

Association for Information Systems

## AIS Electronic Library (AISeL)

---

GlobDev 2021

Proceedings Annual Workshop of the AIS  
Special Interest Group for ICT in Global  
Development

---

12-12-2021

### Digital Health and Africa: an emerging narrative

Gertjan van Stam  
gertjan@vanstam.net

Follow this and additional works at: <https://aisel.aisnet.org/globdev2021>

---

#### Recommended Citation

van Stam, Gertjan, "Digital Health and Africa: an emerging narrative" (2021). *GlobDev 2021*. 11.  
<https://aisel.aisnet.org/globdev2021/11>

This material is brought to you by the Proceedings Annual Workshop of the AIS Special Interest Group for ICT in Global Development at AIS Electronic Library (AISeL). It has been accepted for inclusion in GlobDev 2021 by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# Digital Health and Africa: an emerging narrative

Gertjan van Stam

Masvingo, Zimbabwe

gertjan@vanstam.net

## ABSTRACT

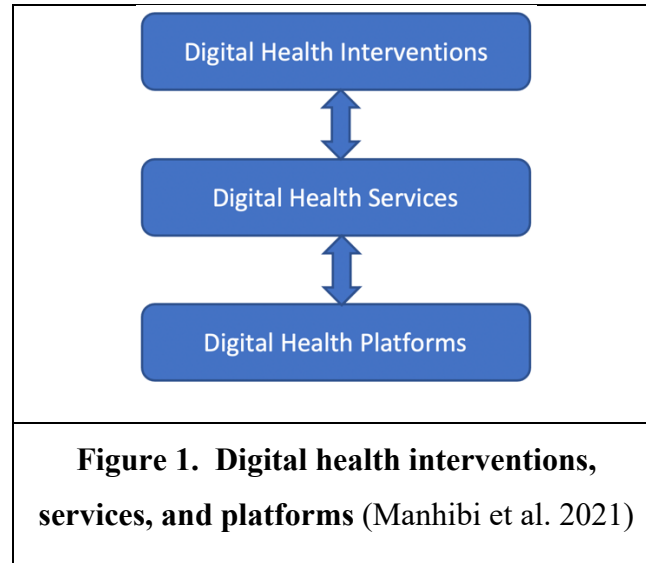
The potential and use of Information and Communication Technologies (ICT) to cater for digital health depend on the context and its meaning-making. Therefore, the concepts and materialization of digital health in Africa are specific for Africa. This transdisciplinary and reflexive paper introduces and positions African particulars pertaining ICTs and an emerging narrative of digital health in Africa. The narrative pivots decentering and the necessary interplay of African community engagement, workforce enhancement, and thought leadership as the means towards inclusive and embedded digital health interventions in Africa.

## INTRODUCTION

Digital health is a field of knowledge and practice for designing, implementing, and using digital technologies – information and communication technologies (ICT) – to improve health and health systems. Digital health expands on the concept of eHealth, which is defined as the cost-effective and secure use of ICTs in support of health and health-related fields, including healthcare services, health surveillance, health literature, and health education, knowledge and research (World Health Organization 2004). Digital health includes all users of ICT and an ever-expanding range of smart devices and connected apparatus. These consist of all digital technologies deployed for health outcomes, such as the Internet of things (IoT), artificial intelligence (AI), big data, and robotics (World Health Organization 2020). The common denominator in all of this is health. Over time, the word digital will fade away when digitalization and ICTs are omnipresent in health. However, this is not yet the case in Africa.

Digital health crystalizes in the implementation of digital health interventions. These interventions are supported by digital health services, which are discrete functions of digital

technology, otherwise called applications. In turn, digital health services are sustained by digital health platforms (see figure 1).



In 2019, the World Health Organisation (WHO) provided comprehensive categorizations and recommendations for digital health interventions (World Health Organization 2019). However, the contexts for digital service provisioning as found in Africa are among the exclusion criteria for most WHO digital health recommendations, primarily due to limited ICT availability.

Digital health interventions, and especially the data involved, are of keen interest to stakeholders on many levels: local, national, regional/continental, and international (Abdullahi et al. 2021; Ibrahim et al. 2021).

Technology-wise, digital health incorporates ICT systems and channels that facilitate the delivery of digital health interventions and content for health support (World Health Organization 2019, p. xiii). Although technical discussions often frame digital health, the primary narratives should be human-centred (Figueroa et al. 2021; Mawere and van Stam 2020a).

The African contexts are particular and prone to be at variance with those from which Eurocentric theories on digital health have emerged (Grosfoguel 2002). Theory on digital health from African contexts, however, is scarce. 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 (Burawoy 2009; Hlabangane 2018; Ndlovu-Gatsheni 2015). Digital health in Africa, like in any other locality, needs contextual thinking, concepts, and language for it to be inclusive (Mawere and van Stam 2016; Du Plessis et al. 2013; van Stam 2017a) 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. This paper aims to contribute towards the addressing of this void.

## **METHOD**

This transdisciplinary paper derives from observing and reflecting on developments regarding digital health on the continent of Africa, signalling how it materializes and deviates from uniform, global developments. The author studied extensively from within both African locations of plenty and those within which digital deprivation and infrastructural struggles are strife (hooks 2014; van Stam 2011, 2019). A narrative is drawn from over 20 years of reflections on those observations, experiences, and derived understandings of the author, living and working in health care environments and from rural areas in Zambia and Zimbabwe. The reflections are informed by human intercultural encounters and philosophical sagacity (Mosima 2016), framed in a glocalization of ICTs. In the process, the author reflected on theories, practices, knowledge guiding digital health developments set in both generalized (predominantly Eurocentric) propositions and local understandings. This work benefitted from a transnational framework developing exercise during 2020 (van Stam 2020a) and the use of Burawoy's (2009) extended case method. Thus, the paper is contextual, subjective (following du Toit (2007)) and challenges universalized development framings that appear to define the field of digital health.

The paper presents derivatives at the intersection of digital health and Africa. From these, the paper proffers a digital health narrative augmented with a reflection on the use of Information and Communication Technologies from Africa. It foregrounds the issue of privacy as an incongruency example. The emergent views are framed and discussed to inspire further explorations. The paper draws extensively from works from Africa, cited for readers to study situated concepts and positions.

## **DIGITAL HEALTH AND AFRICA**

Beneficiaries of digital health include among its users African governments and government ministries, departments and agencies, community-based organizations, enterprises, universities, and non-governmental organizations,

Woermann and Engelbrecht (2019) argue that African foci on harmonious social relations, shared identity and solidarity does not align with the libertarian foundation of stakeholder theories. Subsequently, they posit a relationholders approach that focuses on inclusivity, ethical connections, and moral obligations to give all persons their due. Digital health, however, is primarily conceptualized in a world of stakeholders, individual users, and ubiquitous computation, which is a world misaligned with many African contexts where people strive for sustainable communities (van Stam 2021a). In Africa, digital health involves language and views from at least two perspectives: those from international and local settings. As with the development of 5G communication technologies, in digital health developments, the African voice is subalternised (van Reisen et al. 2017).

In a world changing through digital transformation, African health actors and ICT service providers connect with, and improve upon, digital health and its interventions. An embedded workforce is equipped to utilize underlying systems and harvest the benefits they can cater for. Like in Europe, in Africa, data- and technology-sovereignty issues are becoming pregnant battlefields (Mawere and van Stam 2020b). African experts indicate that digital health narratives and practices necessitate contextual understandings and augmented reports that alter the centre of gravity in the development of digital health to the local and national settings (van Stam 2021b). African specialists must lead system integrations utilizing African philosophies, aligned with African needs, using African resources (Adamu 2021; Bidwell 2016; Khoza 2005).

African measures of success can be (far) removed from Western or other extant ideas or models aimed at 'development' (Mawere 2017). Measures of success vary according to contexts and are diverse within the sizeable African continent, its countries, and communities. Furthermore, the way digital health is approached and understood in Europe, the US, or China is not common in the same manner in many parts of Africa. Context, skills, and cultures are diverse and significantly affect technical realities (Johnson and van Stam 2016).

Hegemonic narratives of digitization and the use of ICTs are synonymous with a widening of inequalities (Eubanks 2018). Some of the central needs underpinning action across cultures are justice, health, and education for all. Sensitive narratives support an African embedded imagining of digital health and its supporting ICTs that leaves nobody behind (Adamu 2021). Such an orientation aligns with local views and demands, addresses global systemic concerns (Southern Voice 2020), addresses ecology and, thus, holistic sustainability, and seeks to decolonize and withstand plunder from the dominating and colonializing systems of digital empires and superpowers. Reimagining involves an ever-widening and optimistic view of African progress (Brijmohan et al. 2021).

The recognition of possibilities and opportunities often occurs where and when a public least expects them. For instance, inclusive digital health in Africa could leapfrog like telephony, where digital phone services became ubiquitous without a preceding widespread use of landlines (Odumosu 2018).

Imported digital health systems and services can conflict with African philosophies and values (Adamu 2021; Amare et al. 2021; van Stam 2022) or hamper sustainability (Chawurura et al. 2020). When applied indiscriminately, ICTs can lead to discriminatory and unfair practices with undesirable social implications (Mawere and van Stam 2020a). The lack of infrastructure (the so-called ‘digital divide’) and lack of (affordable) access (so-called ‘digital exclusion’) are among the most pressing issues affecting digitalization in health (Broadband Commission 2019). For the digitally connected, many – often new and imported – ethical issues are at play. For instance, ICT can facilitate adverse incorporation (Heeks 2021). This mechanism operates “when powerful, connected people command resources from which they draw significantly increased returns by coordinating the effort of outsiders whom they exclude from the full value added by that effort” (Tilly 1999, p. 10)(van Stam 2020b). Therefore, digital health implementation involves a careful assessment of its advantages and disadvantages and a debate on insights into the challenges that digitization in health and the use of ICTs entail in Africa.

Local modalities significantly affect the adoption and respectful integration of technologies and interventions (Nwankwo and Sonna 2019; van Stam 2021c). Valuing and mainstreaming African achievement and knowledge enterprises support processes of embodied knowing in African communities (Mawere and van Stam 2020a). Such *knowing* results from conversations and the

culmination of insights (Mawere and van Stam 2017). The alignment of understanding of the purpose, value, and meaning of digital health and the local benefits of underlying ICTs is crucial for fruitful collaborations between communities, practitioners, and digital health specialists. However, the dissemination of African research and understandings is severely hampered in many ways, among which the real and present difficulty to contribute to mainstream and indexed literature (Jeater 2018). Furthermore, captive minds from Eurocentric higher education negate non-Western knowledge and restrict research and development beyond their universalising framings (Alatas 1974).

## DIGITAL HEALTH IN AFRICA

Digital health in Africa goes beyond a focus on the availability of functionality through the provision of physical ICTs in the form of infrastructure, equipment, and services. Instead, it involves a much more comprehensive range of issues – a relationality to be understood as a whole (being social, economic, technical, moral, and metaphysical) (Metz 2018).

There exists a rift between normative views and dynamic-integrative perspectives (Bigirimana 2017; Dussel 1993). Normative thought seeks certainty and indubitable and infallible truths. As a result, *knowledge* related to ICTs supporting digital health is often positioned as objective and universal: an accurate representation of the *real* world. Subsequent efforts boil down such knowledge into formulas, which, in turn, are the tools for mechanical, computational efforts (Bigirimana and van Stam 2021). This scheme fuels many activities in an ICT-facilitated, globalised digital health. However, *knowing* aligns with a dynamic, integrative view of epistemology or meaning-making in many parts of Africa. Here, *what is known* emerges from the accumulation of ever-evolving insights, where the knower is actively engaged in experiencing, understanding, judging, and acting. *Knowing* is a communal activity, not an activity of isolated minds, and involves emotions, intellect, evaluation and pragmatism (Mawere and van Stam 2017). For digital health and its underlying ICTs to be relevant in Africa, a break with universalizing epistemological frames appreciates such contextual, embodied knowledge – *knowing* – in its many formats. However, a translation and re-framing of African realities to fit exogenous definitions and philosophies marginalize African perspectives (Du Plessis 2015). Locally aligned theories set in African understandings of digital health and framings of ICTs are sensitive to history, context, and culture. Such sensitivity is crucial for respectful and inclusive

engagement, education, implementation and maintenance of digitalized health services for sustainable progress in African places.

## **INFORMATION AND COMMUNICATION TECHNOLOGIES**

Digital health is inseparable from technologies that digitize, compute, and transmit information. Computers and information and communication technologies (ICT), especially in conjunction with the Internet, are transforming tools in health practice. ICTs provide the conduit for data-handling and information transfer, just as electricity lines are the conduits for power and roads the conduits for transport.

Despite urbanization, in Africa, most people live in rural areas (Kozma 2006). A digital divide and digital exclusion can exacerbate the inequalities between people if access to technology is not holistically addressed (Chief Chikanta and Mweetwa 2007). Huge disparities in access to resources and denying local expressions are undesirable and socially destructive.

The global impact of ICTs and computing devices, which are widely available, is enormous (Nyamnjoh 2009); It is generally believed that opportunities for progress cannot be harnessed without them (Kabanda 2012; World Health Organization 2016). In the wake of this belief, information and communication industries and related intellectual property are at the centre of geopolitical and legal wrangling (UNCTAD 2019). Intellectual property is among the most important ways to gain income from ICTs in Euramerica. Industries try to have mechanisms described as their intellectual property included in standards. Standard-essential patents are an important, almost guaranteed, source of rent and closely guarded by major industries and (Western) countries. Thingifying intangibles to own and sell is a philosophy of reification and commodification that has not served Africa well (Metz 2020; Mukuka 2010). Thus, the sensitizing, initiating, implementing, operating, and scaling up of digital health in Africa involves an intimidating array of philosophical, social, political, and economic views and issues. Although stories of digitization seem intrinsically connected with ICT machinery, gadgets, and engineering, the understanding of human interaction is inherently socially constructed (Buskens and van Reisen 2016). Eclipsing technology considerations, many philosophical and qualitative issues are crucial in the deployment of digital health. Among these issues are the constraints in physical environments, the availability of a wide range of skills, and cultural aspects (Johnson et al. 2012). There are few digital health guidelines or strategies from Africa that include or inform



digital health practitioners about how to comprehensively act upon the social-technical issues current in their African environments. An academy governed by Eurocentric framings of challenges and solutions (informing subsequent measurement and evaluations) provides little guidance in Africa. Such an academy is disconnected from the realms of African understanding, African needs, and African capacity (Krauss 2012; van Stam 2019).

Almost all writings on digital health appear to come *from outside of Africa*, and there is a dearth of inputs from Africa (Minges 2008). One just wonders *to whom* the authors of publications *for Africa* write when they present the needs to be targeted, propose the techniques and approaches to be followed and suggest the solutions to be implemented in Africa (Ahmat et al. 2014). In the meantime, in Africa, there appears a growing resentment towards imperially-inspired and patronizing ‘bringing development’ approaches, with built-in agendas set by foreign gatekeepers. It is generally acknowledged that *development approaches* proposed and executed over decades have not measured up to expectations and promises in Africa and outside of Africa. Moreover, many digital health solutions are firmly set within capitalistic market mechanisms as engines for development (Moyo 2009) and growth through innovation, which are framings far removed from many African settings where economic activities are intrinsically intertwined with, and motivated by, relationship building and continuities (Sheneberger and van Stam 2011; van Stam 2017b).

### **AN EXAMPLE: PRIVACY**

Sovereignties matter. However, how they matter differs per context, per application, thus, per situation. In the context of a discussion on engagement with artificial intelligence in Africa, Nwankwo and Sonna put it thus: “Privacy in Africa is not the same as in the Western world. Privacy takes on a new meaning and, in some cases, it might even be non-existent. In village communities, where generations of families live, privacy is a foreign concept.” (Nwankwo and Sonna 2019, p. 47) The dynamism of issues about privacy is central in studies on COVID-19 pandemic digital contact tracing apps (Kahn 2020). Researchers of Johns Hopkins University provide indications on ambivalence, “[we] advise that privacy should not outweigh public health goals and other values; that big technology companies should not unilaterally set terms when such broad public interests are at stake; and that decisions about the technology and its uses will have to be constantly updated as new information becomes available.” (Kahn 2020)

## AN EMERGING NARRATIVE: DIGITAL HEALTH WITH AFRICA

Respectful engagement with digital health starts with ‘how we talk about digital health’. Narratives of modernity (Dussel 1993) and dominant eurocentrism (Grosfoguel 2011) concealed or misrepresented the needs and capacity in a so-called Global South. The sustainability of digital health depends on its social, political and physical alignment with African contexts (Keja and Knodel 2019; van Stam 2022). During 2020, a group of experts from highly diverse environments (including Burkina Faso, Dominican Republic, India, Switzerland, and Zambia) contributed in workshops, provided answers in surveys, held online meetings, and participated as persons set in communities in the South. The outcomes of their input on digital health were adopted by Non-Governmental Organizations working through Medicus Mundi (Medicus Mundi Switzerland 2020).

The emerging narrative pivots around the theme of *decentering*. Decentring counters the hegemony of so-called universal truths that neglect the diversity of experiences. It problematizes data extraction, the threat of surveillance, and economic exploitation, questions never-ending pilots, lock-in technologies, extortive licences, and the transfusion of dependencies in digital health. De-centring focuses on ethics, philosophies, and the value of *being together*, changing contemporary practices and orientations in international cooperation from us-we-know to both-we-know.

Inclusion and participation are essential elements of *community engagement*, which is the political dimension of de-centring. Engagement thrives on inclusion, shared values, and shared purpose. In digital health, community engagement enables co-development, the hallmark of sustainability and humanity (Alston 2019). In this, community members are the channels of development, harnessing local resources from conceptualization through to the moment of realization. Handing over projects becomes needless when ideas, designs, and implementation are already socially embedded in communities. Community engagement involves dynamic and integrative approaches (Bigirimana 2017), focuses on local agency, seeks reciprocity, and needs a healthy dose of conviviality and stamina (Nyamnjoh 2015).

*Workforce advancement*, the practical dimension of de-centring, recognizes, kindles and expands local capacity to develop digital health. This advancement thrives on a love of humanity, commitment to respectful dialogue and empathy, and alignment with local meaning-making,

norms, and values. Enhancing the African workforce emancipates the African economy (Sheneberger and van Stam 2011). Crossing disciplinary boundaries, including polyvocality, diversity, multiple perspectives and experiential data, scoping across all stake- and relationholders and facilitating indigenous ways of addressing digital health debunks constructed bifurcations and narrow assumptions.

*Thought leadership* enacts the ethical dimensions of de-centring. It puts on display what is known and how it is enshrined in embodied knowledge. Through thought leadership, communities of practice contribute to conversations in international health cooperation, influence public policy, and use relevant experiences to complement the skills of health professionals. Thought leadership discloses local knowledge, resulting from evaluation in situ. It guides other communities and on digital health practices. Thought leadership is the key to social innovation and the transfer of embodied knowledge and solutions to other communities. It puts local capacity on display and inspires by validating digital health interventions' enabling and empowering aspects.

## DISCUSSION

When one approaches digital health abstractly, as being positioned as *something* from *somewhere*, it becomes possible to reflect on its African materialization. Such an interpretation ranges from 1) its description, 2) its interaction, engagement, and representation, and 3) its incorporation in the present (Ricoeur 1965, p. 48). A reflection positioned in this way is fruitful, as it situates thought within African culture and African philosophy (Metz 2021; Okere 1983). Therefore, the priority of using Eurocentric conceptions of ICT in Africa is problematic, as it is inadequate to capture or understand African realities (Ahmed 2020; Mawere et al. 2019; Nyamnjoh 1996). For instance, Eurocentric understandings of 'borders', 'rural areas', and even modalities like 'access' appear to be used without recognizing a colonial past. Extant views often constitute imagined communities (Anderson 2006) and practices in which imported definitions and categorizations are used to maintain colonial power (Mamdani 2012; Mbembe 2019). Furthermore, linguistic difficulties add to the complexity and apprehensions regarding the value of many contributions to the body of knowledge for digital health practitioners in African settings.

It is challenging to import exogenous definitions of development in Africa. Development theories, espoused by Eurocentric academia, have primarily centred on economic growth and industrialization paradigms (Dussel 1993), with various perspectives that have morphed from colonial economics in the mid-19<sup>th</sup> Century, to development economics, modernization theory and dependency theory in the mid-20<sup>th</sup> Century, to alternative and human development and contemporary views of neoliberalism and post-development (Pieterse 2001). These theories foreign to Africa are subsequently forced onto local and national priorities in Africa. They lack African authenticity and aided the expropriation of African resources (Mawere and van Stam 2016; Nhemachena 2016).

In digital health, the default position is a lopsided arrangement, as, from their outset, universalized approaches to and design of ICTs align with colonial intellectual traditions (Dourish and Mainwaring 2012; Lazem et al. 2021). As a knowledge enterprise, computer science seems to solely harvest thought from non-African locations of ICT innovation, planted in egoistic views on the utility of technological developments. As a result, inequalities are exacerbated because of universals, economic-growth fundamentalism, solutionism, and ‘the market’. The private sector is urged to deliver on the interests and needs of the world's poorest people (Deaton 2015; Unwin 2013). Just as structural reform programmes did not lead to the advertised outcomes, a recent history of public-private partnerships has not produced sustainable results in Africa (Southern Voice 2020, p. 47). In the practice of digitization, transnational and oligopolist companies have limited the realms of thought, practice, and possibly even sovereignty (AIV 2020; Mawere and van Stam 2020b). Therefore, in Africa, digital health needs freeing from foreign straight-jackets regarding methods, theories, and practices to recognise situated understandings and locally-led cooperations.

For equal and ethical participation, mutual respect is crucial in conversation. This regard African Engineering Agency and the Informatisation of the World. The case of Big Data and Information and Communication Technologies includes an appreciation of the variety of worldviews and ways of knowing. It is through situated narratives that worldviews become both exposed and established (Salami 2020). The world is too diverse and complex to be explained through a universalized lens. Wholesale ignorance of African points of view contributes to the erasing, silencing, and discrediting of African cultures and ways of knowing.

The effects of digital health interventions are varied. However, they have real implications for the way that digital health is perceived in African contexts. Frameworks, strategies, and programmes for digital health need to recognize the diversity of cultures and the requisite of inclusivity, involving all – also those in out of the way places – in Africa. Ultimately, an inclusive discourse of how ICTs are understood in African places will inform African strategies and policies and inform strategies of glocalization (UN SG High-Level Panel 2020).

For digital health to be relevant and sustainable in Africa,

- a dominant, Eurocentric narrative on ‘development’ and the affordances of ICTs need to be challenged by *knowing* and counter-narratives from Africa,
- African ownership of digital health interventions, services, and platforms will advance sustainable digital health in Africa,
- in situ digital health designs must align with socio-technical realities, challenges, and opportunities in Africa, where experts lead in the production of digital health interventions, services, and platforms from Africa,
- sovereign African expressions of digital health encapsulate the various ways of knowing, ensuring African solutions for African problems and respectful exchange of ideas and skills across cultures and places,
- the appropriation of African (data-)resources must be withstood for equitable relationships managed and directed in Africa by African persons, relationholders, and stakeholders.

## CONCLUSION

An emerging narrative of de-centring digital health facilitates the recalibration of hegemonic paradigms, moving the (Overton) window of which policies are politically acceptable and are constitutive of change in contemporary practices and orientations in Africa. Such a narrative alters the centre of gravity in the development of digital health interventions. It empowers local specialists to lead in complex system integrations aligned with local needs, using local resources. The emerging narrative for digital health caters for stability, inspires synergy and trust, and brings together various perspectives on realities and glocalization. It opens up opportunities for redemption and the use of local capacity, rather than the imposition of digital health systems by

powerful, non-African entities in Africa. Regardless of where they are established, digital health systems benefit from embedded community engagement, an involved and local workforce, and authoritative thought leadership by the communities involved. From such a base, in Africa, digital health systems can bolster health services and bring health systems closer to universal health coverage, engendering good practices in local, national and international health cooperation.

## REFERENCES

- Abdullahi, I., Amare, S. Y., Aktau, A., Ayele, W., Basajja, M., Chindoza, K., Flikkenschild, E., Folorunso, S., Ghardallou, M., Graybeal, J., Jati, P. H. P., Kawu, A. A., Lin, Y., Liu, F., Medhanyie, A. A., Mpezamihgo, M., Musen, M. A., Nalugala, R., Oladipo, F., Osigwe, O., Schultes, E., Stocker, J., Stokmans, M., Taye, G. T., van Reisen, M., van Stam, G., Wolstencroft, K., and Wirtz, M. 2021. “Design of a FAIR Digital Data Health Infrastructure in Africa for COVID-19 Reporting and Research,” *Advanced Genetics*. (<https://doi.org/10.1002/ggn2.10050>).
- Adamu, M. S. 2021. “Rethinking Technology Design and Deployment in Africa: Lessons from an African Standpoint,” in *3rd African Human-Computer Interaction Conference (AfriCHI 2021), March 08–12, 2021, Maputo, Mozambique*, New York: ACM. (<https://doi.org/https://doi.org/10.1145/3448696.3448704>).
- Ahmat, D., Bissyandé, T. F., Klein, J., Le Traon, Y., Ouoba, J., and van Stam, G. 2014. “Sustainable ICT4D in Africa: Where Do We Go From Here?,” in *E-Infrastructure and e-Services for Developing Countries, 5th International Conference, AFRICOMM 2013, 25-27 Nov, Blantyre, Malawi, Revised Selected Papers*, T. F. Bissyandé and G. van Stam (eds.), Springer International Publishing, pp. 95–103.
- Ahmed, S. 2020. “Decentring English through Bilingual Creative Practice,” *New Writing*, Taylor & Francis. (<https://doi.org/10.1080/14790726.2020.1810279>).
- AIV. 2020. *Digitalisation and Youth Employment in Africa*, The Hague: Advisory Council on International Affairs.
- Alatas, S. H. 1974. “The Captive Mind and Creative Development,” *International Social Science Journal* (26:4), pp. 691–700.

- Alston, P. 2019. "Report of the Special Rapporteur on Extreme Poverty and Human Rights," in *United Nations General Assembly, 74th Session*, United Nations.
- Amare, S. Y., Taye, G. T., and van Stam, G. 2021. "Freedom to Operate and Convergence of Tools: The Conundrum of Diversity and Freedom versus Standardisation and Regulation, Experience in FAIR (in Press)," *Data Intelligence, Special Issue: Launching an International FAIR Data Network for COVID Data* (4).
- Anderson, B. 2006. *Imagined Communities: Reflections on the Origin and Spread of Nationalism*, London: Verso.
- Bidwell, N. J. 2016. "Moving the Centre to Design Social Media in Rural Africa," *AI & SOCIETY, Journal of Knowledge, Culture and Communication* (31:1), pp. 51–77.
- Bigirimana, S. S. J. 2017. "Beyond the Thinking and Doing Dichotomy: Integrating Individual and Institutional Rationality," *Kybernetes* (46:9), pp. 1597–1610.
- Bigirimana, S. S. J., and van Stam, G. 2021. "Artificial Intelligence: Qualified Competence without Comprehension of Essence (in Press)," *Data Intelligence, Special Issue: Launching an International FAIR Data Network for COVID Data* (4).
- Brijmohan, Y., Manuhwa, M., and van Stam, G. 2021. "Regional Trends in Engineering: Africa," in *Engineering for Sustainable Development*, Paris: UNESCO, pp. 172–179.
- Broadband Commission. 2019. "State of Broadband Report 2019," *Broadband Commission for Digital Development*, Geneva: ITU/UNESCO. (<https://doi.org/10.1017/CBO9781107415324.004>).
- Burawoy, M. 2009. *The Extended Case Method*, Berkeley and Los Angeles: University of California Press.
- Buskens, I., and van Reisen, M. 2016. "Theorising Agency in ICT4D: Epistemic Sovereignty and Transformation-in-Connection," in *Underdevelopment, Development and the Future of Africa*, M. Mawere (ed.), Bamenda: Langaa RPCIG, pp. 394–432.
- Chawurura, T., Manhibi, R., van Dijk, J. H., and van Stam, G. 2020. "Stocktaking the Digital Health Infrastructure in Zimbabwe," in *Public Health Conference (ICOPH 2020)*.
- Chief Chikanta, H. R. H., and Mweetwa, F. 2007. "The Need for Information and

- Communications Technologies,” Macha, Zambia: LinkNet. (www.share4dev.info/kb/documents/4782.pdf).
- Deaton, A. 2015. *The Great Escape: Health, Wealth, and the Origins of Inequality*, Princeton: Princeton University Press.
- Dourish, P., and Mainwaring, S. D. 2012. “UbiComp’s Colonial Impulse,” in *UbiComp’12, 5-8 Sep 2012, Pittsburgh, USA*.
- Dussel, E. 1993. “Eurocentrism and Modernity (Introduction to the Frankfurt Lectures),” *Boundary 2* (20:3), pp. 65–76.
- Eubanks, V. 2018. *Automating Inequality. How High-Tech Tools Profile, Police, and Punish the Poor*, New York: St. Martin’s Press.
- Figuroa, C. A., Luo, T., Aguilera, A., and Lyles, C. R. 2021. “The Need for Feminist Intersectionality in Digital Health,” *The Lancet Digital Health* (3:8), pp. e526–e533. ([https://doi.org/10.1016/s2589-7500\(21\)00118-7](https://doi.org/10.1016/s2589-7500(21)00118-7)).
- Grosfoguel, R. 2002. “Colonial Difference, Geopolitics of Knowledge, and Global Coloniality in the Modern/Colonial Capitalist World-System,” *Review* (25:3), pp. 203–224.
- Grosfoguel, R. 2011. “Decolonizing Post-Colonial Studies and Paradigms of Political Economy: Transmodernity, Decolonial Thinking, and Global Doloniality,” *Journal of Peripheral Cultural Production of the Luso-Hispanic World* (1:1).
- Heeks, R. 2021. “From Digital Divide to Digital Justice in the Global South: Conceptualising Adverse Digital Incorporation,” in *IFIP 9.4 Virtual Conference 2021, 26-28 May 2021*.
- Hlabangane, N. 2018. “Can a Methodology Subvert the Logics of Its Principal? Decolonial Meditations,” *Perspectives on Science* (26:6), pp. 658–693.
- hooks, bell. 2014. *Teaching to Transgress*, London: Routledge.
- Ibrahim, H., Liu, X., Zariffa, N., Morris, A. D., and Denniston, A. K. 2021. “Health Data Poverty: An Assailable Barrier to Equitable Digital Health Care,” *The Lancet Digital Health* (3:4), pp. e260–e265. ([https://doi.org/10.1016/S2589-7500\(20\)30317-4](https://doi.org/10.1016/S2589-7500(20)30317-4)).
- Jeater, D. 2018. “Academic Standards or Academic Imperialism? Zimbabwean Perceptions of a Hegemonic Power in the Global Construction of Knowledge,” *African Studies Review*



(61:2), pp. 8–27. (<https://doi.org/10.1017/asr.2017.132>).

Johnson, D. L., Mudenda, C., Pejovic, V., Sinzala, A., van Greunen, D., and van Stam, G. 2012. “Constraints for Information and Communications Technologies Implementation in Rural Zambia,” in *E-Infrastructure and e-Services for Developing Countries. AFRICOMM 2012. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, Vol 119*, K. Jonas, I. A. Rai, and M. Tchunte (eds.), Berlin, Heidelberg: Springer.

Johnson, D. L., and van Stam, G. 2016. “The Shortcomings of Globalised Internet Technology in Southern Africa,” in *E-Infrastructure and e-Services for Developing Countries. AFRICOMM 2016. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, Vol 208*, T. F. Bissyandé and O. Sie (eds.), Cham: Springer.

Kabanda, G. 2012. “The Impact of ICTs on Innovative Sustainable Development in East and Southern Africa,” in *Technological Change*, A. Teixeira (ed.), Shanghai: InTech.

Kahn, J. (ed.). 2020. *Digital Contact Tracing for Pandemic Response: Ethics and Governance Guidance*, Baltimore: Johns Hopkins University Press. (<https://doi.org/10.1353/book.75831>).

Keja, R., and Knodel, K. 2019. “Mistrust and Social Hierarchies as Blind Spots of ICT4D Projects,” *TATuP - Zeitschrift Für Technikfolgenabschätzung in Theorie Und Praxis* (28:2), pp. 35–40. (<https://doi.org/10.14512/tatup.28.2.s35>).

Khoza, R. 2005. *Let Africa Lead: African Transformational Leadership for 21st Century Business*, Sunninghill: VezuBuntu.

Kozma, R. B. 2006. “Toward an African Knowledge Network: ICT in Support of Grassroots Rural Development,” in *ICTe Africa*. (<http://www.share4dev.info/telecentreskb/documents/3266.pdf>).

Krauss, K. 2012. “Towards Self-Emancipation in ICT for Development Research: Narratives about Respect, Traditional Leadership and Building Networks of Friendships in Rural South Africa,” *African Journal of Information Systems* (4:2), pp. 46–60.

Lazem, S., Giglitto, D., Nkwo, M. S., Mthoko, H., Upani, J., and Peters, A. 2021. “Challenges

- and Paradoxes in Decolonising HCI: A Critical Discussion,” *Computer Supported Cooperative Work (CSCW)*, Online. (<https://doi.org/10.1007/s10606-021-09398-0>).
- Mamdani, M. 2012. *Define and Rule: Native as Political Identity*, (Kindle.), Cambridge: Harvard University Press.
- Manhibi, R., Ruckstuhl, L., Shamu, A., van Dijk, J. H., and van Stam, G. 2021. “A Portfolio of Digital Platforms and Services for Digital Health Interventions, a Case in Masvingo Province, Zimbabwe,” in *Africomm 2021*.
- Mawere, M. 2017. *Theorising Development in Africa: Towards Building an African Framework of Development*, Bamenda: Langaa RPCIG.
- Mawere, M., van Reisen, M., and van Stam, G. 2019. “Language Dominance in the Framing of Problems and Solutions: The Language of Mobility,” in *Mobile Africa: Human Trafficking and the Digital Divide*, M. van Reisen, M. Mawere, M. Stokmans, and K. A. Gebre-Egziabher (eds.), Bamenda: Langaa RPCIG, pp. 527–558.
- Mawere, M., and van Stam, G. 2016. “Pillage, Plunder and Migration in Africa: On the Expatriation of Riches and Remittances,” in *Development Perspectives from the SOUTH. Troubling the Metrics of [under-]Development in Africa*, M. Mawere (ed.), Bamenda: Langaa RPCIG, pp. 43–75.
- Mawere, M., and van Stam, G. 2017. “Oratio: A Framing of Knowledge in the Context of Technology and Academia,” in *African Studies in the Academy. The Cornucopia of Theory, Praxis and Transformation in Africa?*, M. Mawere and T. R. Mubaya (eds.), Bamenda: Langaa RPCIG, pp. 251–264.
- Mawere, M., and van Stam, G. 2020a. “Digital Health, Technology, and Digital Diplomacy: African Solutions for African Challenges,” *Journal of Sustainable Development in Africa* (22:1), pp. 35–45.
- Mawere, M., and van Stam, G. 2020b. “Data Sovereignty, a Perspective from Zimbabwe,” in *WebSci’20 Companion: 12th ACM Conference on Web Science Proceedings*, pp. 13–19.
- Mbembe, A. 2019. “Bodies as Borders,” *From the European South* (4), pp. 5–18.
- Medicus Mundi Switzerland. 2020. *Digital Health in International Cooperation: A*

*Transnational Framework*, Basel: Medicus Mundi Switzerland.

- Metz, T. 2018. "What Is the Essence of an Essence? Comparing Afro-Relational and Western-Individualist Ontologies," *Synthesis Philosophica* (65:1), pp. 209–224. (<https://doi.org/10.21464/sp33113>).
- Metz, T. 2020. "Relational Economics: An African Approach to Distributive Justice," *Ethical Perspectives* (27:1), pp. 35–68.
- Metz, T. 2021. "Recent Work in African Philosophy: Its Relevance beyond the Continent," *Mind* (130:518), pp. 639–660. (<https://doi.org/10.1093/mind/fzaa072>).
- Minges, M. 2008. *Measuring Information and Communication Technology Availability in Villages and Rural Areas*, Geneva: International Telecommunications Union.
- Mosima, P. M. 2016. *Philosophic Sagacity and Inter-Cultural Philosophy. Beyond Henry Odera Orika*, Leiden: African Studies Centre.
- Moyo, D. 2009. *Dead Aid*, London: Penguin Group.
- Mukuka, G. S. 2010. *Reap What You Have Not Sown. Indigenous Knowledge Systems and Intellectual Property Laws in South Africa*, Pretoria: Pretoria University Press.
- Ndlovu-Gatsheni, S. J. 2015. "Decoloniality as the Future of Africa," *History Compass* (13:10), pp. 485–496. (<https://doi.org/10.1111/hic3.12264>).
- Nhemachena, A. 2016. "Animism, Coloniality and Humanism: Reversing Empire's Framing of Africa," in *Theory, Knowledge, Development and Politics: What Role for the Academy in the Sustainability of Africa?*, M. Mawere and A. Nhemachena (eds.), Bamenda: Langaa RPCIG, pp. 13–54.
- Nwankwo, E., and Sonna, B. 2019. "Africa's Social Contract with AI," *XRDS: Crossroads, The ACM Magazine for Students* (26:2), pp. 44–48. (<https://doi.org/10.1145/3368073>).
- Nyamnjoh, F. B. 1996. "Africa and the Information Superhighway: Silent Majorities in Search of a Footpath," *Africa Media Review* (10:2).
- Nyamnjoh, F. B. 2009. *Mobile Phones: The New Talking Drums of Everyday Africa*, (M. de Bruijn, F. B. Nyamnjoh, and I. Brinkman, eds.), Bamenda: Langaa RPCIG.

- Nyamnjoh, F. B. 2015. "Incompleteness: Frontier Africa and the Currency of Conviviality," *Journal of Asian and African Studies* (50:2), pp. 1–18. (<https://doi.org/10.1177/0021909615580867>).
- Odumosu, T. 2018. "Making Mobiles African," in *What Do Science, Technology, and Innovation Mean from Africa?*, C. C. Mavhunga (ed.), Cambridge: MIT Press, pp. 137–150.
- Okere, T. 1983. *African Philosophy: A Historico-Hermeneutical Investigation of Its Conditions of Possibility*, New York: University Press of America.
- Pieterse, J. N. 2001. *Development Theory. Deconstructions/Reconstructions*, London: SAGE Publications.
- Du Plessis, H. 2015. *The Rise and Decline and Rise of China. Searching for an Organising Philosophy*, (H. du Plessis, ed.), Johannesburg: Mapungubwe Institute for Strategic Reflection.
- Du Plessis, H., Sehume, J., and Martin, L. 2013. *The Concept and Application of Transdisciplinarity in Intellectual Discourse and Research*, Johannesburg: Mapungubwe Institute for Strategic Reflection.
- van Reisen, M., Mawere, M., van Stam, G., Stocker, M., Williams, C., and Yin, W. 2017. "A 'Black Hole' in the Digital Era: Interrogating Travesties and Exclusion of the African Continent," in *Leiden University, 24 November 2017*.
- Ricœur, P. 1965. *De l'interprétation*, Paris: Editions du Seuil.
- Salami, M. 2020. *Sensuous Knowledge*, (Kindle.), New York: Amistad.
- Sheneberger, K., and van Stam, G. 2011. "Relatio: An Examination of the Relational Dimension of Resource Allocation," *Economics and Finance Review* (1:4), pp. 26–33.
- Southern Voice. 2020. *The Global State of the SDGs. Three Layers of Critical Action (Report 2019)*, Southern Voice.
- van Stam, G. 2011. *Placemark*, Macha: Gertjan van Stam.
- van Stam, G. 2017a. "The Coming-of-Age of Super-Colonialism," in *African Studies in the Academy. The Cornucopia of Theory, Praxis and Transformation in Africa?*, M. Mawere and T. R. Mubaya (eds.), Bamenda: Langaa RPCIG, pp. 13–40.

- van Stam, G. 2017b. “African Engineering Agency and the Informatisation of the World. The Case of Big Data and Information and Communication Technologies,” in *Keynote Address at EAI International Conference for Research, Innovation and Development for Africa (ACRID 2017), Victoria Falls, Zimbabwe, 20-21 June 2017*.
- van Stam, G. 2019. “Why Do Foreign Solutions Not Work in Africa? Recognising Alternate Epistemologies,” in *Roaming Africa: Migration, Resilience and Social Protection*, M. van Reisen, M. Mawere, M. Stokmans, and K. A. Gebre-Egziabher (eds.), Bamenda: Langaa RPCIG, pp. 55–82.
- van Stam, G. 2020a. “Voices from the South,” *Medicus Mundi Bulletin, Swiss Online Journal for International Cooperation and Health* (154). (<https://www.medicusmundi.ch/de/bulletin/mms-bulletin/palliative-care/magazin/voices-from-the-south>).
- van Stam, G. 2020b. “Power Inequities. Observations on the Development of Information and Communication Technologies, from an African Place,” in *WebSci’20 Companion: 12th ACM Conference on Web Science Proceedings*, pp. 54–59.
- van Stam, G. 2021a. “Individuals, Conglomerates, Persons, and Communities,” *African Sociological Review* (25:1), pp. 32–47.
- van Stam, G. 2021b. “Digital Health in International Cooperation,” *Medicus Mundi Bulletin, Swiss Online Journal for International Cooperation and Health* (157). (<https://www.medicusmundi.ch/en/advocacy/publications/mms-bulletin/digital-health-a-new-era-of-global-health/kapitel-1/digital-health-in-international-cooperation>).
- van Stam, G. 2021c. “Appropriation, Coloniality, and Digital Technologies. Observations from within an African Place,” in *Proceedings of the 1st Virtual Conference on Implications of Information and Digital Technologies for Development, 2021*, pp. 709–721.
- van Stam, G. 2022. “Conceptualisation and Practices in Digital Health: Voices from Africa (in Press),” *African Health Sciences*.
- Tilly, C. 1999. *Durable Inequality*, Berkeley: University of California Press.
- du Toit, C. W. 2007. “The Restoration of Subjectivity in Science, Rationality and Knowledge Systems as a Precondition for Scientific Integrity,” *Journal for Interdisciplinary Research*

*on Religion and Science* (1:1), pp. 163–185.

UN SG High-Level Panel. 2020. *The Age of Digital Interdependence. Report of the UN Secretary-General's High-Level Panel on Digital Cooperation*, New York: United Nations.

UNCTAD. 2019. *Digital Economy Report 2019: Value Creation and Capture - Implications for Developing Countries*, New York: United Nations.

Unwin, T. 2013. “Ensuring That We Create an Internet for All,” in *Stockholm Internet Forum 2013, 23-23 May 2013, Stockholm, Sweden*.

Woermann, M., and Engelbrecht, S. 2019. “The Ubuntu Challenge to Business: From Stakeholders to Relationholders,” *Journal of Business Ethics* (157:1), pp. 27–44. (<https://doi.org/10.1007/s10551-017-3680-6>).

World Health Organization. 2004. “WHA58.28 EHealth,” *EHealth Resolution to the 58th Meeting of the World Health Assembly* (4), pp. 121–123.

World Health Organization. 2016. *Global Diffusion of EHealth: Making Universal Health Coverage Achievable. Report of the Third Global Survey on EHealth.*, Geneva: World Health Organization.

World Health Organization. 2019. *WHO Guideline: Recommendations on Digital Interventions for Health System Strengthening*, Geneva: World Health Organization.

World Health Organization. 2020. *Global Strategy on Digital Health, 2020-2024*, Geneva: World Health Organization.