Framing 'ICT Access in Rural Africa'

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Abstract: This paper reviews the framing - sets of concepts and perspectives - of the components involved with how one communicates the framings of the words "ICT access in rural Africa". It focuses specifically on the indigenous views. These views are derived from 14 years socio-techno ethnographic research on ICT access in rural Zambia and Zimbabwe.

The realities in rural Africa are particular. Local modalities affect long term local adoption and respectful integration of technologies in African rural areas. Lack of pioneering, indigenous African research does affect and hamper mutual understanding, especially between the local community and specialists.

There appears to be a rift between the framing from the Western/urban worldview and those aligned with the indigenous African perspective. ICT access in Rural Africa is not only a matter of the essential availability of *functionality* through physical ICT infrastructure and equipment. It involves a much wider range of issue, e.g. a *relationality,* that needs a holistic approach and appreciation of the local understanding of reality.

Framing African realities in a foreign perspective is inappropriate to convey the meaning and value of these realities to Africans themselves. Such re-framing of African realities in Western-cast definitions and philosophies leads to marginalisation of the African perspectives. Local framing of ICT access, sensitive to history, context and culture, are crucial ingredients for respectful and inclusive sensitisation, education, implementation and maintaining ICT access for sustainable progress in rural Africa.

Keywords: rural Africa, indigenous knowledge, ICT, ethnography, framing

Introduction

Information and Communication Technology (ICT), especially in the form of the Internet, is transforming global relationships and interaction through supporting networking capacity and contributing to enhanced social capital. Woolcock (1998) defines social capital as "the norms and networks facilitating collective actions for mutual benefit". The trajectory of social theories involved with rural areas is multifarious, with a variety of topics from a number of theoretical perspectives that include, for instance, Social Networking Theory (Wade et al. 2006), Social Capital Theory (Svendsen & Svendsen 2003, Woolcock 1998), and Actor Network Theory (Latour 2005).

This paper addresses framing related to the concepts contained in the topic "ICT Access in Rural Africa". The paper consecutively exposes framings connected with each of the components of this topic. These framings are recognised from the critical, ethnographic assessment of case study spanning 14 years of ICT access provisioning and research in rural Zambia and Zimbabwe, from 2000 till 2014. The research perspective is transdisciplinary. It invites input from any discipline and includes a review of viewpoints and contributions from such (sub-)disciplines such as Information and Communications Technology for Development (ICT4D or ICTD), Community Informatics (CI) and User Experience (UX).

The author works and lives in an environment deprived of access to documentation shielded from public access, e.g. placed behind pay-walls. Therefore, primarily, publicly accessible texts are relied upon.

Background

In Africa, the vast majority of people (approximately 70% to 85% of the productive labour force) live in rural areas (Kozma 2006). Writing from within their rural Zambian environments, His Royal Highness Chief Chikanta and Mweetwa (2007) state that the digital divide and digital exclusion have the potential to exacerbate the inequalities between people in society if access to ICT is not wholesomely addressed. They observe that huge disparities in access are undesirable. Inequality in access demonstrates that people of different communities have unequal opportunity to utilise information in their daily lives. They posit that a developing country must position for new opportunities and innovations in an effort to streamline productivity and for the populace to enjoy an improved quality of life.

ICT is the conduit for information, just as electricity lines are the conduits for power, roads for transport and aquifers for water. These are considered the four crucial infrastructures for the Millennium Development Goals (Sachs 2006).

Access to ICT services links a community with people and information. The Zimbabwean academic Kabanda (2012) concludes that in this day and age, opportunities for progress cannot be harnessed without ICT. Andrianaivo and Kpodar (2011) show how access to the Internet has a direct and mutual correlation with the gross domestic product (GDP) per capita of a country. Therefore, telecommunications access also influences the socio-economic status of a population.

The global impact of ICT is enormous and undeniable. The sensitising, initiating, implementing, operating, and scaling up of access to ICT in rural Africa involves an intimidating array of challenges. Quantitative engineering aspects play a role. However, as the nature of human action is inherently social, a multitude of qualitative constraints have a considerable effect. Based upon observations in rural Zambia, Stam et al. (2012) distinguishes between environmental constraints, skill constraints and cultural constraints.

There are few guidelines or strategies that inform local practitioners in the field of ICT on how to act upon these challenges in a harmonised manner and make ICT accessible in Africa's rural areas. The mostly exogenous framing of such challenges provides for a disconnect between the realms of (local) needs and (foreign) solutions.

Although the magnitude of the growth of literature in the multidisciplinary field of ICT for Development is unquestionable (Gomez et al. 2012), information from rural areas remains scarce and challenging (Minges 2008). Reviewing conference contributions, Bissyande et al. (2013) rhetorically questions *to whom* most authors make suggestions of engineering techniques and approaches. In the meantime, there is a growing resentment towards traditional approaches to development, with some proposing to utilise dominant capitalistic market mechanisms as engines for development (Moyo 2009).

It is challenging to align the various definitions of development and good practice, and to understand outcomes in the context of community priorities, local authenticity, and limited resources. Critiquing dominant framing, Dourish and Mainwaring (2012) show how, from the outset, the approach and the resulting design of technology - ubiquitous computing in this case - is based upon a continuum of European-centric intellectual traditions. They link the development of ubiquitous computing with a colonial intellectual tradition - as a knowledge enterprise - and recognise a narrative that results in continuation of a western-centred location of innovation and a western-centric egoistic view on technological dissemination.

Unwin (2013) questions whether ICT contributes to accelerating inequalities. He critiques the hegemonic framing that consolidates economic-growth fundamentalism and reliance on the market and the private sector to deliver on the interests and needs of the world's poorest people. He identifies as the problem the dominance of an economic model that seeks to extract high short-term returns on investment. Among his recommendations, he calls for reframing towards inspired collaboration and co-operation, innovative modelling, and effective multi-stakeholder partnerships.

Framing

D'Almeida-Topor (2006) shows how, inherited from the colonial ethnology and maintained by ignorance and lack of interest, the prejudices about Africa still run rampant. The structure of much academic research builds upon a one-sided view of economics, democracy – or Information and Communications Technology for Development for that matter – that emerged from imperialistic practice (Galtung 1971, Ndlovu-Gatsheni 2013). Grosfoguel (2011) regards academic practise to be amnesic to its coloniality. Consequently, for Africa, in general, the prospective benefits from academic research and the resulting technical assistance processes are problematic.

In the same strain, language is often problematic in that it is inadequate to capture or apply to African realities. This paper shows how definitions of 'borders', 'rural areas', or even modalities like 'ICT access' appear to be ambiguous, with different connotations, value and use in Africa than those in a western context. These ambiguities add to the complexity and uncertainty regarding the value of much of the existing body of knowledge for local practitioners within the African settings. There is a lack of seeking understanding of the indigenous meaning and its framing of the topic 'ICT Access in Rural Africa', in language, philosophy and worldview. This discordant situation is fuelled by incomprehension – or even contempt - of the indigenous perspectives and narratives, and a lack of eagerness to seek such comprehension.

Framing of ICT Access in Rural Africa

The realities in rural Africa are particular. With the exception of anthropology, few researchers ventured into the study of ICT and the aspects of context (Stam 2013). Most literature omits assessment of African philosophical and cultural aspects, such as incorporating insights on Ubuntu epistemology, pervasive orality, or economies of giving. In the meantime, these are African modalities affecting long term local adoption and respectful integration of technologies in its rural areas.

The methodologies of how to do research are the subject of careful debate by academics in the field of ICT4D or CI. Lack of pioneering research from within Africa affects and hampers mutual understanding, especially between the local community and engineering specialists.

As an example, note that no research was found on the dichotomised societies in each African country, in their respective framing, their concepts and theoretical perspectives of the effects on ICT access. Haggard (2013) shows, in practice, at least two societies operate side by side. One society speaks the language of the former coloniser - mainly English, French, or Portuguese - and operates in a society framed by Western discourse. My observation is that such society contains the minority of the population and pivots around urban areas. The other society, with the majority of people, incorporating almost all people living in the rural areas, speak indigenous languages (Chumbow 2005) and communicate primarily within orality (Stam 2013). The linguistics Chumbow (2012) and Gumucio-Dagron and Tufte (2006) regard the use of western language and western culturally-described processes as an obstacle to progress in African countries. National, African progress, and the principles of participative communication (Freire 2000) motivate the need for the democratisation of access to information and knowledge. This is done through the use of languages and framing recognised by the majority of the population (not exclusively, but alongside languages like English, French and Portuguese); also in disciplines addressing the invention, design, building, maintenance, and improvement of technologies.

The way reality is framed affects the understanding of meaning and the understanding of systems. Currently, the (often unconscious) infusion of the cultural values, espoused through the framing and tangibly embodied by technology, mostly link to a dominant Western worldview.

Framing of 'ICT'

The idea that 'everyone has technical expertise in the broader sense' is not valid in rural Africa. Langen (2010) observed that the intended purpose and the inner workings of technologies are a complete mystery to most people in rural areas. However, the effects of those technologies in a particular contexts of use are not (Stam 2013). Long term observation in Zambia and Zimbabwe show that a single, pre-defined definition of information communications technology (ICT) is unaligned with the day-to-day experience in rural areas; understanding of applications and technological practices are as varied as those engaged in their use, and involve un assessment of behaviour as prescribed by Ubuntu, which is embodied by the interaction with ICT practitioners (Stam 2014).

One could say that *engineers* are the experts on the mechanisms of technology, whereas *the community* is the expert on the impacts of technologies and the interaction with practitioners. In most debates, only the first type of technical expertise is valued, rewarded, and represented. There is no similar appreciation for the expertise or assessment of performance of the community.

There appears to be 'inner and outer technical expertises', and both types of expertise define a technology and its fitness for use. Both influence development of ICT, its implementation and dissemination. Definitions do influence the structure of ICT, however, so, thus far, the framing of ICT mostly focuses on the expertise of mechanisms and systems (Chigona & Mooketsi 2011). The relational aspects of ICT, for instance incorporating the aspects of behaviour of its practitioners, is not taken into account. Therefore local, rural understanding and the effect on local framing of ICT in rural Africa must be the subject of further studies. A sign of the definition having emerged could be when a description of ICT in the local language has been reached.

Needs

A vernacular language that is part of the Bantu group of languages focuses information transfer on human interactions, not items (Stam 2013). In daily practice it is observed how the language focuses on the 'World of Humans' instead of the 'World of Things'. Through verbalisation, the community positions the process of interaction with artefacts and developments integrally with perspectives of human interactions. This in itself constitutes a means of identification with technology. It was noted that for observers from other cultures, inherent to language and cultural barriers, this difference in the nature and subject of communications is not directly obvious. However, their effects are clearly witnessed, especially during times of difficulties, as instantiations of technology are linked in with human relationships, and any change in human relationships has a direct and tangible effect in the deployment and use of technology.

In African settings, most communications homeostatically deal with 'the present'. They are highly efficient and relevant for purpose in everyday life in resource-limited environments (Stam 2013).

The current academic methods for needs assessment in technology design appear to be western-dominated. They are executed within the framework of a western paradigm, based upon Aristotle's thinking that emerged around 350 BC. Heilbron (2003) states that after independence, the African governments had many issues to attend to, and typically considered support of western-dominated scientific research foreign and unnecessary. Daily interaction with African universities and researchers confirm that indigenous research capabilities have been systematically under-utilised and local input has been marginalised. Including indigenous research can lead to rediscovery/redefinition of ICT and engender progress of related disciplines in a way aligned with African practices. For instance, Western engineering seems to neglect such human realities as emotions, and fear and greed. Current engineering skills do not to know how to deal with religion, and guidance from the Bible, Koran, and/or traditional belief systems. This de-contextualisation makes technologies to falter in the face of ignorance and the various circumstances of the wielding of power (Stam 2012).

With ICT exogenously framed in foci based upon de-constructions of reality, and guided by interacting within a world with subject experts, my observations in rural Zimbabwe and Zambia show that rural engineers struggle to find their social function. This is in line with Mittelstrass' (2006) exclamation: ''science is losing its existence as a social organism with its educational and research responsibilities, and understanding of moral forms or forms of life''. Without moral guidance, and explicit exposure of its embedded worldview, in practice rural African communities seem to recognise how engineering skills lack human orientation and therefore appear ineffective in rural Africa.

Most universities and institutes of higher learning in sub-Saharan Africa were built during colonial times. They model Western examples and are among the key instruments and vehicles of cultural westernisation on the continent (Mazrui 2003). Leadership styles have resulted from western models. In a study on leadership, House and Aditya (1997) found that 98% of the empirical evidence from over 3,000 studies was based on research in an American context and environment. Not surprisingly, it seems that an African background is not taken seriously, nor recognised as a determining factor for the behaviour of Africans when assessing ICT access. The rural African community is a much more complex environment than is often assumed. Proposed models are often solely based upon examples that work in affluent countries, and rural communities are keenly aware of such history. On the other hand, in practice, it has been observed that most administrative processes and virtually all judgement of performance, based upon measuring and evaluation, involves non-inclusive processes, and is happening by foreign agents *to* rural areas instead of happening *with* rural areas.

My observation is that traditional African views and their daily operations remain mostly unseen, unknown and misunderstood. It is the same with African legal, cultural, political, economical, and social contexts. Progress is defined through western eyes and seems to be linked to progress for the West. Khoza (2005), in his book 'Let Africa Lead', writes "Those of us accustomed to mixing with outsiders are used to hearing a few polite and tentative remarks about the problems of Africa after independence, followed by an embarrassed silence. Aid-givers celebrating their selfless assistance to poor old Africa are wont to lay misgovernment and corruption at our feet, like a corpse at a wedding feast."

Gurnstein (2011) observes how foreign-trained African scientists understand that the framing of their discipline-based knowledge and training does not fit the problem-based and people-centred issues that exist in (rural) Africa. 'Needs' assessment distinguishes distinctly from an inventory of 'wants'. Hoorik and Mweetwa (2008) show testimonies on how, in rural Zambia, local framing of ICT incorporates interactive processes of sensitisation, gathering of testimonies, and training. African needs often centre on social justice and include appropriate behaviour of all persons involved to sustain social inclusion, hospitality, and generous sharing. Local framing includes the need for assessment of which manner and process ICT has being discussed and how it contributes to the local culture and preservation of cultural heritage.

In rural Africa, *needs* are mostly subjective. They are recognised during a process aiming at sustainable progress. They are not pre-set goals set out at a starting moment.

Skills

For ICT access to function in rural areas, engineers are indispensable in the same way as, for instance, the medical staff for the access to healthcare. Skilled engineers must have appropriate training so that they can carry out the work effectively (UNESCO 2010). The shortage of engineers is particularly acute for ICT, as computers are invading rural areas, especially in education and health, while skilled persons live mainly in urban areas (Karsenti et al. 2011, Reddy et al. 2008).

Zambia recognised a shortfall in critical ICT skills required for developing its information and knowledge economy at managerial, professional and technician levels for the development, deployment and application of ICT in both the private and the public sector (Government of the Republic of Zambia 2006, Habeenzu 2010). National ICT policies call for the operations of Centres of Excellence for the research, manufacturing, and assembly of ICT

products, as well as training of ICT professionals, a position confirming the demand for a national embodiment of ICT. Zambia, like other African countries, faces challenges in engendering skilled personnel that meet the needs of local context, especially in technical functions. However, in contrast with efforts in health and education, in Zambia there are no national programmes that specifically aim to train engineers for rural areas. Training is mostly left to the unregulated, commercial markets (Mudenda & Stam 2012).

Framing of 'Access'

The definition of 'access' might seem a straightforward endeavour, with the dictionary defining access as 'a means of approaching, entering, exiting, communicating with, or making use of'. However, in his writings on the *digital divide*, Warschauer (2003) notes that meaningful access to ICT comprises far more than merely providing computers, and Internet connections. He states that access to ICT is part of a complex array of factors encompassing physical, digital, human, and social resources and relationships.

Feenberg (1991) and Gomez and Pather (2012) make the case that an over-riding importance attributed to the relational aspects of the physical availability, and the contextualised and reduced autonomous functionality of computers and connectivity, are difficult to comprehend from a basis of western framing. Heeks (2002) posits that culture and language, literacy and education, politics and community, religious beliefs and policies, institutional structures, and more, must all be taken into account if access to technologies is to be defined, provided, and assessed.

The access statistics provided by institutes like the International Telecommunications Union (ITU) often lack differentiation between urban and rural areas. Although not explicitly mentioned, it can be expected that most information emerged from urban Africa only. The same with mapping of 'access and coverage'; The general figures in literature hardly ever specify what they describe: the coverage of mobile communications in Africa from a western and urban perspective. When travelling in rural Africa, the disparity of mobile penetration in terms of the percentage of the population using the service, and the practical experience of connectivity being available, is obvious. Nyambura-Mwaura and Akam (2013) question the available data. They guestimate mobile (geographical) area coverage far lower than reported, even as low as 30% in certain countries. Due to its specific framing, and the ambiguity in definitions, practical experience of the author is that the data on 'coverage area' as shown by mobile operators cannot be relied upon when reviewing the availability of access to ICT networks in rural areas.

Cisler (2000) argues there is not a division between information 'haves and have-nots', but rather a gradation based on different degrees of access to information technology. Warshauwer (2003) considers the notion of a binary divide between the 'haves and have-nots' inaccurate and patronising because it fails to value the social resources that diverse groups bring to the table. He regards technology and society as intertwining: each operates to create and give meaning to the other while the aim of the process is one of social inclusion. Dourish and Mainwaring (2012) even regard the whole discussion as one being colonially biased. Gurnstein (2012) poses that, in the context of rural Africa, the conventional (even technologically prescribed) mobile communications mode i.e. one-to-one (or many-to-one) is non-functional or even potentially destructive.

Pais (2007) postulates that telecommunications and economic prosperity do mutually relate to each other. Therefore, the issue requires assessment in the context of overall development efforts. He states the unifying view that telecommunications can empower people to meet their needs, which must be held by all stakeholders if communities are to value technology as a means of achieving sustainable prosperity.

Observations during the case study show that the local framing of access heavily relies upon relational aspects, which are power-distance, judgement of character and human performance. Interference of inappropriate assumptions governing the ICT design mediating access complicates matters significantly. It is vital to raise local talent to the point where

locally appropriate access mechanisms are researched, developed and approved by local communities.

Framing of 'Rural Areas'

There is no standard definition for the term rural (Gregory et al. 2009). Various countries use different, mostly implicit, definitions. Neither is there clear guidance for the definition of rural areas. Seldom do texts mention definitions explicitly.

In South Africa, for instance, the definition of 'rural' is framed in the context of neo-liberal framing, labeled as "Under-serviced areas". This translates for the ICT perspective into: 'rural areas are areas with a lack of ICT services', or '... profitable ICT services'. South Africa's Department of Rural Development uses criteria that label the areas according to the groupings of how deprived of service they are. Its Comprehensive Rural Development Programme dissects rural areas as socio-economic viable units (Department of Rural Development and Land Reform 2009). Rural areas in South Africa can include so-called 'high density areas', where thousands of people live closely together. In Zambia and Zimbabwe, such areas would be designated as 'urban' or 'peri-urban'.

For another perspective on the issue, Adams (2003) notes that, in Zambia, 93.9% of the surface is designated as customary, rural land. Without explaining their definition, government reports designate 61.2% of Zambia's population as living in rural areas (Central Statistics Office Zambia 2011). In 2005, Zambia reported 6,268 (83%) out of 7,576 schools located in rural areas (Government of the Republic of Zambia 2005). Other texts - while omitting to define 'rural' - depict that, in 2008, Zambia operated 1,564 health facilities, of which 1,029 classify as a rural health centre (Government of the Republic of Zambia 2008).

Gregory et al. (2009) defines a rural community as "the smallest spatial group which encompasses the principal features to society, being a group of people interacting socially, with common ties or bonds with the geographic limited rural territory in which they live". I noticed that in rural areas inhabitants often frame the term 'rural' as an antithesis: rural is 'not-urban'. Rural areas are seen as isolated communities in terms of geographic location, separated from central clusters (i.e. towns), and deprived of most amenities available in an urban or rural-urban environment. Zambians commonly designate these areas as 'deep-rural', separating them from urban and/or rural-urban areas. Thus, there are thousands of rural communities in countries like Zambia.

Context

African philosophy, if such could be depicted, does not adhere to the history of Western philosophy. To understand African thought and to untangle the perspective of its philosophy and resulting epistemology, thus framing, is a crucial task in rural Africa. Fanon (1967) saw it to be a body-politics of knowledge. Observations in this case study reveals that every rural area has its own way of framing its context, with the common denominator the aim of sustaining the integrity and social fabric of its own particular society.

There are different ways to look at the African context: from an indigenous perspective (from the local context, the way the engineers 'in the African context' would see things), and from an extraneous perspective (from an external context, for instance from a Western context).

The context in rural Africa is very different from the context found in urban or Western environments. Marantz (2001) and many others provide insight into bewildering experiences for those not accustomed to its practices. For this paper, it reaches too far to provide a full description of the context of rural Africa, although it is posed as fundamentally distinct in nature.

Culture

Culture contains the characteristics of a particular group of people, defined by everything from language, religion, cuisine, social habits, music and arts. It frames acceptable behaviour.

Ethnic groups in rural areas have strong ties to their tribes, each with its specific culture. Zambia's first president, Kenneth Kaunda, established policies and used tools to promote nation-building. This reflected his slogan "One Zambia, One Nation". Such national identity and the large size of the country facilitated a peaceful co-existence for numbers of years.

The author went into deep conversation with persons having a Tonga ethnicity. The name Tonga means 'independent'. Lucas Phillips (1960) describes how, originally, Tonga people existed as independent family units. Hope (1978) explains how chieftainship was instituted among the Tonga people in response to demands by Western interaction. Colson (2006) draws a picture showing how chieftainship is now a significant part of Tonga life, although at a lesser level than with other ethnic groups in Zambia.

Traditional Tonga culture encourages polygamy and having many children. Polygamy is considered advantageous for working on the land. Women play an important role in growing food. There are many gender inequalities, often institutionalised during colonial times, for instance in terms of rights to property and inheritance (Nsama 2006). Tonga people adhere to a matrilineal system. The maternal uncle holds the most powerful position in the extended family structure.

Significant ceremonies frame Tonga life. Ceremonies take place during major life events like birth, marriage and funerals. The main Lwiindi Gonde Ceremony is held in south-west Monze. Also, there is a Lwiindi Ceremony in Chikanta Chiefdom, and the author's participation at that ceremony was significant in the local acceptance of his presence and activities.

Traditional beliefs include witchcraft, sorcery, and ancestor worship. A large number of Tonga practice a secretive mix of Christianity and traditional religious beliefs (Colson 2006), often in mystical, anxiety-charged environments. Langen (2010) shows how, in the area of health, there are diverging framing of realities, in terms of values, definitions of illness, approaches and treatment methods; likewise, in the design and application of technology, experience and assessment of realities of western-trained persons and indigenous people diverge (Stam 2013).

There is much influence with respect to the physical presence of a western person in a rural environment. The rational, highly-organised Western world influences the rural environment when Westerners are present. When interactions with ICT are being discussed, as with any activity, its assessment includes the 'use of spiritual powers' (Colson 2006, Bets 2009). In the oral context, interactions address a whole range of means of communication and the environment, like the records of evanescent sound, non-verbal communications, inputs like the season, place, sun position, mental state of the people present, and the seating arrangement and somatic information such as gestures and facial expressions (Stam 2013).

Framing of 'Africa'

Zambia is a typical example of a country demarcated by Western influence. Fuelled by the Berlin conference in 1884, its territory was part of the Scramble for Africa. 'Northern Rhodesia' was demarcated in 1911. The British South Africa Company conquered and administered the area until the transfer of the conventionalised area to British administration in 1924. On 24 October 1964, the country became independent of the United Kingdom. The nation harbours seven main ethnic groups, which are the Bemba, Kaonde, Lozi, Luda, Luvale, Ngoni and Tonga, which are subdivided into 73 ethnic groups (CIA 2013).

The demarcation of countries in Africa is a legacy of the colonial past, which was exercised through domination and geared towards exploitation of resources. However, people in the rural areas bear a strong alliance to their ethnic groupings. Figure 1, reproduced from Africa Institute and De Blij (1977), shows a geographic representation of ethnic groups in Africa.

MAP 2: SUPERIMPOSED ETHNIC MAP OF AFRICA
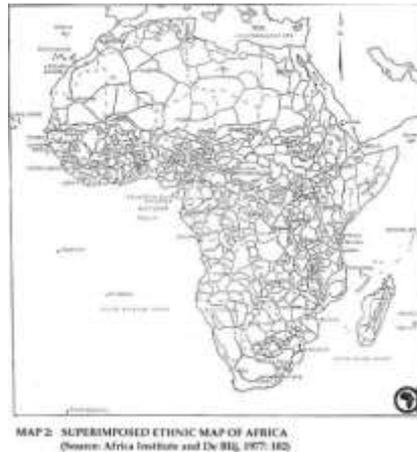(Source: Africa Institute and De Blij, 1977: 182)

Figure 1.

Long term observation suggests that the populations in the cities are more exposed to the concept of the nation state. They are more tuned into the aspects of democracy, exercising of sanctioned power, and western economics, than populations in rural areas. However, in urban Africa, there appears little attention to rural issues. Involvement in rural areas is sparse. The African nation state does not necessarily have full dominion in rural Africa.

In general, the urban attitude towards rural areas flows from a framing inspired by imperialism. Little documentation addresses the complicated society of rural Africa with respect to its interaction with urban Africa from an engineering perspective in particular. Documentation framing realities from the local, rural perspective is very scarce indeed.

Lack of knowledge about 'the other' is pervasive on any side of a divide. Graham (2012) presents a significantly lopsided geography of information. For example, no studies were found exposing the local view on the property and land issues in rural areas, and their effect on ICT access. There is a lack of alignment with African legal systems or incorporation of indigenous intellectual property rights.

Conclusion

Long term observation from within rural Africa shows that framing of ICT access in rural areas is not just a matter of the availability of essential functionality through physical ICT infrastructure and equipment. It involves a much wider range of issues that needs a holistic approach and incorporation of a wide range of diverse views of reality, especially incorporating the behaviour of humans.

There appears to be a huge dichotomy, a rift, between the framings from the Western/urban worldview and those from a rural African perspective. When dominant framing and definitions are foreign to the local context and culture, injustice and domination can be the result.

Putting African realities in framing that is inapt to convey the meaning and value of such realities to Africans themselves, and a reframing of African realities in Western-cast definitions and philosophies, leads to marginalisation of African perspectives. Academic research must pursue integral approaches seeking to understand African world-views and consolidate such input within the freedom and pluralism of academia.

Rural community members, whether inside or outside of an organisation, put interpersonal relations at the highest priority. Rarely is ICT framed in relation to such continuous conversation aimed at establishing social acceptance through a basis of relationships. ICT access must be embedded in the African social system with technology framed with
- ICT objects and services embedded in, not separated from, the context
- functionalities not separated nor reduced from each other, and
- no separation of the subject from the object, nor its functionality and positionality.

Endeavours towards, and respect for local understanding and framing based upon context and culture, and appreciation of pluralism are crucial ingredients for sustainable ICT access in rural Africa.

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