution, are not dictated by only political and commercial motives; they are also driven by culturally vested interests which are often overtly expressed and at some instances unwittingly so (Lamola, 2021a, p. 39).

Lamola refers to the implementation of the square kilometre array telescope in the Karoo region of South Africa as an example of global technology that is not aligned with the epistemic traditions of the first nations who historically inhabited the area.

In their discussion of the dark side of IT use, Tarafdar et al. (2013) differentiate between aspects of design and usage. It is important to note that it is not only the design of IT artefacts that may lead to harmful consequences but also how the technologies are harnessed, often in unintended ways: "What we are seeing is a set of complex social and individual situations where the very benefits that use of IT brings contain the seeds of potentially transformative changes in ways of working, collaborating and living—changes that can lead to non-beneficial, if unintended, consequences" (Tarafdar et al., 2013, p. 270).

It is paradoxical that the same applications that are programmed by moral agents (human programmers) can be designed to control users' moral behaviour. This can be used to enforce moral behaviour but can also be abused to prompt unethical actions (cf., Myers, 2021). According to Leonardi (2009, p. 303), researchers must cross the line between design and implementation on the one hand and use on the other hand because the information systems lifecycle does not stop at deployment but includes ongoing maintenance, often prompted by a system's (sometimes unexpected) performance, utilisation and consequences: "… technological and organizational changes mutually constitute each other within development, implementation, and use activities (diachronically), as well as across them (synchronically)." Therefore, not only does culture get embedded in technology, but, vice versa, technology also affects habits, values and norms (Lamola, 2021b).

Above, it has been established that digital technologies carry cultural and ethical values deep-rooted in their designs, which may affect indigenous cultures negatively, or that their designs afford some unethical uses of the technology that could not be foreseen. This scenario prompts the following questions: How can digital colonialism and coloniality be decolonised, and why and how should this effort form part of the IS research agenda?

3   Digital decolonisation as an objective of IS research

In the introduction, it was illustrated how cultural biases are embedded in and perpetuated by IS: " ... biases can become culturally entrenched through simple information transmission ... and … IS ... may amplify and exacerbate this entrenchment" (Gupta et al. 2022, p. 1477). The phenomena of digital colonisation and coloniality as instances of the dark side of IS call for remedial endeavours. Since research in the IS discipline

focuses, inter alia, on the socio-materiality of the IT artefact (Chatterjee et al., 2021), digital decolonisation should be an objective of the field. By synthesising fundamental concepts extracted from existing literature on IT ethics and responsible research about the decolonisation of the computing environment, the endeavour can be defined as follows: Digital decolonisation is the deliberate and systematic endeavour by IS academics and practitioners to create an awareness of the embodiment of foreign cultural values in software that is implemented in marginalised communities and to drive interventions to either resolve the effects thereof or to prevent them from occurring in future IS developments (cf., Etori et al., 2024; Hatakka & Strand, 2022; Masiero, 2023; Pauleen et al., 2006; Shiels & Tanner, 2022; van Stam, 2021; Zimmer et al., 2023). The foundational definitions and explanations are listed in Appendix A.

Because IS deals with the interaction of technology, data and people (both information technologists and users), the field should not only uncover the problems in terms of design, implementation and use of software but also find ways to adapt or redesign apps for diverse cultural ecosystems. The open-source movement leaves ample room for software to be adapted for indigenous environments. For example, the open-source health informatics systems discussed above can often be customised to mitigate deliberate or non-intentional implementations of Eurocentric health systems in African environments. The customisability of these apps creates an opportunity for programmers in the African health environment to amend or adjust them to also cater for indigenous health systems.

Infusing ICT4D—and IS in general—with indigenous theories could go a long way to overcome the negative effects of the historical Western-centrism of the sub-discipline (Khene & Masiero, 2022). Therefore, it is encouraging when Khene and Masiero (2022, p. 446) report that ICT4D is not a condescending one-way street where globalised software is deployed to develop previously disadvantaged communities but that "indigenous theory has become integral to the making of ICT4D research".

Another possibility for digital decolonisation comes from the AI field. According to Gupta et al. (2022), AI algorithms become unfair if trained using unrepresentative databanks or when a program's objectives restrict diversity. AI systems, like most IS, mainly embodies Western epistemologies and knowledge. If AI is to be implemented optimally on the African continent, the pattern-finding algorithms should be trained to include diverse, indigenous knowledge systems:

> The dominant value system should not determine the principles underpinning AI systems and the development of technologies. Falling into the trap of adopting value systems that are inherently different from Africa is a form of epistemic

injustice. There needs to be a 'fit for purpose' and alignment between AI and re-lated technologies and the African context. Africa has long had multiple legacies of wholesale adoption of Western values. To echo Joseph Conrad, we have lapsed in this regard 'under western eyes'. It is salient to assert that Africa itself is not homogenous. What is clear is that AI is a significant lever that can address the in-equities on our continent. Africa needs a seat at the dining table to drive AI and related technologies as well as define the parameters for an ethical framework. If we are not alert to this impending danger, we will find ourselves trapped and log-jammed in a value system that does not cohere or relate to our continent. (Marwala, 2021, p. v)

Since the African philosophy of Ubuntu provides a valuable lens to guide digital de-colonisation (Myers et al., 2020), it will be discussed in the next section. In passing, it should be mentioned that collectivist cultural values are not exclusive to Africa. Ac-cording to Gupta et al. (2022, p. 1469), homogenous groups in different regions of the world form cohesive in-groups: "Collectivistic cultural values are characterized by the presence of strong, cohesive in-groups, which consist of others perceived to be similar to oneself … A family, village, nation, organization, religious group, soccer team, and student body are examples of in-groups." In this essay, such in-groups are called imme-diate or closer communities compared to society at large. The Ubuntu paradigm's values indeed seem to be closely aligned with North American indigenous values:

> The Indigenous values of *relationship,* responsibility for the whole *(stewardship),* *reciprocity,* and *redistribution*—clearly recognizable as value-laden—have the po-tential to offer a very different form of economy and different sets of manageri-al values that orient businesses and other institutions towards generativity, life, *inclusivity, participation by all,* and *shared wellbeing* [emphasis added]. (Pio & Waddock, 2021, pp. 339-340)

Comparing these values to Abubakre et al.'s (2021, p. 856) list of Ubuntu values that should inform digital entrepreneurship clearly brings the parallel values to light: "Hu-man relations … Humility … Reciprocity … Benevolence … Communities". There-fore, it can be concluded that indigenous wisdom (knowledge, values and worldview) can enrich management disciplines, including IS, not only in sub-Saharan Africa but globally. Saunders and Rutkowski (2019) indicate that IS researchers must do more research regarding robotic systems to prevent disasters such as the Boeing 737 Max disaster. Conner et al. (2024, p. 354) discuss the problematic ethical issues related to

187 Kroeze: Digital Coloniality

the design and operationalisation of the Boeing 737 MAX: "By *neglecting* their duty of *care* and *prioritizing profit-driven motives*, Boeing compromised the care of customers and diminished trust in the aviation industry … [P]rospective engineering activities must *prioritize ethical considerations*, *balancing corporate interests with the welfare of the community*, to prevent catastrophes in the future [emphasis added]." Using Ubuntu's moral values of communalism, relationality, modesty, mutuality and goodwill to amend and strengthen global IS ethics to prioritise the interests of the community and society at large above pure business-centred economic goals could steer the future development of robotics and the wider 4IR movement in a responsible manner.

Moreover, the paradox of cross-cultural implementation of IS technologies should be highlighted. While deploying IS can bring many beneficial innovations to indigenous communities, such as enhancing local practices, the same technologies may also cause unintended consequences by imposing foreign values. Therefore, it is important to stress that *mere adoption* carries significant cultural risks. This complex situation can be mitigated by the *adaptation* of software for indigenous communities. The applications should be aligned with diverse cultures to evade the hazard of rolling out one-size-fits-all applications globally (cf., Gupta et al., 2022; Pauleen et al., 2006). Tensions between mainstream computing methods and Ubuntu-infused approaches, as well as the enigma of both the positive and negative effects of Ubuntu itself on digital entrepreneurship, will be discussed in the following section on the use of an Ubuntu ethic as an avenue toward digital decolonisation (see 4.2).

4   An Ubuntu perspective as a path toward digital decolonisation

Ubuntu is often presented as a holistic philosophical paradigm shared by most sub-Saharan African cultures: "Ubuntu is an indigenous value system, a worldview …, a philosophy, and a lifestyle that permeates many African cultures, particularly in South Africa" (Abubakre et al., 2021, p. 842). It is based on the expression, "I am what I am because of others" (Abubakre et al., 2021, p. 839), emphasising the importance of the community. Its central values of humility, reciprocity and benevolence emphasise the unity of individuals and their community, their responsibilities to it and the help they receive from it, as well as the sharing of resources and skills amongst the community members (Abubakre et al., 2021, pp. 842-843).

Indigenous Africans often experience Eurocentric cultures and value systems as individualistic. However, many mainstream IS ethicists highlight the importance of groups and society at large, too. Therefore, it is important to take note of the similarities and

differences between mainstream (usually Eurocentric) and Ubuntu ethics. Because software that is developed responsibly is based on shared ethical values (Geeling & Brown, 2020), the similarities are important to inform global ethical principles, especially in those IS that are developed for international purposes, while the unique African aspects are more important for local and continental applications in Africa.

4.1 Ubuntu and the importance of communalism in African communities

Communalism is often indicated as the essence of Ubuntu. One of the most salient aspects of African culture is a sense of community, i.e., the values and practices of one's family, group and community (Nwosimiri, 2021). It seems that there is a stronger emphasis on close or more immediate communities than on society at large: "[A]n African will always strive for the maintenance of a dynamic relationship with his/her extended family, clan, tribe, ancestors, God and nature" (Sande, 2021, p. 253). Abubakre et al. (2021, pp. 842-843) differentiate between the local community and its values and the broader social context as a typical characteristic of Ubuntu. They align Ubuntu specifically with closer groups: "South Africans express Ubuntu through caring for extended families, where one achiever in the family becomes the veins through which siblings, cousins, and neighbours experience success." When Konyana (2021) refers to communities among the Ndau people, it seems that the focus is also on immediate communities—the head of the family, the headman and the chief of a village. Due to the advent of social media, domestic quarrels are nowadays often resolved using social media, which limits the leader's control over the family court. This affects the Ubuntu value of "respect for community social cohesion" negatively (Konyana, 2021, p. 183). The focus on more immediate or closer communities fills a gap in mainstream ethics with its strong focus on the individual and the organisation on the one hand and society at large on the other hand but less emphasis on more immediate communities. Yet, examples can be found where the community is specifically mentioned in Eurocentric environments as well, for example: "IT addiction can have a wide variety of consequences to an individual's performance and well-being. These consequences can, in turn, spread further to the levels of organizations, *families, communities,* and even societies [emphasis added]" (Pirkkalainen & Salo, 2016, p. 8). Furthermore, it must be mentioned that the individual is also not forgotten in African societies: "In as much as the community is important in most African cultures, they equally honour and *respect individual differences* [emphasis added]" (Lajul, 2021, p. 201). The differences in emphasis are demonstrated in Figures 1 and 2 showing two versions of "the IS ethics ripple".
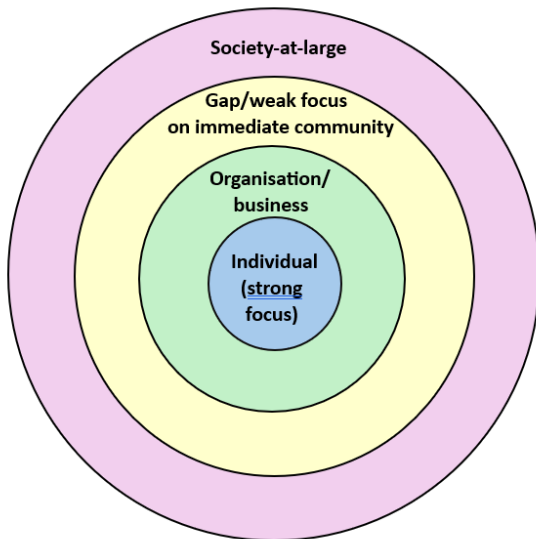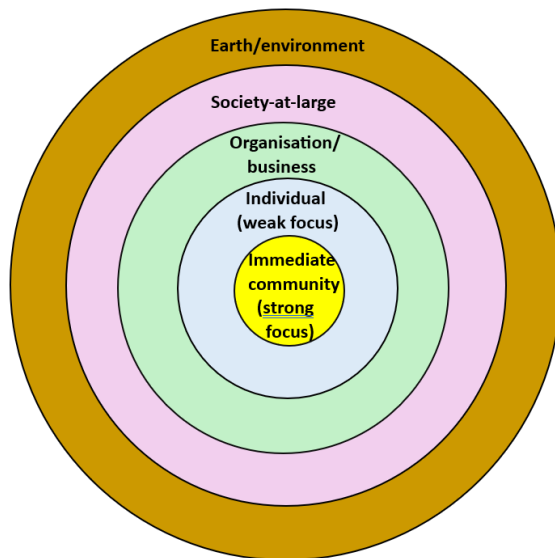
Figure 1. The Western IS ethics ripple.

Figure 2. The Ubuntu ethics ripple

The idea for the portrayal of the scope of IS ethics as a set of concentric circles spreading outwards was inspired by Saunders's research onion (Saunders et al., 2023, p. 131). The

expanding concentric circles depict the ethical range of IS. Colours are used to differentiate the nested circles, each representing a unique social level.

Comparing the two versions of the figure reveals that Ubuntu ethics fills a gap in the scope of IS ethics by focusing more on immediate communities than Eurocentric ethics. Different shades of blue and yellow depict the lighter or heavier emphasis on the individual and the immediate community. The light yellow ring in the IS ethics ripple in Figure 1 illustrates less emphasis on the closer community, while the bright yellow ring in Figure 2 depicts a stronger emphasis on it. The light blue ring in Figure 2 indicates less emphasis on the individual, while the dark blue ring in Figure 1 portrays more emphasis on it. Also note that the individual is the core of the concentric circles in Figure 1, reflecting the centricity of individualism in Western ethics, while the immediate community is the midpoint of the concentric circles in Figure 2, symbolising communalism as the focal point of Ubuntu ethics.

Moreover, Ubuntu also adds importance to humans' unity with the earth and environment (see the brown outer ring in the Ubuntu IS ethics ripple in Figure 2, which is absent in Figure 1). According to the Ubuntu philosophy, the ethical responsibility of humans towards environmental conservation is grounded in the close relationship between humans and the earth:

> Africans … transpose their Ubuntuness (humanness) and moral obligations not only to their fellow human beings, but also to *the surrounding natural environment, including wildlife* … [T]he humanity and existence of Africans is intertwined with that of plants, animals and rivers [emphasis added]. (Chibvongodze, 2016, pp. 157-158)

A detailed discussion of this aspect and the Ubuntu views on spirituality falls outside the scope of this article. Still, a few short notes are appropriate to support the inclusion of the environmental ring in Figure 2. Lajul (2021) refers not only to the rights of the individual and the community regarding health informatics but also to the importance of environmental contexts. Furthermore, the religious dimension is also relevant, for example, when decisions around e-health are made: "In the African perspective, while individuals remain unique, autonomous and free, they cannot exist independently of other *human beings, nature and God* [emphasis added]. This social dimension changes the way biotechnology should operate and bioethical values should be evaluated" (Lajul, 2021, p. 192). The expanding rings of the Ubuntu IS ethics ripple (immediate community, individual, organisation, society at large, as well as the physical and spiritual environment should be weighed up against and balanced with each other.

4.2   Possible shortcomings of communalism

Although a stronger emphasis on the immediate community fills a gap in the ethical scope, it should not be an absolutist focus. Too much emphasis on more direct communities could lead to nepotism and damage the needs of both the individual and society at large. According to Otaluka (2017, p. iii), nepotism is a form of corruption that represents the less favourable side of unrestrained communitarianism: "African cultural practices of gift-giving and the extended family system encourage corruption particularly in the form of nepotism." Metz (2021) also refers to the aspect of African ethics that prioritises the interests of family. He mentions that blood relations have become a controversial ethical basis and that the idea of prioritising the needs of relatives must be extended to other relations.

Another danger of communalism is that it could stifle development if it is not open to adopting (or adapting) beneficial innovations from outside the closer group. Chemhuru (2021) mentions that corruption and nepotism in postcolonial Africa contributed to the lack of development in Africa, thus reinforcing the historical disadvantages of colonialism. According to Matolino (2021), postcolonial Africa rejected a spirit of modernity that drives innovation, probably due to a spirit of communalism where the group is responsible for finding solutions and as a counter-reaction to colonialism accompanied by the negative aspects and experiences of modernity. Furthermore, indigenous knowledge is often not shared publicly but hidden behind a veil of authoritarianism, anachronism and supernaturalism. This stifles the creation of innovative technologies that are tailor-made for Africa, consequently forcing Africans to often merely adopt exogenous alternatives.

It is an enigma that Ubuntu's communal values can either have negative or positive impacts on entrepreneurship. Since communalism is in some environments not conducive to the stimulation of proactive endeavours and risk-taking, it can constrain the optimisation of specialised abilities and knowledge and give rise to unassertiveness and passivity, thus hindering entrepreneurship. However, in other setups, the same values could be harnessed to grow entrepreneurship, cultivate skills and develop strategic awareness in networks that support each other (Abubakre et al., 2021). Otaluka (2017) refers to the danger of nepotism embodied in Ubuntu, but also its value in counteracting corruption.

It is, therefore, important to balance the communalist focus of Ubuntu with other Ubuntu values, such as human welfare and dignity (Chemhuru, 2021), to prevent unrestrained communalism from leading to nepotism and to mitigate any reticence towards all exogenous influences. Luckily, traditional communalist values can be adjusted for modern environments. It is possible because African culture is "dynamic,

which means that it changes from within and outside" (Nwosimiri, 2021, p. 93). If Ubuntu-informed ethics is reformed, it should consider this conundrum and look for ways to embrace a positive spirit of modernity and innovative development. Knowledge should be shared openly to be tested and extended by future generations of researchers.

One should, however, acknowledge that the integration of Ubuntu values into IS teaching, research and practice may introduce tension between the communal values of Ubuntu and the current policies and practices in mainstream ICTs and IS, such as:

- initiatives for innovation originating in communities versus heroical inventions by individual pioneers;
- collective processes versus independent, self-efficient control; and
- sharing skills and resources versus a competitive mindset (Abubakre et al., 2021).

The next section looks in more detail at mitigating the unintended consequences of digital coloniality, while Section 5 provides some theoretical suggestions for solving the tensions, ironies and paradoxes mentioned above.

4.3   Using Ubuntu to inform African and global IS ethics

Otaluka (2017) regards Ubuntu as an African moral theory and suggests that Ubuntu-informed values be taught on all levels of learning to counteract corruption. One example would be teaching communal values to children and applying them to digital technology. Children's use of ICTs should be supervised and controlled to avoid addiction that impedes their in-person interaction in their community (Chirongoma & Mutsvedu, 2021). Regulation and restriction may be a way to overcome some of the dark sides of ICT design and use, and it is in line with Wang and Lee's (2020) suggestions regarding the systematic management of the use of social media, for example, designing and implementing affordances to prevent the compulsive use of IS.

Living up to one's Ubuntu principles in the digital world may even be a tool to strengthen communities. African communities that incorporate Ubuntu values while using ICTs may enrich human relationships (Chirongoma & Mutsvedu, 2021). ICT has helped Zimbabweans in the diaspora to maintain and strengthen their traditional community bonds, thus actuating the central value of Ubuntu (Chirongoma & Mutsvedu, 2021).

It is in this regard that Ubuntu can be transferred to the digital world. The rest of the world outside Africa also struggles with the problematic use of ICTs. As indicated above, the overuse of smartphones is one example of the addictiveness of ICT. In their suggestions for further work on problematic smartphone use (PSU), Busch and McCarthy (2021, p. 15) ask: "How can PSU be brought back to healthy levels?" Turel et al.

(2011) refer to the use of belief modification techniques to counteract IT addiction and the obsessive use of IS. Informing smartphone users of the possible dangers of digital addiction and educating them about the family and community values of Ubuntu may be a good starting place to overcome overusing digital devices and apps. For example, explaining the importance of in-person, face-to-face communication, not only in African communities but also in other cultures in the Global North and Global South, may be a good motivation to moderate users' own negative behaviours (cf., Wang & Lee, 2020, p. 187) such as phubbing (i.e., ignoring other people in a conversation while focusing only on one's smartphone).

Furthermore, Ubuntu principles cannot be harnessed to guide only the usage of digital devices but also its design and development. One of the persistent challenges in IS development is that "[c]ommercial software products are developed for diverse and unknown users", which necessitates "evolutionary and incremental methods" (Kautz et al., 2007, p. 224). Using Ubuntu values to inform the theory of IS design, management and use may provide ethical principles as the foundation for such groundbreaking approaches, albeit as a nascent theorisation process. This may also help to fill the void identified by Bock et al. (2021) regarding the unsatisfactory quality of ethical research in IS over the past five decades. One area where more research is needed is a "concern for the principal scope and structure of moral theorizing in ISR [IS Research]" (Bock et al., 2021, p. 8).

4.4   Feasibility of implementing Ubuntu in practice

This section demonstrates the feasibility of implementing Ubuntu in practice. Ubuntu can be used to critically analyse the status quo of the design, implementation and use of ICT, as well as to guide these undertakings. Nkohla-Ramunenyiwa (2021) explores the ethical challenges posed by using smartphones in African homes. She notes that smartphones have extended the traditional concept of the community by facilitating digital communities that are usually made up of individuals who share similar views and purposes. However, social media often embed exogenous values that may not align with the members of a specific group: "… the African spirituality and value system of African teenagers is constantly compromised" (Nkohla-Ramunenyiwa, 2021, p. 149). The drive for profitability of social media platforms conforms to individualism and consumerism that do not align with Ubuntu values. Furthermore, excessive use of these apps causes physical and emotional alienation, which negatively impacts communalism. To alleviate these problems, African teenagers can create support groups where they discuss how they can appropriate the technologies in a way that is aligned with

their value system to create "a borderless African village" (Nkohla-Ramunenyiwa, 2021, p. 151).

Morgan and Okyere-Manu (2021) determine Ubuntu-based ethical principles for a "virtual communitarianism" that can be used to localise social media for African societies. These principles can be used on the African continent—and maybe even globally—to guide the governance of social media platforms, thus mitigating concerns regarding pervasive social media, such as "the spread of misinformation, hate speech and online surveillance" (McCarthy et al., 2023, p. 2172). Not only can these principles represent "devoiced entities" from Africa (Masiero, 2023, p. 306), but they can also inform the agenda for collaborative research in the field to involve local communities.

Techno-overload and -invasion are two of the major contributors to the dark side of technostress (Shi et al., 2023). This is not only the case in the workplace, but it also impacts families. The Ubuntu-based communalist values provide a counterweight to balance these negative constructs. ICT users must find ways to balance professional demands—often enabled by smart technologies—with family and community responsibilities.

Persuasive technologies such as feedback loops are used to change or guide users' behaviour. This implies that moral values are embedded in software designs. Ethics plays an important role in the decisions that designers make when planning which activities should be promoted or curbed. Ethical objectives should override pure profit aims, especially if these are unethical. Ubuntu values can be used to guide designers and developers on the acceptability of persuasive technologies in new digital devices and software. According to Durani et al. (2021), little research has been done on values in the sub-field of Design Science Research (DSR). They developed a conceptual framework of negative design principles to guide ethical DSR. African ethical principles could contribute especially to the level of meta-ethics to inform ethical design principles. Meta-ethics includes reflective discussions about the systemisation of ethical values.

In Section 2.2 above, some biotechnical procedures that do not align well with Ubuntu were discussed. However, biotechnology that is centred on the human being as connected to other people and nature is acceptable: "What can be done is to regulate its activities for the good of the world, human life and the life of other living organisms" (Lajul, 2021, p. 211). If digital enhancement technologies can be aligned with the Shona values of humanness and communalism, it can be encouraged (Sande, 2021). Morgan (2021) agrees that from an Akan ethical viewpoint, assisted reproductive technologies for sex selection should be allowed to assist women to bear a male child as is preferred by the patriarchal sub-Saharan African cultures. It should, however, be

restricted and regulated to overcome the dangers of gender stereotyping and to preserve traditional values of family and marriage.

African communitarian ethics can guide both software designers and users to align their conduct with Ubuntu (Chemhuru, 2021). These values challenge, for example, the ethics of using full-body scanners at security checkpoints. From an Ubuntu viewpoint, it may not be regarded as respectful to expose persons to radiation and to undress them digitally. Furthermore, using mobile phones to trace users' contacts during the COVID-19 pandemic may have had ethical impacts not only on individuals' privacy but also on the rights of communities. The communalist values of human welfare and dignity provide an alternative perspective on using these technologies.

Modern technology can be harnessed to promote traditional values and have a positive impact on the ever-ongoing revitalisation of value systems. Mujinga (2021) recommends that mainline churches in Zimbabwe adopt the use of ICTs to enhance their visibility, extend their membership, reach their members, spread the gospel, and improve their revenue. The use of social media will attract the youth and facilitate the connectedness of church members. Nwosimiri (2021) proposes that some African cultural practices are combined with modern technology. Traditional African values can be combined with or replaced by those of other cultures. ICT can cause shifts in values and practices, for example, by making indigenous knowledge available to people who need access to it, while African communities should critically evaluate these technologies to judge if they support the values that they would like to cherish and promote moving forward (Nwosimiri, 2021).

Furthermore, African ethical values may contribute to global IS ethics by providing principles to overcome the divide between science and ethics (cf., Chemhuru, 2021). Chemhuru feels positive about the 4IR, believing that African ethics is compatible with these new ICTs. Decision-makers should not only take their own set of values into account but also those of other stakeholders and society as a whole—this is called a relation-holder ethic (Woermann & Engelbrecht, 2019). Although Woermann and Engelbrecht (2019) do not mention communalist values as such, they do refer to group support systems. Considering community values is especially important when decision support systems (DSS) are developed for specific communities (Meredith & Arnott, 2003).

Sections 2 and 3 above referred to the use of open-source software (OSS) in marginalised communities. Examples of OSS software are the Ubuntu operating system for personal computers (named after the sub-Saharan African value system of Ubuntu!), Libre Office and the Android platform for mobile apps. Free online meeting tools, crowdsourcing platforms and social media have helped community-based development

networks to overcome physical and time barriers and to cut financial costs substantially (Abubakre et al., 2021). Therefore, one may safely conclude that OSS will accelerate the integration of Ubuntu values in IS, making the ideal of digital decolonisation, and specifically Africanisation, even more feasible. In the next section, the spotlight moves from achievability to relevant theoretical issues underlying such an endeavour.

5   Theorisation on the use of Ubuntu to mitigate the dark side of IS

This section reflects on the theorising process that was used for this research and suggests a few alternative theoretical approaches that can be used in future work. The importance and possible impacts of the reflections above, both on theoretical and practical levels, are also discussed.

Identifying tensions between Eurocentric and African value systems opens opportunities for theorisation (Shepherd & Sutcliffe, 2011). This article focuses on explaining digital colonialism and coloniality, relating it to sub-Saharan African cultures, selecting Ubuntu values to criticise the phenomena, idealising ways of using these values to remedy the dark side of IS, and synthesising these African contributions with related Eurocentric concepts. "The process of theorizing consists of activities like abstracting, generalizing, relating, selecting, explaining, synthesizing, and idealizing" (Weick, 1995, p. 389).

As a critical analysis of digital colonialism and coloniality from an Ubuntu perspective, the research is an early step in a nascent process towards theorising dark IS phenomena. What IS needs, is an in-depth and well-structured Ubuntu-informed ethics to critique and guide IS design, implementation, management and use. The paper, hopefully, plants the seeds for such an endeavour. It only recognises and motivates a research opportunity and, hopefully, lays a useful foundation for future work to harness Ubuntu values to counteract some of the dark sides of ICT. "A single theoretical paper is often not the final outcome of theorizing but one step in an ongoing, dynamic process" (Shepherd & Sutcliffe, 2011, p. 374). One possibility for a follow-up study is related to Gupta et al.'s (2022) findings that, compared to members of individualist groups, members of strong collectivist groups are more sceptical about accepting biased information and predictions made by AI tools. Their study uses Hofstede's cultural framework to measure cultural differences, including variances on the individualism-collectivism scale. The authors mention some alternative frameworks that can be used in future work. Since they focus on individual participants, it should be interesting to explore if their results can be generalised to African communalist environments.

Weick (1995) indicates that theory is not only a product but also a process (theorisation). This article exemplifies an "interim struggle" in the aspiration after the decolonisation of IS on the African continent, i.e., "a theoretical development still in its early stages" (Weick, 1995, p. 385). Going forward, the field needs a critical meta-theorising endeavour, i.e., "the synthesis and critique of existing categories of theorizing [that] creates reflexivity and provides an ardent call for alternative ways of studying and knowing topics" (Cornelissen et al., 2021, p. 7). It is suggested that inductive top-down theorising is used as a foundational paradigm to build out an Ubuntu-based IS ethics (UISE) by discovering its key pillars—or "foundational building blocks for theorizing" (Shepherd & Sutcliffe, 2011, p. 367)—and synthesising it to constitute a nascent moral theory. After arriving at an initial premise that IS ethics can be amended from an African point of view, building on a background knowledge of IS ethics and Ubuntu ethics, insights from cognate fields of literature can be used to propose possible cornerstones of a new theory (Shepherd & Sutcliffe, 2011).

The CARE theory, proposed by Leidner and Tona (2021), provides an exemplar of research using inductive top-down theorising, making use of existing literature (on dignity) from related scholarly fields. The same approach could be used to develop a UISE by synthesising ethical concepts from a wide array of cognate fields into a central and foundational value-based principle. As one example of such a principle, Sande (2021, p. 255) refers to the principle that "an action is right to the extent that it maximizes harmony". This principle is very similar to Taylor's (2014, p. 338) principle for an Ubuntu-based business ethical principle: "An action is right insofar as it promotes cohesion and reciprocal value amongst people. An action is wrong insofar as it damages relationships and devalues any individual or group." The CARE theory may indeed be fundamental towards Ubuntu-based research. Since CARE's focus on people resonates well with Ubuntu's core value of humanness, it offers a theoretical lens to guide Ubuntu-based IS ethics as an emerging IS phenomenon in further work:

> Designing with dignity entails thinking of ways to design a system while respecting the individuals who might use the technology, as well as those who will not use the technology per se but will be affected by it … Design is needed that supports individuals in their efforts to live virtuously. (Leidner & Tona, 2021, p. 363)

According to Metz (2021), the design principle of utility maximation (utilitarianism) does not align well with Ubuntu ethics because, in certain circumstances, it may conflict with the Ubuntu principles of respect for human dignity, maintaining family

and group rights, as well as self-sacrifice to support other members of the community. He refers to examples of auto-driving cars, robotic nursing, domestic robots, military weapons and underground mining to illustrate his point. Therefore, a UISE should reconsider the usability goals of HCI. In African environments, the interaction design principles of effectiveness, efficiency and utility (Sharp et al., 2019) should be critiqued and reinterpreted from an Ubuntu perspective. For example, software designers and owners should ask if and how their apps ensure respect for human dignity, especially when there is a clash between global and African values. Individual rights and collective rights should also be balanced (Metz, 2021), with the principle of dignity providing a suitable counterweight for these rights: "[T]he essence of traditional African ethics particularly as practiced before the dawn of the colonial era was based on an attitude towards life which is based on human dignity and respect of the self which is interconnected with that of others" (Chirongoma & Mutsvedu, 2021, p. 157). Amugune and Otieno-Omutoko (2019) stress the importance of involving communities in a participatory research design in African environments.

According to McCarthy et al. (2023), Habermas's theory of communicative action offers a solid theoretical point of departure for research that includes the voices of ordinary ICT users regarding the dark side of IS. Since African ways of knowledge creation and the transfer of indigenous knowledge historically rely on oral traditions, dialogical processes are especially suitable for participatory research in Africa. Lifeworld reasoning could, especially, provide an ideal platform to share pre-scientific knowledge, which can then be integrated into scientific knowledge through critical rationalisation. Being part of the design and governance process should eventually ensure moral behaviour while using social media.

Paradox theory (Smith & Lewis, 2011) offers a further theoretical perspective that may be useful in theorising digital coloniality and decolonisation. Above, some paradoxical tensions were discussed cursorily. Paradox theory can guide IS researchers to find a balance between opposing forces by facilitating the following conciliatory undertakings:

- Finding an equilibrium between individualism and communalism, including the importance of local communities versus society at large
- Accommodating both personal accountability and collective decision-making
- Harnessing the benefits of a Western-to-African flow of information while creating space for the reciprocal process to enrich and supplement global information technologies
- Maintaining the strengths of a stakeholder ethic while fostering a relation-holder ethic on the other hand
- Juggling the aim of the firm to be profitable and the nurturing of interpersonal harmonious relationships in communities and organisations

Although these values seem to be contradictory and indeed constitute extreme opposites, there often is an enrichment opportunity in diversity. Following strategies that are based on a theory of paradox (Smith & Lewis, 2011), software firms could acknowledge the inherent tensions between Eurocentric and African values and opt to view them as opportunities for innovation and growth rather than seeing them as stifling threats. By oscillating strategic goals and actuating processes between these opposites, they could prioritise both—but at different time intervals—to remain profitable while addressing their social responsibilities. Smith and Lewis (2011, p. 393) believe that "a dynamic equilibrium unleashes the power of paradox to foster sustainability." Such an alternative point of departure does not only provide a solution to mitigate opposing forces in the software industry but also provides an alternative theoretical foundation for related research: "Paradox theory not only proposes that contradictory theories exist but offers a process for academics to start enriching and renewing our stock of organizational theories" (Smith & Lewis, 2011, p. 398).

Once a nascent theory has matured to the extent that falsifiable hypotheses have been formulated, top-down deductive approaches can follow to test the premises empirically. To strengthen the theory even further, the aspects of causation and time should also be researched. One specific temporal configuration that may be relevant for a UISE is to investigate how Western-based software challenges traditional African ethical principles (cf., Baranauskas et al., 2024), and how a pushback reaction could then test or even change the values that are built into the applications—this is called a "cyclical recursive causation" (Mitchell & James, 2001, p. 534). Another possibly relevant configuration is to study how Western software applications affect African ethics over time, especially due to repeated exposure; alternatively, one could study other (African) philosophical ontologies of time, how they affect different cultures' ethical systems, and what the implications could be for IS design and use (Mitchell & James, 2001).

On a more practical note, one may recommend that designers should consider the values that are unique to the community for whom a product is developed. This may be difficult if the product is to be rolled out globally because it may be impossible to cater for conflicting values. Ideally, it should be possible to configure software to facilitate tailor-made adjustments for local cultures and values. Mujinga (2021, p. 277) applies the principle of benefiting communities, formulated by Metz (2007), Lutz (2009), Taylor (2014) and Sande (2021) when he says: "Technology is beneficial to religion because it enhances the communal aspects of religion, and detrimental to religion when it degrades these communal aspects." Just like the printing press stimulated the development of theology, especially Protestantism, digital technologies should, therefore, be embraced to support the church's endeavours in the digital era. As an aside, it should be noted that while Western ethical systems are reductionist because they are always based on a single principle, African ethics is based on a philosophy of diversity. "The philosophy of diversity is the accommodation of varied and peaceful apparently contradictory elements" (Lajul, 2021, p. 199). While building a UISE, one must keep this in mind. It may indicate a problem in the approach to search for a single Ubuntu-based ethics principle. The cognitive dichotomy of holistic thought, typical of Chinese epistemology, versus analytical thought, typical of Western epistemology, is a related issue that may affect scholarly activities in the IS field (Pauleen et al., 2006).

The author realises that, ironically, most of the theoretical approaches suggested above are, once again, of Western origin, a conundrum that is also mentioned by Masiero (2023, p. 300): "Critically, Western bias affects also theories that, such as critical theory, are meant to question exactly the oppression and alienation implicit in the status quo." Myers et al. (2020) propose that methods and theories should also be decolonised. A subaltern approach, referred to in the introduction, may offer an alternative theoretical perspective, but it is also not an indigenous African theory. The author trusts that the Ubuntu constructs highlighted in this article may serve as an initial contribution towards the development of a truly African epistemological theory, which can be used in a collaborative and cumulative project to make IS research and practice more inclusive. "If pluralism … is core to building knowledge in IS, a substantial effort is needed for the field to embark on a direly needed decolonial project" (Masiero, 2023, p. 312). Since researchers' methodology often reflects their worldviews, a home-bred African paradigm is indispensable as the epistemological foundation of indigenised research methodologies (Myers et al., 2020). Such a paradigm will also address the need for deeper reflection regarding research philosophies used in IS and ICT4D investigations (Cibangu, 2020).

6   Conclusion

The study concludes that the deliberate imposition of Eurocentric software to maintain a postcolonial state (Monteiro et al., 2022) can be considered digital colonialism, while the unintended but harmful effects of using global software in indigenous communities, i.e., digital coloniality, can sometimes also be experienced as such. The paper defined these concepts and provided examples to illustrate them. Using an Ubuntu perspective, it was demonstrated how and why they can be seen to constitute instances of the dark side or IS within a sub-Saharan African context and other communalist settings. These considerations address various themes relevant to the special SJIS edition on the dark side of IS in terms of the role of the IT artefact. It challenges stereotype assumptions about the global adoption of IS, showing how the lingering effects of colonialism can lead to digital coloniality, bringing African voices to the fore on the IS podium, and demonstrating how IS could be adjusted in sub-Saharan African environments according to Ubuntu values (cf., Monteiro et al., 2022).

The above critique on IS theory, design and use from an Ubuntu viewpoint should challenge IS scholars' assumptions (cf., Grant & Pollock, 2011) that Western-based software can be rolled out in African environments to develop historically disadvantaged communities. Such an assumption is unethical and can be experienced as a form of digital colonialism, even if there were no evil, hidden agendas on the side of the developers and implementing agents. Furthermore, the paper may advance researchers' and practitioners' understanding of the often-unintended consequences of ICTs in diverse cultural environments. Such an awareness prompts the need for digital decolonisation by infusing an Ubuntu perspective on IS ethics. It further reveals the importance of local communities' involvement in creating and implementing IT artefacts.

Creating awareness that IS should not always merely be imposed on users who uphold other cultural values prompts a scholarly process to solve this challenge: "Computing technology's ubiquity and pervasiveness over the past decade have shown societal challenges (e.g., justice, sustainability, ethics, peace) that demand we examine how we approach computer-based systems design" (Baranauskas et al., 2024, p. 101). The reflection on the theorisation of digital colonialism and coloniality and an Ubuntu-infused approach to correct dark IS phenomena will hopefully stimulate follow-up research. Once a theory of Ubuntu-based IS ethics has been formulated, it could be included in IS syllabi (cf., Pirkkalainen & Salo, 2016), especially in sub-Saharan African countries, to guide future IS students, scholars and practitioners in the region, and to enrich the field of IS ethics globally.

Acknowledgments

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211 Kroeze: Digital Coloniality

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Appendix 1. Foundational definitions and explanations of decolonisation and digital decolonisation

1. "Taking a decolonial approach … [is] an approach that unties the production of knowledge from dominantly Western science and paradigms … by proposing an alternative to Western perspectives on critical theory." (Masiero, 2023, p. 301)

2. "There's a need to decolonize African AI by addressing power dynamics and data colonialism within technology development." (Etori et al., 2024, p. 1)

3. "All of the above suggestions indicate the pressing need for some strong ethno-decentring in the research that we undertake … The challenge is to make the mainstream more diverse, more inclusive, and less culturally biased." (Pauleen et al., 2006, p. 360)

4. "From this study it can be inferred that selecting the right tools [e.g., groupware technologies] and having viable objectives can help overcome any problem that cultural differences might cause … Users and educators must be aware not only of cultural differences but also of role differences while preparing their programmes and plans … However, other important differences—such as language or communication needs—could be addressed in the educational systems." (Pauleen et al., 2006, pp. 364-365)

5. "To succeed in the international marketplace, you need a detailed understanding of the culture, customs, and conditions in all your markets. You also need the flexibility and responsiveness to take into account diverse legal frameworks, different languages and lifestyles, and a wide range of other local business requirements." (Pauleen et al., 2006, p. 366)

6. "The greatest insurance that we can have in countering cultural biases in IS is to conduct high quality, cross-cultural research … I propose cultural intelligence as a theoretical lens to use in future capability research." (Pauleen et al., 2006, p. 363)

7. "[Decolonization is] the process through which colonial rule and power over political, economic, cultural and social spheres is dissolved and where power and self-determination is [sic] transferred or (re)transferred to national indigenous

213

people. A decolonization process of knowledge production subsequently needs to support researchers to critically engage with existing power relations, and challenge past preferential treatment of Western ontologies, epistemologies and theories, as well as academic practices serving to uphold historical biases. A decolonialization effort thus entails disrupting the West's historical privileged position of determining what forms of knowledge are accepted and valued, which also ultimately decides whose knowledge counts … Decolonizing academic knowledge production, [sic] also calls for critical reflections pertaining research practices and research ethics. Extractive and exploitative research practices has [sic] received significant attention by development studies scholars … The fields of Information Systems (IS) and Information and Communication Technologies for Development (ICT4D) has [sic] also starting [sic] to engage more consistently with the issue of Western dominance in scholarly knowledge production and circulation … [D]ecolonizing ICT4D research will requires [sic] us to do things differently … If there is agreement that there is room for improvement concerning how ICT4D engages with justified criticism of Western biases, there seems to be less consensus pertaining how to concretely approach an alternative imagined future. One suggested remedy is to strengthen the meaningful participation and representation of scholars from developing country contexts, not only as local research assistant [sic], but as authors and co-authors." (Hatakka & Strand, 2022, pp. 2-3)

8. "Indeed, the decolonisation of education requires that colonial knowledge construction be investigated and challenged. To do so, diversity should be valued, and the multiple experiences of people should be recognised … Decolonisation of the curriculum should start in schools and in the classroom … and teachers can contribute by interrogating historical relationships of power, authenticating diversity, and remaining open to inconsistencies whilst confronting tensions." (Shiels & Tanner, 2022, p. 3)

9. "Theory building in Africa requires sensitivity to, and to allow for, the diversity of cultures, views, and philosophies of the people living on the continent and decolonial sensitivity … Digital health in Africa, like in any other locality, needs contextual thinking, concepts, and language for it to be inclusive … and to facilitate an understanding of the complexity and particulars of the digitization of health and the utilization of ICTs. There is a void in understanding Africa's transversal, inclusive practices and needs for a respectful and ethical positioning,

programming, and assessment of digital health in the continent." (van Stam, 2021, pp. 2-3)

10. "Digital transformation can positively or negatively contribute to societies, organizations, and individuals depending on the values inscribed in the underlying digital technologies. This highlights the importance for researchers to critically examine digital technologies' value inscriptions, how technology use enacts these values and the bearing of these values on research … Phenomenon-based criticality sensitizes us to scrutinize how we—as researchers—and our informants enact values in how we define, position, and frame the subject under study … Method-based criticality turns to how researchers' methodological choices regarding data collection and analysis carry values and/or dictate which values become elevated … Theory-based criticality requires researchers to choose their theory with scrutiny; or at least to reflect on the values underlying their choice … Last, self-reflexive criticality centers on explicitly interrogating the values, assumptions, and biases that researchers themselves bring to their work … Indeed, we consider criticality as pivotal for understanding how the design, development, implementation, and use of digital technology can help humanity in tackling the grand challenges of our time through DT [digital transformation] … To understand how digital innovation, digital infrastructures, AI, and resulting DTs can help build a better world, we must engage with the values that underpin and emerge in these digital phenomena." (Zimmer et al., 2023, pp. 964, 975-976, 978)