

Adapting modern ICTs to the spatial and cultural environment of urban Africa: The experience of Cameroon¹

AMBE J. NJOH*, LIORA BIGON AND ELISABETH N.M. AYUK-ETANG

*School of Geosciences, University of South Florida. Email: njoh@usf.edu

Abstract

Navigation-facilitating information and communication technologies, especially personal navigation devices (PNDs), are commonplace, and account for a significant share of the GDP, in developed countries. However, their utility is compromised in Africa where the precise and unambiguous physical addresses necessary for their functioning are a rarity. This paper proposes a strategy that can significantly improve the functioning of these devices despite the lack of precise and unambiguous physical addresses. The strategy incorporates major aspects of African indigenous culture and tradition blended with received cultural practices. Cameroon serves as the empirical referent. The paper identifies specific benefits of facilitating geospatial navigation including economic value of journey time savings, environmental protection via reduced carbon emissions, cost savings resulting from reduced fuel consumption, and improved efficiency for entities involved in door-to-door service/goods delivery.

Keywords: Cameroon; GPS; Information and communication technologies (ICTs); Navigation in built space; Syncretism.

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1. Introduction

Information and communication technology (ICT) is unquestionably among the leading determinants of economic development throughout the world. Its importance is amplified in the least developed regions such as Africa (Murphy and Carmody, 2015). Yet, it is in these regions where ICT initiatives encounter the most notorious barriers. Thus, as some analysts such as Gebremichael and Jackson (2006) have observed, in addition to the traditional divide characteristic of North-South relations, a new divide, the ‘digital divide,’ has now emerged between developed and developing countries. The digital divide connotes a situation characterised by differential access to information and communication technologies (ICTs) and cognate devices. Credit for initially drawing attention to this situation goes to the Markle Foundation’s Llyod Morrisett, who defined the term digital divide as the inequalities characteristic of information ‘haves’ and ‘have-nots’ (Gebremichael and Jackson, 2006). To the list of problems plaguing developing countries, one can now safely add ‘information poverty’ (Gebremichael and Jackson, 2006). The concept of information poverty captures the essence of the true nature of being a ‘have-not’ in a world in which quality of life depends on the ability to adequately utilize ICTs.

Sub-Saharan African (SSA) countries, with the exception of South Africa, are at the bottom of the world’s digital prosperity and opportunity ladder. Despite recent encouraging developments such as the increasing use of the internet and the growing number of mobile phones per capita in SSA, countries in the region remain among the least likely to benefit from the myriad opportunities for socio-economic progress offered by ICTs. One reason for the low level of ICT penetration in SSA is obvious. The functioning of conventional ICT, especially personal navigation devices (PNDs), depends on factors such as the availability of electricity, precise physical addresses and a literate population. These factors are scarce at best, and absent at worst, in the region.

Yet, it is unreasonable to prescribe the availability of these factors as a prerequisite for promoting PNDs in the region. In this connection, Mukoko (2012) has uncovered evidence pointing to the dangers of ignoring context in efforts to promote ICT around the world. Mukoko suggests that the socioeconomic model that acts as an important pre-condition of ICT consumption in Western Europe is less critical in Cameroon (p. 119). This calls into question any theory suggesting that the same conditions – such as a tidy built environment – must prevail as a foundation for the success of PNDs in Africa. Yet, success in this connection hinges tightly on the extent to which a number of crucial questions can be

adequately addressed. Prominent among these questions are the following. What features of the built environment in Africa impede the conventional functioning of PNDs and other common ICT devices? What attributes of indigenous African culture and knowledge can be deployed to facilitate the functioning of PNDs and other ICT devices in the face of the spatial, physical and related problems of built space in Africa?

These are essentially the questions we sought to address in the study reported in this paper. One specific African country, namely Cameroon serves as the empirical referent. Cameroon is ranked near the bottom of the world's Networked Readiness Index (WEF, Online; Nzeba and Keutchankeu, 2012). The country stood at Number 125 out 143 countries in 2012 (Nzeba and Keutchankeu, 2012), and dropped to Number 126 in 2015 (WEF, Online). Given this record, the country is ideally suited for any strategy that seeks to maximize the utility of a scant supply of ICT infrastructure. The paper is organised as follows. The next section briefly discusses the central problem tackled in the study. Then, it discusses the methodological adopted to address the problem. Next, it discusses the theoretical framework within which the study is couched. Following this is a discussion of the proposed remedy to the problem, and a presentation of the steps that can be taken to facilitate the functioning of PNDs and other ICTs in non-descript built space. The paper ends with some concluding remarks.

2. The problem

Many features of built space in Cameroon have implications for the conventional use of PNDs in particular and ICTs in general. The most conspicuous of these problems are discussed here under three major categories. The first includes urban dualism, marked by the differential distribution of public infrastructure and utility services. Within the framework of this differential distribution, the upper-income districts are equipped with basic amenities such as electricity, fixed telephone lines and other utilities. On their part, the low-income and informal residential zones lack or possess very little of these amenities. To be sure, and as Obeng-Odoom noted in the editorial of the first issue of Volume 3 of this journal, there has been a significant increase in the use of ICT as a result of recent urban growth dynamics throughout Africa (see Obeng-Odoom, 2011). Yet, there is no denying that the continent as a whole, but especially the sub-Saharan region remains largely on the fringe of the digital technology world. The problem is generally more severe in the low-income areas thereby creating a digital divide at the city/town level in every African country. In Cameroon, this digital divide

is a legacy of the country's colonial past. During the colonial era infrastructure and utility services were provided in the European enclaves to the exclusion of the so-called native zones (Njoh, 2010; 2003). With the demise of colonialism, the independent leadership assigned the formerly exclusive European enclaves to senior members of the emerging bureaucracy, and the erstwhile native areas to low-income members of society. Worth noting here is the fact that, like their colonial predecessors, the indigenous authorities have elected to neglect the low-income areas by directing all infrastructure development and maintenance efforts to the upper-income districts. Consequently, amenities such as paved streets, electricity, broadband cables and fixed telephone lines that are essential, and in some cases, required, for the functioning of ICTs in general and PNDs in particular, are available mainly in the upper-income districts and government office parks.

The second category includes the compartmentalization of land use activities. This phenomenon is a product of zoning. Zoning, originated as an instrument for separating incompatible land use activities in Western Europe in the 1800s. It was introduced in Cameroon as part of the broader European colonial project. The covert rationale of efforts in this regard was to supplant indigenous models of spatial organisation with European varieties. The indigenous leadership has religiously adhered to the spirit of the spatial organisation blueprint bequeathed to it by colonial authorities. Compartmentalization constitutes a prominent feature of the master plans that have been drawn up mainly by Western planning consultants for towns throughout the country (Njoh, 2010; Njoh, 2003: 154). A major implication of this feature for ICTs is related to cost. The cost of providing many ICT services, particularly those depending on cabling, is directly proportional to the distance covered. For example, if the cost of providing one kilometre of broadband cables is \$5,000, it is safe to assume that the cost of providing two kilometre of the cables will be \$10,000. In the impoverished economies of Africa, cost increases resulting from factors such as distances cannot be neglected.

The final category includes nondescript spatial structures. The most relevant manifestation of this toponymic problematic in the context of ICT provisioning and functioning is the absence of precise and unambiguous addresses for physical elements in built space. This problem is commonplace and is often manifested in terms of streets and major places going by multiple names.

Douala is plagued by identical problems. Thus, as Figure 2, a partial map of the city, shows, the street bearing the official name, Boulevard de l'Unité, is also known as Avenue Japoma. In the same manner, Boulevard de la Gare also bears the lengthy and confusing name, Boulevard General Leclerc 27 Août 1940. Douala's spatial structure is rendered more confusing by the fact that a number of streets and places in some parts of the city were renamed in the 1990s but continue to be better known by their former names (Bigon and Njoh, 2013; Njoh, 2010). For example, Place de la Salle des Fêtes in Akwa, continues to go by this name despite the fact that it was officially renamed, Place de Lions Indomptables as a tribute to the national soccer team's valiant performance at the World Cup in Italy in 1990.

The problem of nondescript and complicated spatial and physical structures has far-reaching implications for the functioning of ICTs and PNDs in particular. For example, the problem impedes the conventional use of PNDs, such as GPS navigation devices. This is mainly because the functioning of these devices depends on precise physical addresses. At a more basic level, the lack of precise addresses complicates the task of delivering conventional mail, locating individuals and services in the built environment. The informal sector, which as Ojong (2011) noted, currently counts middle-income individuals in its ranks in Cameroon, is also negatively impacted by the problem of nondescript spatial structures. Conceivably, the availability of precise addresses can go a good way in enhancing the mobile food vending business, which constitutes a significant portion of the informal sector in Cameroon's major cities such as Bamenda (Ojong, 2011). Other areas that are already benefiting from the use of ICTs in general and PNDs in particular in developed countries but are yet to do so in the less developed ones are business management, urban and municipal administration, public health and public safety and security (Nijkamp and Cohen, 1992; Nijkamp *et al*, 2009). Municipal authorities in developed countries are employing ICTs to enhance the collection, processing and dissemination of data on land use and related activities. Ambulance and other medical services as well as the police are using ICTs in general and PNDs in particular to facilitate rapid intervention in emergency situations.

The question of interest here is as follows. Can ICT/PND devices and systems that have been designed with the 'well-organised' spatial and physical structures of the developed world in mind function in the 'untidy,' 'chaotic' and 'ambiguous' environment of developing countries? The response to this question is in the affirmative as long as one critical condition is fulfilled. The condition is that ICTs

in general and PNDs in particular must neither be viewed from the perspective of ‘technological determinism’ nor from that of ‘social determinism’. As shown below, both perspectives are flawed. Rather, technology and human behaviour must be seen as interacting in a reciprocal manner. Evidence of this reciprocal relationship between ICTs and human behaviour abounds in Cameroon.

3. Methodological issues

The methodological approach adopted in this study can best be described as ‘mixed methods,’ including in-situ observation and desk-based research. The former involved ‘windshield observations’ along major thoroughfares in Cameroon’s two premier cities, Yaounde and Douala. The aim was to obtain first-hand knowledge of the ambiguous nature of the cities’ street signage and property identification systems. The observations also enabled us to have some sense of navigation problems arising from the lack of a precise and unambiguous addressing system. The desk-based prong of the study entailed essentially ferreting a multitude of secondary sources for information on the issues dealt with in the study. Particularly, through desk research we were able to conduct an extensive review of works on PNDs, ICTs and how they affect, and are affected by, cultural variables.

4. Theoretical and conceptual framework

Modernization theorists of the post-World War II era steadfastly held that the emerging nations of the non-Western world had no chance of ‘developing’ without completely supplanting their indigenous beliefs, culture and tradition with Western varieties (see e.g., Rostow, 1961; Inkles, 1960). Paradoxically, proponents of modernization were parading their recommendations as gospel truth almost a century subsequent to the groundbreaking work of Franz Boas (1888), who had acknowledged the inevitability of exchanges between cultures as opposed to the absolute supplanting of some cultures by others. More importantly for the purpose of the present discussion, Boas was ahead of his time by drawing attention to the fact that even in instances of acculturation, an alien culture never completely replaces the extant indigenous ones. Rather, there is often what has come to be a well-known anthropological concept, namely syncretism. Syncretism connotes a *mélange* of indigenous and received cultural practices. This amalgamation of different cultures is almost never coordinated by any superior authority. It just happens.

Yet, there is no denying that dominant groups have often resorted to promoting their own culture while discouraging the cultural practices of minority or weaker groups. Proponents of modern ICTs, most of whom are agents of Western civilization, have often sought to supplant indigenous cultural practices with Western equivalents. Consider for instance, the fact that developers of indicators of ICT penetration usually focus on the number of ICT devices per 100 persons. Certainly, the resultant indicators are of some utility in Western settings, where the individual ownership of real property, chattels and most other items is the rule. However, they are misleading in settings such as Africa. This is because in the latter, the communal ownership and the tendency to share most items is commonplace. It is quite common in Africa for individuals without a television (TV) set to congregate in the domicile of one of their television-owning neighbours to watch TV. Thus, to count individuals who do not own a TV set as having no access to TV in most African communities is erroneous. The proclivity towards sharing as an element of the African ethos also manifests itself in the use of mobile phones throughout the region. For instance, in Cameroon, the least expensive mobile phone costs about 5,000 francs CFA (about \$12.00 US). This amount, although paltry by US/European standards is substantial in Cameroon. However, a Subscriber Identity Module (more commonly known by its acronym, SIM) card for mobile phones, complete with an individual phone number costs only 500 francs CFA or less. This is barely a tenth of the cost of a mobile phone. Consequently, many individuals of modest means own phone SIM cards but no phones. Whenever the need arises, an individual without a phone simply borrows one from a relative or friend, inserts his/her SIM card in the phone and assumes 'ownership' of the device for a definite period. Also worth noting in this connection is the prevalence of privately-owned public 'call boxes' or phone booths. Members of the public are able to make phone calls from these booths at a modest fee per minute.

Thus, for statistics on ICT penetration to be more reflective of the reality in non-Western societies, account must be taken of the role of syncretism. In the foregoing examples, note should be taken of the fusion of two cultures, Western technology manifested in the first instance, in the form of a TV set on the one hand, and the African ethos of communalism that affords access to TV for those without the wherewithal to own one. In the second instance, Western technology, the mobile phone, is fused with African culture, articulated in the tendency to share resources – in this case, the phone.

Another attribute of African culture that has found its way into the modern ICT domain is the requirement that those with the means support or assist those without. The case of the creative uses of the cellular phone that has been observed by Mbarika and Mbarika (2006) among others is particularly telling in this connection. One such use of this device is known locally in Cameroon as ‘beeping’ (or ‘bipage’ in broken French). With ‘beeping,’ family members, friends and acquaintances use the cellular phone to communicate without incurring any charge. In this regard, pre-negotiated or agreed upon instrumental messages, such as ‘call me back,’ ‘meet me somewhere,’ or ‘I will be there soon,’ are communicated by say, 1, 2, or 3 rings (i.e., ‘beeps’) respectively. To understand where African culture and tradition fits here, requires appreciation of the unwritten rules governing the social intercourse involving ‘beeping’ in Cameroon. These rules allow for individuals on the lower rungs of the socio-economic ladder to ‘beep’ those on the higher rungs and never the reverse (cf., Mbarika and Mbarika, 2006). The expectation is usually for the better-off parties to incur the charges for all cell phone interactions with their less fortunate counterparts.

The foregoing observations bring into focus two diametrically opposed views of ICTs. The first of these, namely technological determinism, is the brainchild of Thorstein Veblen (1857-1929). This view suggests that the social structure, culture and tradition of any given society are driven by the technology available in that society (Griffin, 1997). For instance, as Marshall McLuhan (1962) once argued, the human experience is the function of changes in communication technology. Resulting from this line of thought is a belief that not only is technology autonomous. In other words, not only is technology capable of developing independent of social concerns, it is also powerful enough to regulate human behavior. The implication here is that humans organise themselves to meet the needs of technology, with the consequences of this organisation falling beyond human control. Simply put, technological determinists view humans as lacking the freedom or ability to influence technology.

The second view can be subsumed under the canopy of social determinism, which essentially sees society as an autonomous force that possesses the capacity to alter technology (Goguen, Online). Thus, as stated above, social determinism stands in diametric opposition to the claim by technological determinists to the effect that technology is an autonomous powerful and inevitable force that operates in a uni-directional, rather than reciprocal, manner to influence human behaviour (Ellul, 1964). The disagreement between social

and technological determinists is simply in relation to the direction of the presumed causal relationship between technology and societal behaviour. In contrast to technological determinists, social determinists see technology as a function of societal behaviour (APF, 2008; Miller, 1997; Ellul, 1964).

Both views are flawed. The causal relationship between the two variables is rather ambiguous and nuanced. In fact, it is an oversimplification if not erroneous to reduce the relationship to one defined in terms of cause-and-effect. Rather, as Oduol (1995) has argued especially in the context of Africa, technology assumes the identity of a social and cultural phenomenon that influences and is influenced by human, political, economic and social behaviour. He then went on to quote Pfaffenberger (1988: 249), who views technology as a “totally social and cultural phenomenon which marries the material, social and symbolic in a complex web of associations.” From this vantage point, technology can be seen as constituting “a symbolic reflection of people’s values, belief systems, and cultural practices” (Oduol, 1995, p. 302). More importantly, it is worth noting that any particular technology, how it is used, and its impact on a society are jointly products of the cultural meanings that the society attributes to the technology. From the genesis of human existence, technologies have always been adapted and adopted to suit the needs of the societies within which they are employed. The need to adopt and adapt technology has always been dictated by the need of societies to transform their proximate environments to their advantage.

5. The proposed strategy

The proposed strategy can significantly improve the use of PNDs and other ICT devices in Cameroonian and other African cities despite their nondescript spatial structure. Thus, the strategy is cognizant of the socio-cultural, spatial and physical realities of these cities, including the lack, or imprecise nature, of physical addresses. Some development theorists of the immediate post-World War II era erred by believing that the only way forward for developing countries was for them to follow the exact development path taken by their developed counterparts (e.g., Rostow, 1960; McClelland, 1961).

Theories positing that African countries must follow the development path of contemporary developed nations imply that no meaningful use of PNDs is possible in Africa today. This is because African countries lack tidy built space complete with precise and unambiguous physical addresses. Yet, nothing could

be further from the truth. Instead, it is incumbent upon researchers to uncover creative ways to go about facilitating the use of PNDs and other ICT devices given the nondescript nature of built space in Africa.

The economic, environmental, political and safety rationales for promoting the use of PNDs in Africa are compelling. The value of such devices include but are not limited to the following: economic value of journey time savings, environmental protection via reduced carbon emissions, cost savings resulting from reduced fuel consumption, and improved efficiency for entities involved in door-to-door service/goods delivery. It is therefore imprudent to postpone their use until the region is equipped with more 'tidy' built spaces. This is essentially the underlying premise of our study. Essentially, we propose some ways in which modern ICTs can be adapted to the extant spatial and cultural environments of urban Africa. Adaptation is certainly more pragmatic and sustainable. In contrast, propositions that call for radically transforming existing conditions to reflect developed world standards are unrealistic. Developing countries would have to wait forever to benefit from ICTs if the precondition for doing so is to duplicate developed world standards. Resource scarcity is only one of the many problems that render efforts to duplicate developed world conditions in developing societies impossible. At the same time the complexity of modern ICT devices makes propositions to improve their functionality in developing countries by tinkering with their technical components untenable. The most promising propositions are therefore those that call for adapting ICT devices 'as they are' to existing cultural, spatial and physical conditions in these countries. With this in mind, the remainder of this paper concentrates on how best to increase the utility of: a) modern navigation devices, b) the internet, c) mail and parcel delivery, and d) tele-health delivery systems, given the existing socio-cultural and physical environment of Cameroon in particular and Africa in general.

Modern navigation devices

Modern navigation devices, such as the Global Positioning System (GPS) receivers, have become widely popular in developed countries during the last five or so years. Presently, these devices come as standard equipment in new cars, and have dramatically simplified navigation in the built space of these countries. The GPS system is the brainchild of the US Defense Department. It works in tandem with space-based satellites that are continuously orbiting the earth. The satellites transmit signals which enable the precise pinpointing of the

location of GPS receivers anywhere on the earth's surface. Use of GPS signals is cost-free to anyone with a GPS receiver. This makes it suitable for use in resource-scarce countries such as Cameroon.

However, the GPS receiver requires precise and unambiguous physical addresses to function. Such addresses, as mentioned earlier are rare or non-existent in Cameroon and other African countries. Consequently, the utility of GPS receivers is compromised in such countries. Yet, GPS receivers can serve to complement and dramatically simplify traditional methods of locating people and things in the built environment in these countries. To appreciate this line of thought one must first gain some knowledge of the traditional methods in question.

Although often unbeknownst and unrecognizable to most strangers, there is some order to the chaotic and fragmented urban spaces characteristic of African countries such as Cameroon. Of course, if there was no order at all, it would be impossible to locate someone or anything in an urban setting in these countries. Yet, in Cameroon for instance, people have devised pragmatic means by which to locate things, places and persons in the country's nondescript towns. Cameroon contains a total population of a little more than 22 million and 240 different indigenous and non-indigenous tribal groups. Members of these groups within every town in the country typically, although not always, live in geographic clusters or within the same neighbourhoods known locally as 'quarters' or 'quartiers' (in French). For example, Quartier Hausa in Yaounde and Hausa Quarters in Bamenda were initially inhabited by members of the Hausa tribe mainly from Nigeria and Northern Cameroon. Meta Quarters in Kumba and Bamenda were initially the main place of residence for members of the Meta tribe from the Northwest Region. While the geographic clustering of tribal groups may not be the rule, the tendency for members of each of these groups to belong to tightly knitted semi-formal social bodies commonly known as Hometown Associations (HTA's) is commonplace. Hometown associations and their Euro-linguistic zone of origin (Anglophone versus Francophone) constitute the most important attributes of one's identity in the country. Consider how someone would go about locating the residence of a man from Meta by the name Amah Mahmuzang, who lives in Cameroon's economic capital city, Douala, with a population of more than two million, and located in the Francophone region of the country. Once in Douala, a typical Cameroonian in search of the person in question would simply ask to be directed to any Anglophone resident of the city. From this Anglophone, he would ask to be placed in contact with any Meta

person or any member of the Meta Cultural and Development Association (the main HTA for people of Meta origin). From any member of this HTA, he is certain that he would be placed in touch with Mr. Mahmuzang or someone who knows his whereabouts.

Another commonly used means of locating a person within an urban area in Cameroon is by asking random passers-by, people at their homes or those at work, for directions. This approach is described by Njoh (2010: 7) in the following narrative. In the narrative, Njoh recounts the directions he was given to locate someone to whom he attributed the pseudonym, “Mr. ‘A’ as follows:

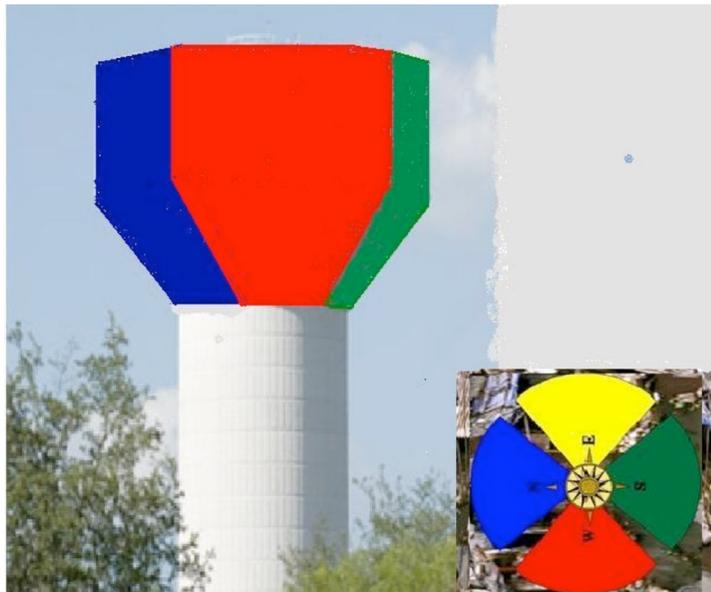
Take a taxi-cab from the city centre and ask to be dropped at ‘Carrefour Agip’ (a major intersection named after the Agip Service Station, the dominant commercial enterprise at that locale). Then, proceed to the ‘Pharmacie Santé pour Tous’ (Health for All Pharmacy). Go about 50 meters straight down the street across from the pharmacy. There, you'll find a hair dressing saloon called ‘Beauté Avant Tous’ (Beauty-First Saloon). Take the alley directly opposite the saloon. Go about 40 meters along that alley. At that point, you'll see two alleys intersecting. Take the alley to your left. Continue on that alley until you see a two-storey building to your left. Take the alley to the right and go down on that alley for about 30 meters. There you will find an open playground. There are always children playing soccer on the playground. Ask any of the children that you are looking for Mr. “A” and you'd be pointed to his house, which is the largest of the houses flanking the playground.

Although Cameroonians and other Africans have depended on methods such as this for centuries, their cumbersome nature is obvious. These methods can be vastly improved through the use of modern navigational devices or PNDs. However, given that such devices, particularly GPS receivers, require precise physical addresses and the problem of resource scarcity, a more pragmatic schema is proposed. The schema entails the use of colour-coded landmarks.

Colour-coded landmarks can be used as a strategy to circumvent the problem of ambiguous physical addresses characteristic of Cameroonian urban centres. Colour-coded landmarks of the genre envisioned here, and illustrated in Figure 3, may be tall concrete or metal water tanks or cellular phone towers. These structures already constitute conspicuous features of the built environment in Cameroon and other African countries. Thus, all that needs to be done to enhance their utility as tools of navigation is to colour-code them. In this regard, a number of strategically located landmarks can be selected to serve as guideposts for navigational purposes.

Each landmark or a portion thereof, at a height well above all proximate physical objects can then be divided into four equal faces, and each face painted with a different bright colour that is visible to the naked eye from as far away as possible. Each colour should be made to agree with a corresponding zone within the surrounding neighbourhood or quarter. Within this framework, the four sides of a landmark painted, red, green, blue and white correspond respectively with a 'Red,' 'Green,' 'Blue,' and 'White' Zone or Quadrant of the neighbourhood as illustrated in Figure 4. Each landmark must then be assigned a precise physical address based on its polar coordinates and bearings. To improve the utility of such an addressing system, each landmark within any given town should be assigned a unique number or name corresponding with the name or number of the neighbourhood or quarter in which it is located.

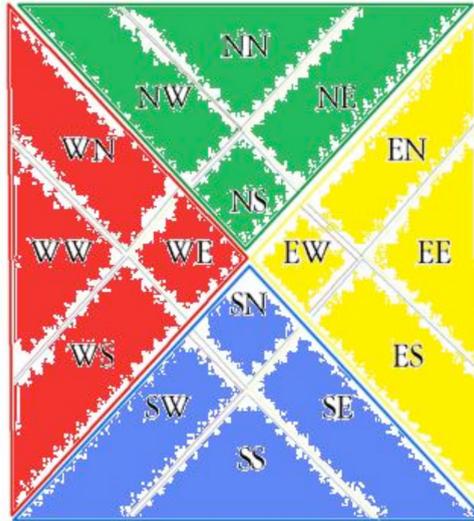
FIGURE 3: LANDMARK BEARING COLOUR CODES CORRESPONDING WITH NEIGHBOURHOOD QUADRANTS



Source: The authors

Accordingly, a person may be said to live in the Green Zone of Quarter 12. In this case, 12 should serve both as the number of the colour-coded landmark and the neighbourhood or quarter in which it is located. To further facilitate navigation, the major arteries leading to each of the colour-coded land marks should be precisely identified and clearly sign-posted. This option is relatively more feasible than any proposition requiring the precise identification and sign-posting of all streets in any given area.

FIGURE 4: COLOUR-CODED OUADRANTS CORRESPONDING TO NEIGHBOURHOOD AREAS



Source: The authors

The proposed schema, including landmarks with precise and unambiguous addresses is guaranteed to render modern navigational devices such as the Global Positioning System (GPS) receivers usable in the otherwise nondescript built environment of Cameroon. Thus, instead of say, Mr. Mahmuzang being simply known as a resident of Douala, he may be more precisely known as living in the Green Zone of Quartier Omnisport in Douala. Someone completely unfamiliar with the vast and populous city of Douala can simply enter the address of the Quartier Omnisport landmark into his GPS receiver and will be guided to within a few hundred meters of Mr. Mahmuzang's residence. Recall that Cameroon does not boast any precise residential addresses or unambiguously named or numbered streets. Consequently, the goodwill of Mr. Mahmuzang's neighbours would still be depended upon to actually locate him. The syncreticism here is obvious. Modern ICT, the GPS receiver, is used in combination with a customary practice, the practice of depending on even total strangers for directions, to facilitate navigation in an otherwise nondescript built environment. However, it is worth noting that GPS receivers and other ICT devices depend on electrical energy to function. In Cameroon and other African countries, electricity is a scarce commodity and power outages are commonplace. Therefore, more dependable and sustainable sources of power must be sought. Solar and wind are alternative energy sources that come to mind although their cost-effectiveness remains debatable.

Community internet centres

One important attribute of the African ethos is the tendency to collectively hold, manage and control scarce valuable resources. To be sure, systems of shared user privileges run counter to the dominant global ethos that promotes individualism. The Victorian economist, William Foster Lloyd and likeminded thinkers are well-known for contending that such systems are doomed to fail because of people's tendency to be greedy (see e.g., Lloyd, 1833). The ideas of these early thinkers evolved and became known as 'the tragedy of the commons'—a characterization whose origin is commonly attributed to Garrett Hardin's 1968 piece in *Science* (see Hardin, 1968). The thrust of Hardin's thesis is that individual users of shared resources acting independently would sooner or later seek to serve their own self-interests in a manner contrary to the common good of all users (Hardin, 1968). This line of thinking is pervasive among free-market enthusiasts for whom a community internet centres would contradict man's nature as a rational being. Yet, as proponents of common resource pools such as de Villiers (2012) have argued, cooperation is more in line with man's nature as a rational being than independence. More importantly for the purpose of the present discussion, cooperation – in the use/control of scarce resources such as arable land and other natural resources – dovetails neatly into traditional African culture. On account of this, two alternative propositions are advanced. First, it is recommended that internet service providers (ISPs) be required, in return for say, tax breaks or other incentives, to provide internet centres that can be used on a communal basis in especially poor neighbourhoods or quarters. Such a requirement is akin to what obtains under the fair share housing policy in vogue in some municipalities in the United States. The policy essentially requires real estate developers, in return for tax incentives, to ensure that a certain proportion of their property in any municipality is affordable to low-income families. To meet the needs of the poor, such cafés must charge its users no more than a token fee to support the upkeep and maintenance of the facility. The second alternative is one that encourages hometown associations (HTAs) through some minimal financial and/or technical assistance to set up internet services in the halls they already own and/or use as venues for their monthly meetings and other activities.

Within the proposed schema, community centres will re-assume the role they played during the pre-colonial era. During that time and even beyond, in the case of areas with a history of strong chiefs, community centres were based in the chief's palace. It is at these centres that community festivals were held. In

this modern era of ICTs, these facilities can serve many contemporary purposes. In this vein, community centres, which may be those owned and operated by HTAs in urban centres or palaces of chiefs in rural settings, can serve as locales for internet services, public phones, and related services.

Community mail/parcel depots and distribution centres

Although the e-mail and mobile phones are now the dominant means of communication, conventional mail services remain important for parcel distribution. However, the cost of maintaining individual Post Office mailboxes is beyond the reach of most people in Cameroon and other developing countries. One way of reducing this cost, hence making such services affordable is to operate communally as opposed to individually-owned mail/parcel depots and distribution centres. These centres can then serve as an important element in online or internet-based shopping and an indispensable link to global commerce. The effectiveness of such shopping depends on the availability of precise physical addresses to which online-ordered goods and/or services can be delivered. Community halls can serve as such addresses. Here, as noted earlier, urban centres in Cameroon are divided up into quarters or quartier in French. Each quarter is placed under the administrative jurisdiction of a quarter head (*chef du quartier*, in French). This head is generally familiar with all households within her/his quarter. Thus, based on the strategy being proposed here, the quarter head's residence can serve as a mail/parcel depot for households within any given quarter. Once such depots have been established, precise addresses can then be assigned to each, and then entered into the relevant data-base. From here, the data can be retrieved by entities such as those in the mail/parcel delivery services. To be sure, assigning precise and unambiguous physical addresses to community halls as suggested here is far less demanding, financially or otherwise, than to do so for all physical objects in the built environment of Cameroon or any other African country.

Sound codes for health and public safety purposes

The use of sound codes is an integral part of the African ethos. Talking drums that have been used to relay messages over distances as vast as 8 kilometres exemplify this tradition. This African tradition was introduced in the USA by enslaved West Africans in the 1600s (Zao, 2014). 'Slaves from the west coast of Africa,' Zao (2014, p. 1) noted, 'used drums to communicate with each other in much the same way as they did at home, sending coded rhythmic messages

Europeans could not understand over long distances.’ Authorities in America’s most prominent slave-owning states were so terrified of the communication ability of (African) drums that they outlawed them in the 18th century. South Carolina was the first to enact such a law as evidenced in Article 34-37 of its 1740 Slave Code, which stated in part thus:

‘drums, horns, or other loud instruments, which may call together or give sign or notice to one another of their wicked designs and purposes’ (South Carolina, Online, para. 6).

Thus, the importance of sound codes in African ethos cannot be overstated.

The uses of sound codes in a modern context dominated by sophisticated telecommunication devices are numerous. Advanced warning devices can be programmed to emit sounds to warn populations of impending natural disasters such as floods, volcanic eruptions, and hurricanes. They can also be used to mobilize neighbourhood watch groups to chase and capture thieves or other criminals. In fact, members of neighbourhood-watch groups have already programmed specific sounds to alert each other once a criminal is detected anywhere in their area of jurisdiction.

Sound codes can also be used to announce the start and conclusion of joint or communal activities such as monthly or weekly clean-up campaigns. Presently, people depend on word of mouth, which cannot assure the same level of effectiveness guaranteed by a programmed sophisticated electronic device.

Another promising avenue in which sound codes can be effectively used in an impoverished setting such as Cameroon is telemedicine. Telemedicine’s main advantage in such areas resides in its ability to provide medical services through most telecommunication devices. Typically, such services are transmitted from a relatively well-endowed location to a site with limited resources, particularly a shortage of health professionals. Through telemedicine, it is possible for urban-based health professionals to effectively serve their rural-based clients. For instance, the medications for a rural-based illiterate can be placed in three different bottles, respectively coloured, green, red and yellow. This individual can then be instructed to take the medication from the green bottle when her phone rings once, and from the red bottle when it rings twice, and finally from the yellow bottle when the phone rings thrice. Here, the sound codes serve as reminders and circumvent the need to have someone with the ability to read to assist the (illiterate) rural patient.

6. Conclusion

Efforts to promote development in Africa during the post-World War II era have produced dismal results at best. Prominent among the reasons for these negative results is the tendency on the part of development agents to erroneously equate development with Westernization. Viewing development in this light invariably leads to recommending the supplanting of non-Western cultures and traditions with Western varieties. In the ICT domain, such a view typically gives rise to attempts to duplicate Western spatial, environmental and other standards as a prerequisite for the functioning of ICT devices. Resource scarcity and other problems make such attempts an exercise in futility. Yet, the importance of these devices in development initiatives in non-Western societies cannot be overstated. Thus, the question is neither about the utility of ICTs, nor about the untenable proposition of duplicating Western conditions, in non-Western societies. Rather, it is about how the utility of ICTs in general and PNDs in particular can be significantly enhanced under existing conditions in these societies. The present paper has attempted to address this perennial question. It has shown how the utility of ICT devices can be enhanced in Cameroon through syncretism, that is, the *mélange* of indigenous and received cultural practices. The paper holds critical lessons for efforts to improve the utility of ICT devices as instruments of development in other countries in Africa in particular and other non-Western regions in general.

Biographical Notes

Ambe J. Njoh, Ph.D., is a Professor of Environmental Science and Policy, School of Geosciences, University of South Florida, Tampa, USA. (njoh@usf.edu)

Liora Bigon, Ph.D., is a Teaching Fellow at the Department of General Studies, Holon Institute of Technology, Holon, Israel. (liorin@hotmail.com)

Elizabeth N.M. Ayuk-Etang, Ph.D., is a lecturer at the University of Buea, Cameroon. (miafoueli@yahoo.com)

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