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A holistic ubuntu artificial intelligence ethics approach in South Africa

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Artificial intelligence (AI) is one of the most spoken-about topics in the media, academia, government and other platforms. One of the aspects that is often discussed is the ethical implications of AI and approaches to mitigate the risks. Artificial intelligence has an undeniable impact on industries as well as socio-economic structures; however, this article focusses on the impact of AI on three concerns mainly, humanity, spirituality and the environment. This article is an interdisciplinary study of African theological ethics and the philosophy of technology. It discusses the theological implications (doctrinal issues) of emerging technologies, particularly AI. It discusses technology as power which has impacted Africa since the first industrial revolution and emphasises the importance of African ethics in the context of AI in Africa. This article critically discusses ubuntu ethics and its critique. It focuses on AI and its impact on humanity, spirituality and the environment, and proposes a holistic ubuntu AI ethics approach in South Africa.

Intradisciplinary and/or interdisciplinary implications: This article is an interdisciplinary study of African theological ethics and the philosophy of technology. Ubuntu ethics in this article derives from African Theology and African Philosophy. Ubuntu AI ethics is important for various disciplines such as theology, law, social sciences, computer sciences and information technology (especially designers and developers).

Keywords: African theological ethics; ubuntu ethics; philosophy of technology; artificial intelligence; fourth industrial revolution; systematic theology; AI ethics.

Introduction

According to Arakpogun et al. (2021:375), artificial intelligence (AI) has become an important topic of discussion for academics and the public, since it is disrupting industries as well as daily life. Governments and experts are trying to understand the effects of AI and also how to promote its development. Artificial intelligence has many definitions but, in this article, it will be referred to as the ability of machines to imitate human intelligence, capable of self-learning, and able to accomplish complicated tasks with minimal to no human control (Fourie 2020:13). Common benefits of AI include quicker responses, increased productivity, medical breakthroughs, automation, improved learning and customer experience (Gaffley, Adams & Shyllon 2022). Okolo, Aruleba and Obaido (2023) argue that Africa may not be an AI superpower or it may take considerable effort to be one, but it should capitalise on their capabilities in software creation and research, investing in infrastructure and ensuring that potential benefits outweigh the risks. Ruttkamp-Bloem (2023) argues that understanding the potential benefits of AI necessitates an epistemic just framework of AI ethics and both are inextricably linked. Artificial intelligence technologies have the potential to bring about significant change for many Africans. However to benefit from AI in the African context, Africans require AI ethics awareness, sensitivity and literacy. In the context of smart cities, AI has numerous useful applications, such as leveraging its predictive powers to explore new development paths, water and risk management, assisting with fire detection, boosting security and being employed in historic places. What remains critical is that there is equality in AI opportunities, and that the services delivered are inclusive (Gaffley et al. 2022).

While there are significant benefits to be gained from AI in Africa, there are also multiple barriers and unforeseen risks that policymakers must address. These problems vary from socioeconomic inequalities caused by the digital divide and a lack of digital skills across a big part of Africa's population to the risks of automation and job losses that could affect multiple sectors (Arakpogun et al. 2021; Gaffley et al. 2022). In the global landscape of AI, there is uneven development and deployment of AI in the Global South and Global North. The Global North is more resourced than

the Global South, and it could lead to further inequalities (Arakpogun et al. 2021). Brokensha, Kotzé and Senekal (2023) argue that the challenge with the monopoly of tech companies such as Facebook, Google, Microsoft and Amazon is that they can hamper African countries' efforts to create and implement their own AI technologies. If you cannot develop your technologies, you are at risk of being deployed technologies that are not contextual and there are also risks of exploitation. Artificial intelligence tech, mainly developed in the Global North, can lead to 'allocative harms' in African contexts, such as decisions on bank loans or credit. Furthermore, facial recognition algorithms may disproportionately target or exclude people of colour (Gwagwa et al. 2020).

This article firstly discusses the theological implications (doctrinal issues) of emerging technologies such as AI. Secondly, it discusses technology as power which has impacted Africa since the first industrial revolution. Thirdly, it deliberates on the importance of African ethics in the context of AI in Africa. Fourthly, it critically discusses ubuntu ethics and its critique as well as focusses on AI and its impact on humanity, spirituality and the environment from the perspective of ubuntu ethics. This article is an interdisciplinary study of African theological ethics and emerging technologies, specifically AI.

Theological (doctrinal) implications of artificial intelligence

The rapid growth and power of technology have posed questions if human beings are becoming God. Historically, many things have been attributed to God, but the same attributes can be achieved by humans through technology to a certain extent (Harari 2016). People used to pray to God for rain, but through the power of technology, they now have the ability to create rain. God has given life to human beings, nature and animals on earth. Life, however, is limited. The fragility of human beings to become sick, injured, get old and eventually die is an integral part of life. Inevitably, humans die either by natural or unnatural causes (Matheson 2017).

Mullins (2021:99) states that the assurance that one will be saved from pain and death is a key component of the Christian notion of salvation. The doctrine of salvation in Christianity is known as soteriology. Ryrie (1999) broadly defines soteriology as:

> … the doctrine of salvation, must be the grandest theme in the Scriptures. It embraces all of time as well as eternity past and future. It relates in one way or another to all of mankind, without exception. It even has ramifications in the sphere of the angels. It is the theme of both the Old and New Testaments. It is personal, national, and cosmic. And it centres on the greatest Person, our Lord Jesus Christ. (p. 453)

The theological implication of the doctrine of salvation vis-à-vis technology is that humans would no longer need God for their salvation. The more technology develops, the more the world becomes secular as technology becomes a 'replacement' for God. Salvation is the act of God to save humanity and the

cosmos from death and destruction. Jan G. Van Der Watt edited the book *Salvation in the New Testament: Perspectives on Soteriology* (2005) which indicates that there are varying perspectives of soteriology in New Testament studies but when it is located from the 'master story', it is summarised as follows:

> There seems to be general agreement on the anthropological perspective that humans are in trouble in their relation to God. People are separated from God and a relationship between them is absent. They cannot restore the relationship on their own, because they are not in a position to do that … God, however, comes into action and opens real possibilities for the restoration of this relationship. His motivation for doing this, for instance, is described in terms of grace or love. (pp. 519–520)

The premise is that humans cannot save themselves and reconcile themselves with God but need God for salvation. Humans cannot eradicate sin and death by themselves. Jesus Christ is therefore the agent of salvation.

Radical human enhancement poses a question if human beings are taking salvation into their own hands. This has been advocated by the transhumanist movement which aspires to a life that is prolonged differently, one that is free from illness and pain and one that has enhanced cognitive powers to escape the fatalities and limitations of humanity through technology (Fourie 2020). This is encapsulated in the three 'supers': super longevity, superintelligence and super wellbeing (Peters 2018). Super longevity focusses on radical life extension to achieve physical immortality. Mercer and Trothen (2021:22) mention some of the possible technologies for radical enhancement such as genetic engineering and therapy (i.e. CRISPR) which strives to identify and manipulate the genes that cause ageing and other diseases. Another aspect is 'designer babies' which is genetic engineering in the embryo to enhance a baby to have specific traits and eliminate diseases before they are born. Super intelligence focusses on the use of computers to develop intelligence that is on par with, then surpasses, that of humans (Ross 2020). Think of robots, AI and supercomputers. Super wellbeing focusses on using pharmaceuticals and genetic engineering to maintain a constant state of subjective happiness above all else (Ross 2020). This is for the elimination of pain and suffering from unpleasant experiences. It may take a couple of decades for radical human enhancement to be functional but in the meantime, there are technologies such as cryonics that can preserve the human body indefinitely or bridge a gap between death and the future until technologies are more advanced (Mercer & Trothen 2021). The theological implications include the doctrine of humanity (anthropology) which views humanity as made in the image of God [*imago Dei*]. When humanity technologically alters (enhances) their bodies beyond human limitations, would humans still be considered in the image of God? Would it be a sin to technologically enhance our bodies? This question would be posed from hamartiology (the doctrine of sin). Another theological implication is eschatology (study of the end times). Post-Christian ideologies such as transhumanism

hold an eschatological view that the current dysfunctional world will be replaced by a technologically perfect world (Fourie 2020).

According to Fuller and Lipinska (2014:46), the term 'theomimesis' (which means 'God-playing' in Greek) refers to our desire to 'enter into the mind of God', which is to say, 'play God', with the former word still having resonance in physics and the latter in biology. The aspiration for radical human enhancement is regarded as 'playing God' which is in contrast with human beings as the *imago Dei*. Radical human enhancement thus poses various doctrinal challenges to Christian theology. It is therefore important for theologians to engage on the impact of emerging technologies such as AI as we are entering an era that is technologically fast-paced and challenges our way of life.

This section has discussed the theological implications of emerging technologies such as AI. Transhumanism poses challenges to Christian doctrines such as theological anthropology, hamartiology, soteriology and eschatology. The following section will critically discuss technology as power which has impacted Africa since the first industrial revolution.

Technology as power: Impact in Africa

Artificial intelligence did not appear in a vacuum, but it is the continuation of history when we analyse the impact of Western technology in the African context. Benyera (2022:1) asserts that emerging technologies are a continuation of the exploitation of Africa by the West through tech companies that date back to the first industrial revolution. The impact that the three previous industrial revolutions had on Africa and Africans: the transatlantic slave trade where Africans were reduced to commodity; colonisation and dispossession; and globalisation, where African countries in most cases lack or have no control or ownership of their media and finance among other industries (Benyera 2021:1; Moll 2020). There is a growing literature that AI can contribute to the recolonisation of Africa which warrants calls for decolonising AI or decolonial AI (Mhlambi & Tiribelli 2023; Onwughalu & Ojakorotu 2020; Zembylas 2023).

Adams (2021:180) in the article *Can artificial intelligence be decolonized?* explains that decolonial thought challenges the racial and colonial biases in AI, aiming to dismantle the power dynamics and exclusionary practices that prioritise Western reason, while advocating for alternative ways of knowing, living and resisting. We are at another critical point in history with the development of emerging technologies in the Fourth Industrial Revolution (4IR or industry 4.0) such as AI. The essential concerns of AI in Africa are whether it will continue to entrench Western hegemony in the development and deployment of AI on the one hand, and the continued dominance of Western epistemologies on AI ethics on the other hand. Adams (2021:179) refers to coloniality as the 'Janus-face' which is a Greek deity with two faces, one

looking backwards and another one looking forward. In this context, coloniality denotes the Janus-face of modernity and capitalism: colonialism is the driving force behind the interconnected ambitions of modernity and capitalism.

Technology as power influences decisions, behaviour and connections are determined by data analysis using sophisticated statistics and forecasting models. At the centre of the power of AI is data. Milan and Treré (2019:320) assert that these data are informed by Western modernity and subsequently, global capitalism which are both continued historical processes that suppress and devalue knowledge as well as the distinctive methods of knowing of the Global South. Ricaurte (2019:351) states that epistemologies which focus on data can be seen as an expression of colonial power, involving the forceful imposition of ways of living, thinking and feeling which results in people being excluded from society, while negating the possibility of alternate perspectives and endangering life on the planet. The implementation of AI in predictive policing, algorithmic sentencing, facial recognition, resource allocation, surveillance and hiring, all demonstrate a racialising and colonial perspective (Benjamin 2019:63; Zembylas 2023:25). Research in this domain has coined terms such as 'data colonialism' and 'data capitalism'; data can be regarded as a commodity, with its history of colonialism and capitalism. This notion emphasises the continuous presence of data throughout history and its utilisation for economic growth (Thatcher, O'Sullivan & Mahmoudi 2016:993; Zuboff 2019:5). Mohamed, Png and Isaac (2020:665) further developed the concept of 'data colonialism' into 'algorithmic coloniality' which describes how algorithms affect resource allocation, human behaviour and discriminatory systems across societies. It also looks at how coloniality is manifested in algorithmic decision-making, such as the creation of labour markets and the alteration of geopolitical power dynamics and ethics discourse.

This section has deliberated on technology as power and its impact in Africa since the first industrial revolution. Next, we will deliberate on the importance of African ethics in the context of AI in Africa.

African ethics in the context of artificial intelligence

Gaffley et al. (2022) state that the incorporation of AI in African society necessitates a distinct African stance that considers African contexts, experiences and values. This is necessary to avert potential damage to African communities. To do this, interdisciplinary knowledge creation and comprehension of AI with ethical values and human rights in Africa is vital. There is a gap between those with the development and deployment power of AI and those without, which could lead to more inequality between Global North and Global South countries. It is not only the development and deployment of AI but also a gap regarding the development of AI ethics and regulations globally (Gwagwa et al. 2020:4).

The influence of developed countries in developing AI policies and strategies may be the continuation of Western hegemony. This is in part because the majority of the AI policies and strategies that are considered global emanate from the Global North. Brokensha et al. (2023:6) argue that it is not only the presence of the Global South that is excluded but also their indigenous knowledge systems and values. These include indigenous ethical perspectives from the Global South. Hogarth (2018) suggests that AI superpowers are controlling AI-related policies and regulations without taking into account the specific circumstances of African nations. He refers to this phenomenon as 'AI nationalism'. A point in case is that the government of France held an international meeting, the Global Forum of AI for Humanity, in late 2019. Unfortunately, the event lacked the voices of the Global South such as Africa, Latin America and Asia (except Japan) (Gwagwa et al. 2020:16).

This article focusses on the African context and when it comes to AI ethics, African epistemologies should take precedence. Another important aspect is for African ethics to take into consideration the impact of technology in Africa historically. However, there are challenges when it comes to AI ethics in Africa. Brokensha et al. (2023) argue that Africa is home to 54 countries, about 1.4 billion people, 3000 ethnic groups and 2000 languages, making it a highly diverse continent. A single, unified AI strategy would be both impractical and presumptuous because of this diversity. Additionally, a standard set of ethics guidelines would fail to recognise the importance of diverse voices in tackling the risks and benefits of AI. It would also ignore the ever-changing complex correlations of the continent. Metz (2011) problematises it further that he disagrees that the values governing technology must be those held by society's majority. Everyone in a society may not share the same values. Another aspect of values is that values based on the majority in society are how history has shown us that the majority can be wrong, such as with slavery in the 19th century. Instead, Metz believes we can learn from the African ethical perspectives, as any philosophical tradition likely has something to offer. Eke and Ogoh (2022) assert that many cultures exist in Africa, but it is frequently oversimplified and treated as homogenous. This overlooks the various AI ethics and governance questions that come up.

Although AI has an impact on different industries in society, the section 'Ubuntu ethics and artificial intelligence' focuses on the ethical implications of AI on humanity, spirituality, and the environment in South Africa specifically and African in general.

Ubuntu ethics and artificial intelligence

South Africa currently does not have a specific national AI regulation in place. It was only in January 2020 that the Presidential Commission on the Fourth Industrial Revolution (PC4IR) released its Summary Report and Recommendations,

offering insight into the 4IR, its potential consequences for South Africa and suggested actions to take in the future. This report includes a strategy for AI (CAIDP 2022; PC4IR 2020). The importance of the PC4IR report is that it focusses on regulation, ethics and cultural aspects of the Internet, as well as technological developments such as sense-making, AI, robotics, autonomous systems, the Internet of Things, and cloud computing. It provides a strategy for industrial development, aiming to ensure ethical and transparent use of these new technologies (PC4IR 2020). At the behest of the context of South Africa lies structural challenges such as unemployment, poverty, inequality and the digital divide. Should these structural challenges not be addressed, AI may exacerbate these challenges. Although the PC4IR mentions ethics, it does not provide the epistemology of the said ethics or its approach. There is thus a need to foreground ubuntu ethics to mitigate the risks of AI holistically for humanity, spirituality and the environment in the South African context.

The holistic ubuntu ethics approach includes (1) humanity, which comprises our relations as human beings rooted in human dignity; (2) spirituality, which comprises the relation of the Supreme Being (God), the living, and the living dead (ancestors); and (3) the environment, which comprises our relations with the land, sea, sky, nature and animals. The premise of the holistic ubuntu ethics approach is that the human is not the centre of the universe but is part of the universe and everything in the universe is in relation and significant. Ramose (2005:56) attests that in African philosophy, individual identity is seen as part of a larger whole, rather than being defined by a single characteristic. This belief does not reject the reality of a person's limited existence but instead stresses the value of community in helping to comprehend one's own identity and the environment. Ubuntu ideals are being re-evaluated as Africa seeks ethical principles and values to aid in the formulation of models of development and wealth creation within a neoliberal and globalising framework (Dolamo 2013:1).

The concept of ubuntu is thus not static but its essence of humanity is at the core. Ramose (2005:36) argues that it is the process of being which signifies motion. It implies that ubuntu cannot be 'fully attained' but it is a process of becoming more humane. The emphasis on 'humane' may imply that ubuntu is anthropocentric. LenkaBula (2008:378) argues that ubuntu should be understood as beyond anthropocentric because humans have an ontological, socio-political, economic, ecological and religious relationship with themselves and the environment. This connection highlights the inseparability of human life and ecological life, proving that humans cannot exist without ecological systems. This indicates that ubuntu is more holistic than it has been previously presumed.

As much as ubuntu is argued to be an appropriate ethic in this article, it has several critiques that view it as indigenous, utopian, romanticist, idealistic, universalistic and even vague (Marx 2002; Metz 2011; Richardson 2008; Van Binsbergen 2001).

These critiques of ubuntu are warranted. However, it has to be reiterated that ubuntu is not static or a concept that is stuck in the past (Letseka 2012). The essence of ubuntu in this article is human dignity, ecological conservation and spiritual freedom. It must be stated that although ubuntu is indigenous in Southern Africa, it regards that all people have inherent human dignity (Dolamo 2013). The communality of ubuntu takes into cognisance the diversity of individuals within the community and the wellbeing of the community is essentially the wellbeing of the individual. Nation-building is complex, especially in the South African context, where there is a history of colonisation and apartheid. A process of learning to treat each other with human dignity and unlearning all forms of subjugation, injustice and inequality is required to uphold ubuntu. Ubuntu's acknowledgement of plurality and diversity prevents it from being universalistic. In other words, despite cultural, racial and religious backgrounds, ubuntu takes into cognisance the inherent human dignity and a way of life that regards human dignity. This does not imply that ubuntu is utopian, but that justice, solidarity and equality are essential to ubuntu. At the centre of ubuntu is justice for the dehumanised, excluded, vulnerable, abused, poor and discriminated. This also responds to the notion of ubuntu being vague and inadequate to modern society as it is aligned with human rights and the Bill of Rights in the constitution of South Africa (Metz 2011). The most essential thing that is recommended is for ubuntu to self-critique to overcome its shortcomings and to be more impactful. Emerging technologies such as AI have not only impacted on our socioeconomic structures but also our humanity, spirituality and the environment. Therefore, it requires a holistic ethical approach to emerging technologies. Although ubuntu ethics and AI in humanity, spirituality and the environment will be discussed separately in this section, it should be understood that they are interconnected and holistic in African life and ethical epistemology.

Ubuntu ethics and artificial intelligence in humanity

The historical context of South Africa which includes colonialism and apartheid reduced Africans to cheap labour and exploitation (Moll 2020). Africans were thus regarded as 'sub-human' which justified the conquest. Ubuntu ethics recognises the past and analyses patterns of the past in how they impact the present. The main tenet that ubuntu ethics asks is the question of human dignity. There is no use for advancements in technology if they are developed to disregard human dignity. The previous industrial revolutions came at the cost of human dignity as modernity with capitalism exploited and dehumanised Africans. The 4IR may either be a curse of the previous industrial revolutions or it can address the problems that face South Africa (Benyera 2022:1). Although the benefits of AI may be there, it may widen the inequality gap even wider as South African economy is still based on farming, mining and the informal sector (Sutherland 2020:234). It is essential for South African companies and policymakers to not just contemplate technical solutions but also pay attention to the social and

economic implications of AI (Ormond 2023). The premise of ubuntu ethics is that human beings are more important than AI technologies.

Post-1994, in a democratic South Africa, the majority of Black Africans are still living in poverty and faced with challenges of unemployment, violence and the digital divide. When it comes to the digital divide, there is a lack of information and communications technology (ICT) skills as also fundamental skills such as reading, writing and comprehension (Sutherland 2020:235). Apart from that, those with access to the Internet and digital devices may be considered more human than those without as most things in today's life are digital. Internet data are expensive in South Africa and there have been public calls such as #DataMustFall to reduce prices as well as advocating for Internet data to become a basic human right (Moyo & Munoriyarwa 2021). There are also digital infrastructure challenges as there are marginalised areas with a lack of or no network coverage. Ubuntu ethics take into cognisance the digital divide and seek to uplift marginalised communities to be connected to the Internet. Ubuntu advocates for initiatives that can benefit the community and promote community development to address individual and communal needs (Chigangaidze 2022:291). As AI is incorporated into the South African context, it poses a unique challenge as automated decision-making can reinforce historic stereotypes, discrimination and exclusion in hiring processes, healthcare, insurance, surveillance and creditworthiness (Erastus 2021).

Ubuntu ethics and artificial intelligence in spirituality

As mentioned earlier, spirituality in African theology comprises the communal relationship of the Supreme Being (God), the living, and the living-dead (ancestors) (Mangena 2016:68). According to Mbiti (1991:19–30), African spirituality can be found in art and symbolism, music and dance, proverbs and riddles, names of individuals and places, myths and legends, beliefs and practices. It should be noted that African spirituality is plural, diverse and depends on ethnicity (Chiorazzi 2015). Ramose (2005:56) attests that African spirituality is a lived experience of the reality of the feelings of immanence and transcendence in the lives of African people. Masango (2006:942) expands it further that African spirituality is holistic in the life of Africans and encompasses all facets of life in society, economics and politics. An African spiritualist's growth is shaped by ubuntu, or humanness, which creates an intimate relationship between their identity and actions. This process of ubuntu is fostered in the community (Masango 2006:930). African spirituality is what shapes ubuntu ethics as it influences behaviour and activities which may be difficult for those outside of this spirituality to understand (Kobe 2021:6).

African spirituality in the South African context has been disrupted and suppressed by Christianisation wrapped in colonialism (Kobe 2021:4). Colonists, traders and missionaries had a major impact on the African people and their concept

of ubuntu or humanness. These changes included both positive and negative elements, such as the introduction of Western science and technology, but also the alteration of African self-perception (Dolamo 2013:5). Vellem (2015:3) argues that there are three models of the church in South Africa namely the settler, missionary and struggle churches. The settler model is related to churches that catered to European settlers in South Africa, while the missionary model includes churches established by missionaries in African communities. The struggle model comprises churches established by African people in response to the deficiencies of the settler and missionary models, such as the Ethiopian Movement and African Initiated Churches (AICs) (Vellem 2015:3). Steve Biko's critique of the missionary church in African communities was that it fostered division between those who adopted Christianity and those who did not. It introduced a rigid Christian culture that was incompatible with indigenous beliefs and practices, leading to contempt and suspicion for those who did not convert to Christianity. This in turn created a playground for colonialists to exploit (Biko 1978; Kobe 2021:3). The AICs became the foundation of African theology and subsequently South African Black Theology of Liberation (BTL) and African women's theologies. In African theology, cultural liberation is a key focus, while BTL prioritises political and economic liberation. However, this dichotomy has been challenged, as it fails to encompass the continent's diverse and rich theological history. Both theologies are concerned with culture and socio-economic politics as it is interlinked (Maluleke 2005:486). African women's theologies on the other hand are concerned with how African women reinterpret culture and religion to empower women (Fiedler 2017:10). African women's theology was catalysed in 1989 by Mercy Oduyoye, Letty Russel and Brigalia Bam. These three established the Circle of Concerned African Women Theologians (CIRCLE), which has since been a major force in the field (Maluleke 2022:4). Kobo (2018:3) argues that South African Black women 'have suffered triple oppression of race, class and gender, and their struggle to challenge the patriarchal culture of subordination'. This triple oppression is continuing in the current times. At the heart of African theology, BTL and African women's theologies are the advocacy for the liberation of African spirituality vis-à-vis African Christianity. African spirituality as a field of study has laboured to challenge the misconceptions of African spirituality from the colonial past and redefine it in their own way (Aderigbe 2022:30).

The impact of AI on spirituality would be the over-reliance on AI to solve problems. The practices of technology, which are tied to materialism and the rejection of altruism, are the fastest-growing religion, with humans placing indefensible trust in it, believing it can solve all problems (Fourie 2020:35). Waters' (2015) *Is technology the new religion?* asserts that trust in technology disrupts our relationship with God and the community. We may be in awe of technology but must not commit idolatry or put our faith solely on technology and shift our focus from the complex and wonderful creation of God (Fourie 2020:36). African spirituality emphasises human

relations to be present in the lives of others to recognise the poor, marginalised and discriminated, and to show compassion. African spirituality cannot place trust in what is AI as it is only an imitation of what is human but cannot embody humanness. Trust in African spirituality is placed on God, healthy relations in the community and taking care of the environment. Humanness is developed within a community (Masango 2006:938). This is more illustrated in the phrase 'it takes a village to raise a child' which emphasises that relationships are essential in the development of spirituality in the community (Masango 2006:939).

Ubuntu ethics and artificial intelligence in the environment

It has already been argued that ubuntu is not anthropocentric but extends to spirituality and the environment (ecology) as well (Chibvongodze 2016; LenkaBula 2008:375). LenkaBula (2008:390) explains that ecology generally refers to the various values and activities of a thriving natural system, be it local, global or cosmic. It is often used interchangeably with the term 'environment'. Ramose (2005:108) asserts that wholeness includes human beings and the environment; taking care of nature implies taking care of ourselves. Human beings cannot exist outside of nature, we depend on nature and that dependence requires us to take care of nature. Du Plessis (2012:15) concurs that humans are 'an integral part of nature and partners in the processes of co-creation and co-evolution instead of being merely users or clients of various ecosystem services'. Humans must recognise their interconnectedness with the environment and other beings. This will lead to a greater understanding of the importance of reducing environmental problems and preserving the lives of both humans and animals. It is essential to realise that our individual lives are inextricably linked with others and the environment. Consequently, we should strive to protect and preserve the habitats of both humans and animals (Samuel 2023:14). Ubuntu thus emphasises the relationship between humans, spirituality and the environment. In African culture, there is a deep respect for nature, viewing it as a symbol of the Supreme Being. This understanding prompted Africans to nurture nature, rather than subjugate it. Before a tree was cut down or an animal was to be slaughtered, for example, rituals were often performed. This connection to the earth was seen as essential, forming part of their spiritual practices (Masango 2006:941). Samuel (2023) asserts that:

> When humans treat the habitats of nonhuman beings as something detached from them, especially when people exclude their habitats from the conception of what counts morally, this might prompt the exploitation of water, rivers, forests, and trees that are constitutive of their belonging in the world. (p. 13)

Although AI is improving in terms of learning and generating language, training AI models such as Generative Pre-trained Transformer (GPT-2) and Bidirectional Encoder Representations from Transformers (BERT) requires large finances and has environmental impacts. The computational hardware emits about 284 000 kilograms of carbon dioxide, nearly five times the carbon footprint of the average automobile, including its manufacture. Artificial intelligence models also require a

substantial amount of electricity to train them (Hamilton 2023; Hao 2019; Strubell, Ganesh & McCallum 2019). Since then, AI models such as Big-Ass-Roaming-Database (BARD) or GPT-3 and GPT-4 which have improved drastically have made more use of electricity and increased the carbon footprint. Another environmental issue with AI models is the large use of water to keep data centres and servers cool. All the data that is required to train AI models is stored in data centres, therefore the 'cloud' as we know it is a physical place (Hamilton 2023). According to Li et al. (2023), freshwater scarcity is a major issue because of population growth, dwindling water resources and ageing water systems. Artificial intelligence models should lead by example and take responsibility for reducing their water footprint. Data centres make use of massive land, water and electricity to store data and train AI models while land, water and electricity are fundamental challenges for many people in the world. The notion of ubuntu ethics and AI for the environment requires a rethinking of AI models to be beneficial for society and not cause harm to the environment on the other hand.

Conclusion

Although this article has deliberated on ubuntu ethics and the impact of AI on humanity, spirituality and the environment, it was done from a broad sense; there is still more to be explored regarding the impact of AI in South Africa specifically and Africa in general. Theological doctrines are being challenged by the rise of emerging technologies such as AI which necessitates theological reflections. It has been deliberated that ubuntu ethics need to emphasise the historical impact of technology in Africa to have a better understanding of the impact of AI on humanity, spirituality and the environment. Ubuntu ethics does have limitations, but it is necessary to self-critique for it to develop in a fast-evolving AI world.

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