

3

Mobile Telephony and Socioeconomic Dynamics in Africa

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The mobile phone revolution in Africa is a fact.

—NGO EMPLOYEE¹

It cannot be denied that mobile telephony has been booming in Africa since 2000. Although there are still regions that are not connected to this type of wireless technology, they are rapidly decreasing in number, and not having direct access to the network does not mean that people do not use the phone.

What has this revolution done for Africans and for African societies? Recent studies and articles are quite euphoric about the effect that the mobile phone has had on social relations, economic possibilities, and the political engagement of the “voiceless,” to the point that they have even introduced a new catchphrase in development aid: “mobile interventions.” How well substantiated are these claims?²

Telecommunication infrastructure and development are supposed to be positively related. Roller and Waverman (2001) have analyzed this general relationship in terms of the industry itself and the effect of telecommunication services. Development is thus related to economic growth. In such equations, the concept of development stands for progress, as in moving toward a modern society. The

1. This comment was made by an NGO employee at a meeting about mobile interventions in Africa, held at the African Studies Centre, University of Leiden, April 4, 2012. “Mobile Telephony, Democracy and Development in Africa: Policy and Research Approaches” was organized by the research project Mobile Africa Revisited.

2. In recent publications, this “revolutionary” change as a consequence of mobile telephony is questioned. See Ekyne (2010); Etzo and Collender (2010); and cf. de Bruijn, Nyamnjoh, and Brinkman (2009).

questions are, Who benefits and when? Is this in fact a positive development? And who judges what is positive? The relationship between infrastructure and development is certainly not linear. It may be better to relate infrastructure to change—social, economic, and political change. The relationship could then be analyzed to determine who experiences the change and who will benefit or lose out. This chapter asks these questions regarding ordinary people in various regions in Africa and focuses in particular on those areas that are less well endowed with infrastructure in general, as it might be expected that this would be where telecommunication infrastructure could have a significant impact and make a difference. Telecommunication infrastructure is seen here as being primarily mobile telephone technology.

Changes in society are examined from an economic, political, and social angle, and the chapter is based on research carried out as a part of the Mobile Africa Revisited research program, which is currently investigating the social dynamics related to mobile telephony in Africa.³ The research methodology is basically qualitative and does not pretend to decipher the revolution statistically, although it does attempt to understand changes in dynamics and processes as a consequence of this new era of communication and information technology. The research is based on the notion that present-day dynamics can be understood in relation to past dynamics and that today's dynamics are always related to specific contexts, which makes it difficult to generalize from these specific data. The chapter also compares different regions in Africa to highlight some commonalities and differences that in turn allow us to draw some general conclusions. This research program started in 2006, which thus introduces a certain temporal depth to the observations. Comparison with the period before mobile telephony also helps us understand social processes. The analysis here departs from the interrelationship between society and technology as it was developed in the Actor Network Theory (Latour 2005). Society shapes technology as technology shapes society. The mobile phone is, therefore, as much a part of society as society is a part of the mobile phone (cf. de Bruijn, Nyamnjoh, and Brinkman 2009). The changes described here are the result of this interaction.

The chapter starts by reviewing the statistics on mobile telephony. These general data are related to stories of the construction of the infrastructure as it developed in the project's different field sites. The question "What has the mobile telephone done for people in Africa?" is examined in terms of the economic infrastructure of communication. The chapter focuses on craftsmanship; social relating and distance; trust and betrayal; and phone cultures. It will become clear that the mobile phone revolution is developing in diverse directions and is widely dependent on the context in which it has evolved.

3. The program is sponsored by WOTRO, The Netherlands (W 01.67.2007.014). For more information on the Mobile Africa Revisited program, see www.mobileafricarevisited.wordpress.com.

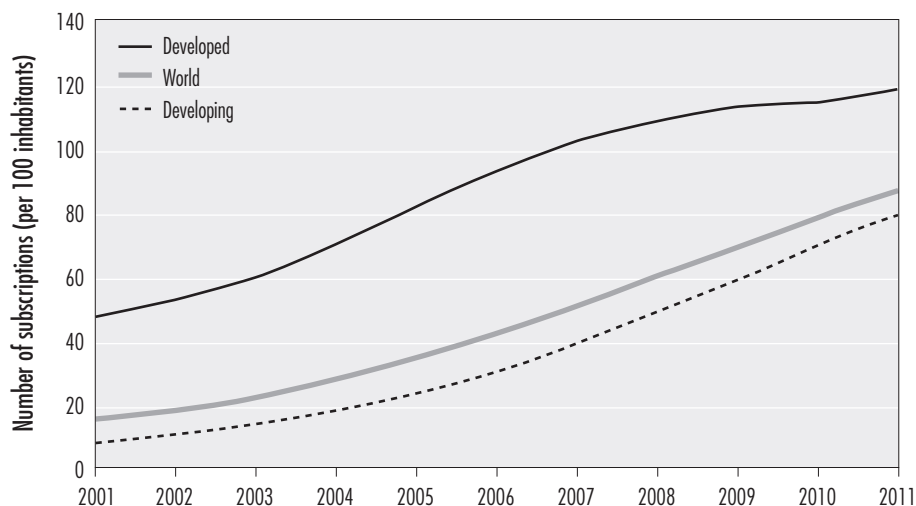
The Mobile Phone Revolution in Africa: Has the Digital Gap Been Closed?

International Telecommunication Union (ITU) statistics show that Africa is being increasingly covered by mobile telephony. The development of mobile telephony expanded considerably at the beginning of the twenty-first century (cf. Castells et al. 2007), and coverage today shows a mean of 50 percent.

This is an enormous boom for Africa, but the continent still seems to be lagging behind the developed world and also the developing world, as shown in figures 3.1 and 3.2. However, these global statistics hide a lot of dynamics. Within Africa, the differences between countries are huge, but growth has been seen everywhere. Countries like South Africa, Gabon, and Egypt have coverage of more than 100 percent, while others, such as Nigeria and Cameroon, are said to have 40 to 50 percent coverage. Yet others, like Mozambique, Chad, and the Central African Republic, do not exceed 30 percent. Within these countries, some regions are doing better than others, and some people are better integrated in this form of communication than others. Urban areas are generally much better connected than rural areas, and a difference in connectivity between social categories is inevitable within these areas.

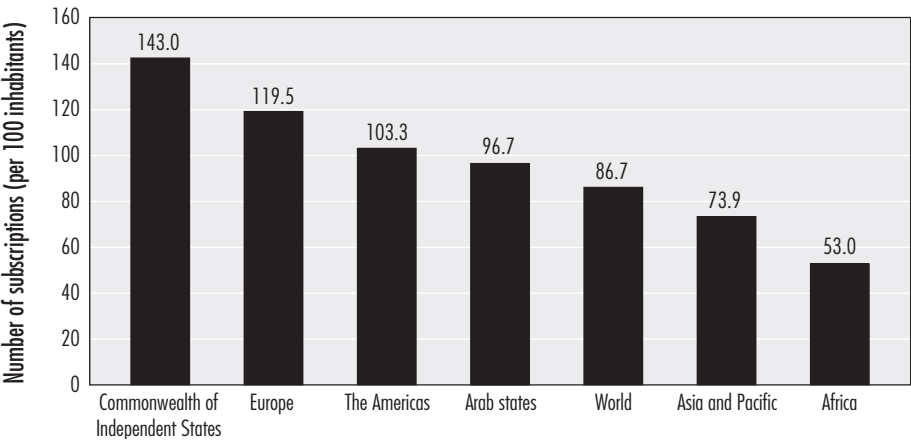
These differences relate to the socioeconomic and political contexts in which mobile telephony develops, and the way it is embedded in society affects the

Figure 3.1
Estimated Mobile-Cellular Subscriptions Worldwide, 2001–2011



Note: The developed/developing country classifications are based on the UN M49; see www.itu.int/ITU-D/ict/definitions/regions/index.html.
Source: ITU World Telecommunication/ICT Indicators database.

Figure 3.2
Estimated Mobile-Cellular Subscriptions in Select Regions, 2011



Note: Regions are based on the ITU BDT Regions; see www.itu.int/ITU-D/ict/definitions/regions/index.html.
Source: ITU World Telecommunication/ICT Indicators database.

way people appropriate the technology. The appropriation of technology is a two-way process in which technology and society influence each other. Closing the gap will be a gradual process in which both state policies and the policies of companies and local users will play a crucial role.

Technology and Infrastructure: Changing the Landscape —————

Wireless technology consists of magnetic fields produced by mobile phone masts that have a certain reach and send out signals for the phone user (figure 3.3). To have a communications network in an urban space, a mast is needed every few hundred meters. In a rural area, masts can be set farther apart, but providers need to negotiate access to the land on which the masts are erected, by either leasing the land or buying it. The masts are often found next to houses or on the top of multistory buildings. They are highly visible in the urban landscape and are found on the tops of mountains in the rural areas or on flat areas where their reach can be much greater. Mobile phone masts have become recognizable markers on the African landscape.

Many anecdotes used to surround the way people in rural areas in Africa tried to access a signal for their phones, with people in remote areas climbing trees or walking long distances to find a signal. In some places known to have a signal, a phone would hang on a cord or in a tree so people could receive calls. These spots of connectivity became social places, and the entrepreneur who was

Figure 3.3**Mobile Phone Mast in Nomadic Lands, Mali, 2005**



Photo: Mirjam de Bruijn.

able to appropriate them became the village messenger (de Bruijn, Nyamnjoh, and Angwafo 2010; Seli 2012; cf. van Beek 2009). With advances in the network and the growing numbers of masts in remote areas of Africa today, these social spots are disappearing.⁴

Mobile telephony is a technology that does not work without electricity. To be able to set up masts, the phone companies have had to bring in their own power generators, as rural areas often had no prior electrical supply. The generator itself then provided the sole source of electricity for people to recharge their phones. Mobile Telephone Network (MTN)⁵ has not, however, been allowed to provide electricity in villages in Cameroon, which has to be done exclusively by

4. For a recent account of these practices in Burkina Faso, see www.metropolistv.nl/nl/themas/de-telefoon/bellen-in-de-boom-in-burkina; this short film reminds us not to draw conclusions about disappearance too rapidly. After all, the whole world will never be connected to wireless; there will always be regions without connections. The film reminds us of the notion of the “fifth world” as the world where connectivity is absent (cf. Castells et al. 2007).

5. MTN is a South African-based mobile telephone company headquartered in Johannesburg.

the state company, Société Nationale d'Electricité du Cameroun (SONEL). This restriction has led to innovative solutions by villagers who created new businesses for charging phones with the help of car batteries or even radio batteries. In a few instances, people have even resorted to using bicycles to generate power. The recharging of phones often takes place at shops that have a generator running during the day, as this provides a (small) extra income for the shop owner. Increasingly, generators have also become a part of Africa's rural landscape. The problems surrounding electricity provision by state companies are enormous, and the companies often default due to corruption and surplus demand. The growth of cities and the increasing demand for electricity for today's modern lifestyle are the obvious causes.⁶

AN INTERMEZZO

In 2005, after an absence of a few years, I visited central Mali and came across mobile telephony for the first time in a remote area. I had worked with nomadic people in central Mali between 1987 and 2005 for Ph.D., postdoctoral, and other research projects, and until the beginning of the twenty-first century there had been no electricity, only one tarmac road (built in 1985), and hardly any roads at all into the interior where the nomads lived. In short, travel was difficult. The main means of communication then was by camel or on foot. Land lines were only available at state offices and were not accessible to ordinary people.

Fast forward to 2005: The first wireless masts had been established near the area's small towns, although they still did not have regular power supplies everywhere. I was surprised to meet my nomad "brother" in his camp with a phone. The flat landscape allowed the signal of the mast 35 kilometers (22 miles) to the north to reach the camp, but only in one place. My brother had managed to connect to the elected deputies in the region, and because of this, he found support among his people to become their leader. He has now entered politics, and as he himself admits, this was due to the contacts he was able to maintain through mobile communication (Sangaré 2010).

Early mobile telephony in Africa has created many such stories, and the discovery of connection spots has forever changed the communication landscape for many. These spots become hubs of communication and illustrate local enthusiasm for phoning. Individual benefits, as in the extreme case of my nomad brother, enhance expectations. And thus, a change in lifestyle is unavoidable. The lives of those who have accessed mobile telephony are changed forever.

6. The electrification of sub-Saharan Africa is about 30.55 percent, compared with 99 percent in North Africa. There are huge differences within sub-Saharan Africa: 14 percent of the rural areas are covered, compared with about 40 percent of the urban areas. See www.iea.org (World Energy Outlook 2012).

The Delivery of Mobile Phone Service

Today, mobile telephony in Africa is provided by different companies that all entered the competitive market in 1998. Foreign companies competed with national companies, which has resulted in the encroachment of international phone companies on the continent. One of the first foreign companies to operate in Africa was Celtel, a Dutch company that has since started operations in 14 African countries. Their colorful advertisements were covered with slogans relating to development rhetoric. They were very visible in Chad's capital, N'Djamena, when I visited in 2007. Their red and yellow advertisements literally colored the town, and their slogans shouted out at people traveling along the main roads (figure 3.4).

In 2009, Celtel was sold to Zain, a company from the Middle East that uses a completely different set of colors—black, pink, and pale green—in their advertising campaigns. The message in the advertisements has changed, too. The

Figure 3.4
Celtel Advertisement in N'Djamena, Chad, 2007



Photo: Mirjam de Bruijn.

women on the billboards now wear veils, and the images presented are of a happy Muslim family, whereas Celtel campaigns had sold visions of a happy life more generally.

MTN is a South African-based company that painted the landscape yellow and introduced words like “airtime” (on a yellow flyer) and a new greeting: “Y’ellow.” They advertise their mobile phone services on huge boards with slogans and images of a beautiful middle-class family life. Their most impressive advertisement to date talks of the “Right to Communicate” (figure 3.5).

The French company Orange is also an influential player in the African telecom market, with its orange advertisements and similar campaigns. As part of its campaign, Orange distributes free paint in the company’s color for shops and houses to remind people of the company’s advertising message. Orange and the other mobile phone companies have effectively turned the urban African landscape into a competitive communication landscape.

Mobile telephony not only provides possibilities for communication, but also brings new messages and new ideas for society—and, in the end, an inevitable change in people’s livelihoods.

Figure 3.5
MTN and the “Right to Communicate,” Bamenda, Cameroon, 2009



Photo: Mirjam de Bruijn.

The Economic Infrastructure of Communication ---

The mobile phone boom has affected different levels of the economy, changing the national and regional economies and certainly local economic dynamics as well. The focus here is on local dynamics and how the mobile phone companies have created a new economic space. The economy that is created in such a field fluctuates with the context, and what seems to be a very firm basis can collapse at any moment. The communication economy has its own specificities, and these are also discussed in this section. Waverman, Meschi, and Fuss (2005) have indicated the possible influence of mobile telephony on trade relations and commerce on a micro scale and on the economy brought into countries with the arrival of the new commodity. The communication economy produces services, goods, and gadgets with their own markets, and mobile phone companies have generally tried to control the market for their services as far as possible.

AIRTIME

Most phone use in Africa is with prepaid systems. Subscriptions are a new concept and only accessible to a few relatively rich people. Most people therefore have a SIM card in their phone (often more than one so they can juggle use according to the different prices offered by the companies), and they put credit (“airtime”) on their phone as they need it or can afford it. The main service that the mobile phone companies provide is airtime, which is their biggest moneymaker. Sales of airtime have gone through different stages. The first system worked in a trapped hierarchy: the hierarchy of sale. It worked as follows: The company had a huge bulk of airtime to divide among its customers but could not handle the sales directly, especially in the parts of Africa where roads and transportation are difficult. Most companies thus worked with middlemen, who were often big businessmen who could afford to buy large quantities of airtime directly from the company. These middlemen would then divide up the airtime and sell it to middlemen lower down the chain, who were also relatively rich. This second group bought quite a lot of airtime, which they in turn sold to regional middlemen, who sold it to individuals, who sold it from tables, kiosks, phone boxes, or bikes directly to customers. To make the system attractive, companies introduced a bonus system (cf. Nkwi 2009).

AYABA: A STUDENT IN BUEA, CAMEROON

When we first met Ayaba, a university student reading history, in Buea, Cameroon, in March 2012, she had just finished her exams. Her involvement with MTN started in her hometown, Bamenda. Her mother died when she was at secondary school, forcing her to take care of herself and her household. She was eager to continue her education, so she began selling airtime and built up a clientele in Bamenda, which helped pay her school fees and allowed her to contribute to her family’s income. When she left school and headed for the university in

Buea, she continued her business, although her new customers were very different from those she had in her hometown, something she felt was related to the university environment. Ayaba's call box is opposite the main entrance to the university, where she is now well known. Students are not always easy, she says, as they sometimes try to avoid paying for services or create problems at her stand. Nevertheless, the business has allowed her to go to the university. Ayaba works hard, but her sister joined her for a few months to help when she had to study.

SELLING AIRTIME IN N'DJAMENA

The young men pictured in figure 3.6 were on the streets of N'Djamena just in front of the Celtel office in 2007 trying to sell phone cards. At that time, the

Figure 3.6

Young Men Selling Airtime for Celtel in N'Djamena, 2007

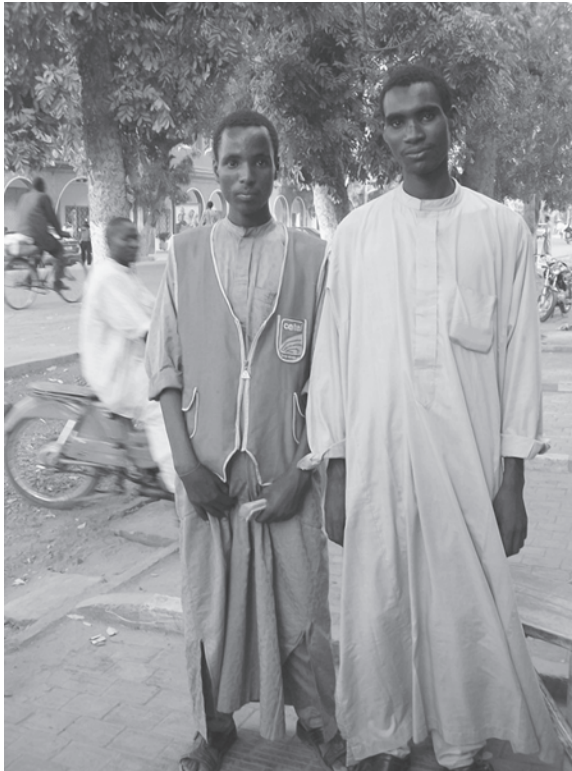


Photo: Mirjam de Bruijn.

Figure 3.7**Young Men Selling Airtime for Zain in N'Djamena, 2009**

Photo: Mirjam de Bruijn.

transfer of airtime had not yet been introduced in the city, and it was common to buy a scratch card to put credit on one's phone. These young men claimed that the business of selling airtime was profitable for them and that they were able to contribute to their family's income. A few years later, after Celtel was taken over by Zain, young men had Zain bikes, which made them more mobile, increasing the area in which they could sell airtime (figure 3.7).

A RECENT ECONOMIC APPLICATION: MOBILE MONEY

The technology of mobile telephony not only has opened a new market related to the phone, its accessories, and its service, but also has become a tool in facilitating economic transactions. In regions with rudimentary economic infrastructure, wireless technology opened possibilities for safe and quick economic transfers. M-banking (mobile banking or mobile money) is becoming increasingly popular in Africa. In regions where banking and the bank system have never been established, mobile technology seems to have found a new niche with a high potential for economic development (Batchelor, Kashorda, and Sylla 2009).

The technology is based on the message functions in Global System for Mobile Communications (GSM) networks to which most of the mobile users

in Africa are connected. Users whose phone company collaborates with a local bank can create their own accounts, similar to a bank account, and transfer money by mobile messaging to whomever they want. This is a sophisticated adaptation of airtime use for mobile money transfer, a technique that arrived after mobile telephony and was immediately adopted by Africans. Airtime was sent from point A to B, and subsequently in B it was paid out in its monetary form. In such a way people would send small amounts of money from urban to rural areas, often from richer or working family members to poorer ones. Airtime was monetized, and the mobile phone became a safe tool for the transfer of small amounts of money. This first form of mobile money later turned into the more sophisticated system of mobile banking. The first experiment with mobile banking was developed by Safaricom, the first mobile phone operator in Kenya, where the concept M-Pesa (Swahili for mobile money) was introduced in 2007. It turned out to be very successful. Nevertheless, a survey on the use of the M-Pesa in Kenya showed that the system is mainly used by the relatively wealthy, usually in urban rather than rural areas (Jack and Suri 2011). This finding is confirmed by the extensive distribution of the technology in South Africa, which has one of the wealthiest economies of the continent (Batchelor, Kashorda, and Sylla 2009).

It is therefore interesting that in May 2012, when we tried to find out if and how mobile banking worked in anglophone Cameroon, more specifically in Bamenda, people admitted that they did not trust the system. At that time, Orange and MTN had just started their campaigns to promote mobile banking. Most phone users said that they never used mobile banking but admitted that they did use the transfer of airtime to send small amounts of money to their parents or other family members in the village. Also important is the fact that in this part of Cameroon, a credit union had been introduced before independence in 1960. People use the services of the credit union to deposit money or to send money home when they travel (cf. Nkwi 2011), which reduced the need for mobile banking. Other regions where we conducted research—Chad, the Casamance region in Senegal, and southwest Angola—were also not yet particularly advanced in this new mobile technology.

Nevertheless, the development potential of this new form of money transfer is high. As the case of Kenya has shown, users appreciate it for its safety and the directness of money transfers, for the fact that they no longer have to carry money along while traveling, and because it facilitates commercial activities (cf. Jack and Suri 2011). The newest trend related to M-banking and mobile money is the mobile payment of water and utility bills. Mobile service deliveries have only just begun in remote and underserved areas, but the unequal access to mobile banking, which was one of the major conclusions in the M-Pesa survey study, threatens a possible increase in social and economic inequalities (Jack and Suri 2011). However, the technology's high rate of adoption and quick spread among ordinary African citizens also reveal an eagerness to appropriate this innovative use of mobile technology in daily life.

Communication Craftsmanship

Mobile phone maintenance is to link the line.

—CHINESE PROVERB

Mobile phone technology was not originally African but was developed in offices in the West. But technology is not static, and it adapts to the environment it finds itself in and molds itself according to the wishes of the host country's customers, users, and leaders. The variety of call boxes that now include mobile banking services is an example of how mobile phone technology has been adapted. Other examples are how providers adapt and are developing technology for the "poor" market that they consider Africa to be, as discussed in the previous section. The craftsmanship around the mobile phone as an object has become increasingly adapted to the African communication environment, and this in turn has transformed the very communication landscape itself.

I met Appolinaire in Buea in January 2012 when my colleagues and I did an extensive qualitative survey on phone repair shops for London's Science Museum, which was preparing an exhibition on phone culture in Africa. The most remarkable figure in this research is the phone repairer. He (and it is always a "he") has become a central figure for people and their phones, replacing Ericsson, Vodafone, or whatever big company one might be attached to in the West. The technological know-how of these men is phenomenal, and it is adapted to the local technological environment and economy.

Appolinaire's story is, in a way, representative of how young men's lives are developing in Cameroon, Uganda, Mali, and elsewhere in Africa.⁷ His parents thought their children should go to the university, and they worked hard to give them this chance. Appolinaire earned a bachelor's degree in accounting from Buea University and, after graduation, went to Limbe, where his parents live. He worked for a while for a Chinese firm and got to know a Ghanaian man who repaired phones. This caught his interest as he had always liked physics, and his knowledge in this field was now useful. In the end, he turned out to be a better repairer than his teacher, and he opened his own workshop. He worked in Limbe for a few years and then went to Buea, where he expected a better market. His shop traveled with him, as it is located inside a mobile kiosk. Inside he built a waiting room and his repair area, which was just wide enough for him to sit in, with room for his table and computer (figure 3.8).

In Buea, Appolinaire now repairs the Chinese smartphones that are very common in Cameroon and often require software repairs. Older models need hardware repairs, and much of what looks like garbage in his work area is actually parts of old phones that he has saved over the years and that now make up

7. I have met young men with similar stories in Yumbe, Uganda; in Khartoum and Juba, Sudan; and in Bamako, Mali; and students have reported other cases in Chad and Senegal.

Figure 3.8**Appolinaire in His Shop, 2012**



Photo: Mirjam de Bruijn.

his tool kit. He collaborates with a group in Buea and is good friends with one of the men whom he got to know through a Chinese phone repairer who was the first to open up such a business in the city. His shop is still there, but the Chinese man has moved on to another business. Appolinaire explains how his encounter with this Chinese phone repairer, who happened to rent space for his shop in his father's house, introduced him to this business. He started repairing phones with the Chinese man, who hardly spoke any English but was able to teach him the craft. Today, he and Appolinaire teach others, and the craft of phone repair is seen as a type of apprenticeship.

Appolinaire and his friends collaborate with repair groups on the Internet and are in almost daily contact with the GSM forum where (phone) repairers from all over the world explain their problems and help one another. The forum works on the basis of knowledge exchange, and if one has nothing to contribute, reception is difficult. A body of repair knowledge is thus being created. To access this knowledge, you have to add to the knowledge in a way that advances improved phone technology. A young man in Bamenda told me that for a long time he exchanged ideas with a friend in India every day. The Cameroonians will not claim ownership of this knowledge, but it will certainly end up improving

technological applications somewhere in a Chinese, Korean, or European business. This structure raises interesting questions about the development of phones with two or three SIM cards. Having two or three SIM cards is only useful as long as the various phone companies do not collaborate and make phoning from one to the other more expensive. This is certainly the case in the African market, where competition is intense and people who live in poverty cannot afford to pay more than the bare minimum. Another development is the cheap smartphone that is depicted as being of secondary quality but still fills a clear role in the African economy. These forums appear to be research consortia for the big phone companies.

Today, repairing phones is big business in African countries, which often receive secondhand phones from Europe that require repair or cheap phones that need frequent attention. This kind of craftsmanship has allowed many young men to earn a good income.

Social Relating and Distance: Mobile Margins Enlarged —————

With easier communication, social relations over a distance are expected to be transformed (cf. Ling 2008). This has certainly happened in Western Europe and in the United States, where the mobile phone has enhanced regular contact between family members. The mobile phone connection has become a new umbilical cord. It has been suggested that the mobile phone has reinforced strong ties and loosened weaker ones. Following the early social network theory, this would not seem to enhance society in terms of extending networks. On the contrary, it may well reinforce boundaries between socially well-connected groups and thus create more social boundaries and potentially more conflict, too (cf. Granovetter 1973; Horst and Miller 2006; Ling 2008).

It would seem obvious that social ties will change, but how and for what reason? Does this social change also influence people's daily choices and thus change livelihoods and ideas about life? How does this interfere with the changes described in the economy and knowledge sector and people's expectations? We should also note that voice communication, which so far has been the most important use of the mobile phone in Africa, is very different from communication via social media, which would appear to be on the rise in Africa's remote areas. This section presents a case illustrating the social use of both forms of communication.

Habsatu, a Cameroonian friend, lives in Bamenda, where she has a tailor's workshop. Her family lives in the north and keeps cattle on semi-sedentary farms. When Habsatu was a child, the family lived a more nomadic life than they do today. Nevertheless, they still consider themselves nomads and respect their own norms and values, which distinguish them from the so-called sedentary farmers. Contact and exchange between groups is frequent, however, and has deep historical roots.

Habsatu has a nice white phone (a 2010 model) in the small bag that she carries everywhere. She opens the bag regularly as she is called by her children who

are at school in Bamenda, by her customers who want to check on her progress with their dresses, and by her cloth provider who lives in the north and is waiting for money to be transferred through the credit union. She also receives calls from her uncle from Nigeria who is ill, from her younger sister from Nigeria who takes care of her eldest daughter (she sent her daughter to this sister, who has no children of her own), from the cousin from the farm who tells her that her uncle has died and asks if she can come for the funeral, and from her mother who lives in a village 30 minutes' drive from Bamenda. The phone contains Habsatu's life in a nutshell, connecting the important relations in her life socially, economically, and emotionally.

She explains that the phone has brought two significant changes to her workshop and to her family ties. First, she no longer needs a place in the market where people can find her; she now has her workshop in her house up the hill. Customers reach her by phone. Second, the phone allows her to reestablish contact with family members who live far away. She now has regular contact with her daughter; she receives news from her every week and, if she wants it, every day. This new connection has led her to appreciate even more her relations with the Fulani, the nomadic community, and she emphasizes her relationship with the people she knows on the farms. Habsatu goes there regularly and receives news now and then. The mobile phone has helped her reconnect. Reconnection is increasingly an urgent need, and it has drawn her back to her Fulani heritage. The contact established with her uncle in the United States is probably the best example. He left the family 25 years ago to join a nongovernmental organization (NGO) in the United States, having been one of the few in his family who received a good education. But after he left, the family hardly ever spoke to him, as they could only reach him through the land line at the post office in Bamenda. This was an expensive endeavor, but with the arrival of the mobile phone, they were able to connect regularly, and he has even visited them in Cameroon.

The story of Habsatu and her connections can be viewed in a wider picture of Fulani culture in the region. Though not yet completely clear, what can be seen in the region is a unification of the Fulani in associations that have a strong basis in the new communication technologies and social media. The Fulani have united in the Tabital Pulaaku association, which promotes Fulbe culture, organizes festivities related to Fulani identity that reinforce the work of local organizations like Mboscuda, with which Habsatu is involved, and fights for the rights of the Fulani. This new connection at the community level runs parallel to the developments and changes Habsatu is experiencing in her own life.

Another interesting development is Facebook and the encounters that are organized between young people in Africa and are linked to the diaspora. These activities are increasingly part of the communication scape of Africa. In some cases, Internet activities are an extension of social contact, enabling distant friends and family to share their lives not only with voice, but also with pictures and other means. In an observation of such a group of Chadians (D. Seli, pers. comm.), it appeared that the Facebook encounters also had political content and were per-

haps related to frustrations and political identities. A similar finding was reported by a researcher who was trying to understand Facebook interactions related to the political elections in Cameroon in November 2011 (Meester 2011). In this case, Facebook users tried to organize people to vote and protest against the regime; however, their efforts barely materialized on the ground.

Discussion: Balancing the Good and the Evil of Mobile Phone Communication

NEW DEPENDENCE RELATIONSHIPS

A recent development in MTN policy reveals the unpredictability of the mobile telephone market. MTN is increasingly trying to encourage customers to buy airtime directly through their MTN account. This will bypass the middleman system in airtime sales and result in the loss of a significant number of jobs in the sector. For phone repairers, the arrival of Chinese models on the market also means a new development in their careers but will not lead to more repairs. These phones have little hardware and can only be repaired if the right software is available. Not all repairers can afford this software, and the repair business will soon be run by only the cleverest and wealthiest young men, like Appolinaire. The lower echelons of repairers will once again have to search for new forms of employment.

In these new dependence relationships, international companies and strong non-African-based businesses will ultimately be the winners, both by obtaining access to knowledge that is developed by others and by creating dependence relationships in an international market that fluctuates with demands and competition that have nothing to do with the local market in Africa. At the same time, the local market and the local dealers and repairers will increasingly be dependent on a global network for their knowledge, spare parts, and clientele.

SOCIAL CHANGE AND COMMUNICATION: BETWEEN TRUST AND BETRAYAL

The mobile phone companies' services have been developed in such a way that they can serve different African economic sectors. Although the African economy is growing rapidly (in some countries at a rate of more than 6 percent a year), most people live in poverty. Poverty has even become part of company policies that strive to reach out to the poorest. In Sudan and Chad, for example, companies were eager to roll out in war regions where they were expecting big returns (cf. Brinkman, de Bruijn, and Bilal 2009). Recent developments in the poverty market mean "business for the poor," such as the appearance of different organizations and NGOs that develop communication strategies for the poor. The poor are proving to be a profitable market (see, for instance, www.cgap.org).

The idea behind the extension of services to the poor is that mobile communication and derived services like mobile banking should be accessible to

everybody. Especially in economies where poverty limits communication, mobile telephony offers opportunities to earn an income both for the companies, as they exploit the poverty economy, and for the individual users. Most individual users will answer the question “What does the phone do for you?” with “It helps.” It helps to link people who are far away to keep connections going, and it helps those in need obtain money.

Mobile phones have also led to mistrust and even anger among users. For instance, the technique of calling without spending any money is well developed in most African countries, where users place a call just to alert the other person that they want to talk and then immediately hang up (cf. Donner 2007). This “beeping” or “flashing” technique has recently been extended with special services like MTN’s “callmeback” service. The recipient of such a call, who is often wealthier, is then expected to call back. An unexpected outcome, however, is that those who are targeted by these calls are becoming annoyed and only return them when they have to. Text messages are increasingly popular, too, as these are free with some services (in South Africa, Mxt or Whatsapp). Texting is of course only useful for people who can read and write, although people who are illiterate can in fact quite easily acquire the skills required for texting (Hahn and Kibora 2008). Despite these free services, most Africans believe that companies inevitably earn a lot of money from this business. There has been increasing dissatisfaction with companies’ attitudes (cf. Obadare 2006), but it has not yet resulted in boycotts or a change in company policy. On the contrary, companies have been able to surround themselves with people who are part and parcel of this “communication family.”

Molony (2007), who was one of the first researchers to do in-depth research into new styles of communication and society, concluded that mobile phone communication does not create the same sense of trust as face-to-face relationships do. How these relationships are shaped depends on the circumstances and the political-social context. In Molony’s case, the context was trade relations in Tanzania at the start of the mobile phone era. Another case is Chad, where, after a long war and period of conflict, the phone was not trusted because it could be used to trace people. At the same time, the phone was central in rebuilding relationships there between people who had fled war zones (cf. Seli 2012). Recent research in South Africa has explored gender relations in relation to the mobile phone. The phone shows who one is (status), but it has also become an element in the building of relationships. Dates are confirmed by sending airtime. A girl is keen to have a boyfriend because he will pay for her airtime, and they will use the phone to share secret messages. But the phone can also betray people, revealing secrets to people who should not know them. Anecdotes about husbands who suspect their wives of having affairs or boyfriends who no longer trust their girlfriends are common (cf. Archambault 2011; Vuyani 2012). In Sudan, the mobile phone has created some freedom for Muslim women who cannot leave their own houses but can organize a (hidden) social life with the help of the phone (Brinkman, de Bruijn, and Bilal 2009). These examples demonstrate how the mobile

phone is creating both trust and mistrust between people and, as such, is altering the division between private and public spheres.

GLOBAL SHADOWS

This chapter does not elaborate on the cases of Habsatu and the others but presents them to show an ongoing development resulting directly from the mobile phone revolution. The new forms of communication have enabled users to strengthen or reestablish connections. These connections may lead to new social fields cross-cutting traditional (national) borders that then become units with newly defined boundaries, demarcated for social, political, or economic purposes. The cases presented relate to situations in which people define themselves as being on the global margins, but these margins are connected over distance and develop in and give form to the “global shadows” of our world (Ferguson 2006).

Conclusions

De Bruijn and van Dijk (2012) recently proposed seeing the world today as having entered the postglobal era in which connections are abundant and taken for granted. Many regions of Africa are approaching this situation. Life without a mobile phone is unthinkable for the younger generation, and mobile phone technology is significantly influencing urban and rural economies. This form of communication may indeed be considered a resource. However, we should always question whether this resource is accessible to everybody and if and how people are accessing it (figure 3.9). This chapter has sketched different ways of accessing the new communication technology and has argued that, through this technology, new social positions with economic and political power are being created, social relationships are reinforced, and in some cases these relationships are taking new forms, leading to a redefinition of the social or a reinforcement of existing relationships and thus social boundaries.

This new technology is not neutral, and connections construed through it are following old paths or forging new ones, thus molding social and political hierarchies that already existed or have just come into existence. If development is progress and instigated by new infrastructure like the mobile communication network, then development also means the reformulation of social hierarchies that might offer chances to some while limiting possibilities for others. This is what progress and social change always do. This new form of connectivity is also producing winners and losers.

If modern communication is the social glue of society (Vertovec 2004), who then is being glued, and what kind of society is being created? The world is increasingly ordered in “global shadows” (Ferguson 2006), which are worlds of their own on the margins of the wider world (Das and Poole 2004). Communication in the shadows is being affected by information and communications technologies, and people are becoming connected over larger distances. Is this

Figure 3.9**Mobile Telephony in Reach of Everybody? Women Carrying Water in Darfur, 2007**

Photo: Mirjam de Bruijn.

leading to a world where links over distances are more important than links with neighbors? I posed this question in my inaugural lecture at the African Studies Centre in 2008. It is difficult to find a good answer, but in general, current research encourages us to answer in the affirmative.

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COMMENTARY

Anthony M. Townsend

Mirjam de Bruijn's chapter fills an important gap in current research on the impact of mobile phones in Africa, a topic that is receiving increasing attention in many sectors: development, the telecommunications industry, and among innovation and design strategists. However, most of those reports have been limited to either breathless recitations of the growth statistics or technological fetishism over the unfamiliar devices and practices of mobile telephones in Africa. Most reports have been written by people looking in from the outside to see what of value they can extract.

Instead, de Bruijn offers us a human, street-level context for this tumultuous change: the view of Africans themselves. Her work is new to me, but I find it reflects a sensibility similar to that of others like Nancy Odendaal in South Africa, who are bringing a rich contextual perspective to the study of mobile communications' role in African economies and societies.

De Bruijn's approach to thinking about technology—essentially that of a social constructivist—is one with which I sympathize. In particular, I think there is no other way to understand mobile communications. In my work, I argue that urbanization and ubiquity (the end state of deploying ubiquitous computing) are deeply intertwined, and they have been for a half century already. The basic ideas for cellular telephony were developed shortly after World War II, but much like the optical telegraph, invented in Napoleon's time, there was no demand yet for it. Slowly, increasing mobility has increased demand for mobile communications, and leaps in technology have driven down cost and increased capacity. The technology of mobile phones—from single-tower to cellular, from analog cellular to digital cellular, from 3G to 4G—is driven by the density of demand in cities. However, technological and infrastructural advances in turn unlock growth, by allowing people to organize more complex choreographies of daily life, which accelerates the metabolism of cities. Mobile telephones are not just society, as de Bruijn notes; they are the city.

I like to think that the end result is that we are all becoming nomads again, connected together by this digital telepathic infrastructure of mobile communications. I think of Nikola Tesla's great prognostication almost a century ago, in *Collier's* magazine in 1926: "When wireless is perfectly applied the whole earth will be converted into a huge brain, which in fact it is, all things being particles of a real and rhythmic whole." As a Westerner, I find it fascinating—as I consider what it will be like to become a nomad again—to reflect, as de Bruijn does, on what we can learn from actual nomads in Africa who are becoming digital.

This raises a larger point that is woven throughout this chapter: Africans are inventing a completely different Internet and a completely new form of computing than what we've experienced in the North. It is based on the mobile phone and not the PC, it is mobile instead of being fixed, and it is based on services

instead of content. Globally, this is how computing is done by most people now. Just look at the statistics. As of 2008 there were more mobile broadband lines than fixed ones, and this transition is being driven by market forces, not development aid. In the last five years, the One Laptop per Child program started by Nick Negroponte of the MIT Media Lab has deployed a couple million laptops to mostly middle-income countries. In the same time, Nokia and its competitors have doubled the world's installed base of mobiles from 2.5 billion to more than 5 billion. In my work, I call the mobile phone "a computer for the rest of us."

After 20 years online, and 10 years doing technology forecasts, I rarely get excited about technology anymore, but this trend excites me. As de Bruijn has documented, cheap Chinese smartphones are surging into the wealthier markets in Africa. In a decade, or sooner, we'll have several billion people walking around the megacities of the global south—many of them slum dwellers—with cloud-served supercomputers in their pockets. As we shift to a more mobile web in the North, some people in the technology community are starting to wonder if the flow of technology transfer and business innovation will start to reverse. Will Africa become a hotspot of innovation? There are signs already in Kenya, South Africa, Ghana, and elsewhere that this is on the cusp of happening. There is a lot to learn from Africa's experience with mobiles about rapid, on-the-cheap, user-centric ways of stretching scarce dollars for infrastructure investment.

What I am left wondering from de Bruijn's chapter is what it will take to fill in the gaps. Africa's mobile networks are far from ubiquitous. The stories in her chapter about people climbing trees or walking to high ground to obtain a signal from a cell tower dozens of miles away are fascinating. In the poorest and most rural countries, only 30 percent of the territory is served. What is the business case for extending these networks? In fact, in the United States we have the same problem with both wired and wireless broadband: urban areas are always the first to get served, and rural areas lag badly in attracting investment.

This really hit home when I read de Bruijn's stunning observation that mobile companies are eager to enter the conflict zones of Sudan and Chad. The physical upheaval, volatility, and uncertainty of war turn out to be profound drivers of demand for mobile communications. What I wonder, though, is whether the economic pressure of globalization—as it increasingly penetrates Africa (literally invading from the coasts in the form of several new fiber-optic cables ringing the continent)—is as fundamentally destabilizing as armed conflict, especially for the poor. Is the popularity of mobiles merely a desperate attempt by the poor to mitigate the violence that the global economy inflicts on their social and economic lives?