

# **New Paths: Exploring Mobile-Centric Internet Use in South Africa**

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## **Abstract**

*The title of this workshop, 'beyond voice', is illustrative of one of the central questions currently surrounding mobile communication in the developing world. Put simply, there is a great deal of enthusiasm around the notion that a large group of users will access the internet for the first time via data enabled mobile handsets. Recent estimates from India, for example (Telecom Regulatory Authority of India, 2007), suggest there may be more mobile Internet connections than traditional PC Internet connections operational in the country. Concurrently, high-end smart phones promise browsing experiences which are steadily closing the gaps in speed and ease of use which have hampered earlier incarnations of the mobile internet, such as WAP.*

*But the raw enthusiasm, the aggregate statistics, and the glossy marketing images from the top-end of handset markets fail to capture the reality of mobile internet use in the developing world. The crux of this paper's argument is that the research community knows comparatively little about this supposed community of users who access and use the Internet exclusively via mobile phones. We know little about who they are, how they discover and access the mobile internet, and how the mobile internet fits into their lives.*

*This paper reports on ongoing qualitative/exploratory research in low income communities in urban South Africa. Through convenience and snowball sampling, the researchers have sought out 'early adopters' among mobile-only internet users. The analysis of the interviews will delineate and describe distinctive new "paths" to Internet use that largely bypass PCs. We draw on a domestication approach (Haddon, 2003; Hahn & Kibora, 2008; Silverstone & Hirsch, 1992) to move beyond an 'adoption' or 'diffusion' paradigm and to complement aggregate statistical perspectives.*

*As exploratory research, this project cannot definitively identify all the new paths to the internet, nor the relative frequency with which individuals choose these paths. However, early findings will illustrate current and emerging practices in mobile-only internet use, as well as opportunities and constraints for policymakers interested in promoting or leveraging internet use among a much broader community of the world's inhabitants*

## **Introduction**

"Dear customer, to open or log into your Facebook account where you can share information go to [wap.safaricom.com](http://wap.safaricom.com) and click 'Facebook'".

- SMS advertisement in Kenya

There is a great deal of enthusiasm around the notion that hundreds of millions of people will access the internet for the first time via data-enabled mobile handsets. Estimates from India (Telecom Regulatory Authority of India, 2007), and South Africa (Joubert, 2008) suggest there are significantly more mobile internet connections than traditional PC internet connections operational in each country. Concurrently, high-end smart phones promise browsing experiences that are closing the gaps in speed and ease of use that have hampered earlier incarnations of the mobile internet, such as WAP. However, the enthusiasm, the aggregate statistics, and the glossy marketing images fail to capture the reality of mobile internet use in the developing world. The crux of this paper's argument is that *the research community knows comparatively little about this supposed community of users who access and use the internet primarily via mobile phones*. We know little about who they are, how they discover and access the mobile internet, and how the mobile internet fits into their lives.

This paper draws on ongoing qualitative/exploratory research in low income communities in urban South Africa. We ground our work in a domestication approach (Haddon, 2003; Hahn & Kibora, 2008; Silverstone & Hirsch, 1992) to move beyond an "adoption" or "diffusion" paradigm and to complement aggregate statistical perspectives. Our analysis delineates and describes emerging and distinctive "paths" to internet use. We explore the importance of self-expression and communication and the role of trusted influencers in shaping and encouraging mobile internet use.

Although our overall focus is on users of the mobile internet, the PC-based internet experience looms large, as both a baseline from which to draw contrasts, and as an important determinant of the behaviors and approaches of this community of users. By design, everyone we spoke to was a mobile internet user and *not* a PC owner. Nevertheless, more than half of our respondents reported some kind of PC exposure. Thus in the final section we distinguish between mobile-only and mobile-primary internet users. As we will show, the PC and the mobile handset are neither exclusively substitutes nor complements; indeed, they might not lead to the same "internet".

### **A look towards use, rather than adoption**

Like many innovations before it, the mobile internet is enjoying a moment in the sun when technologists, policymakers, marketers, and development practitioners are excited about the numbers of people adopting it. There is nothing inherently problematic about this enthusiasm, and it is important to know who is adopting, who is not, and what distinguishes the two (e.g., (Gilham

& Belle, 2005). Yet adoption is not the end of the story. The actual use of mobile internet in daily life demands our attention. Without an understanding of how the mobile internet is used in resource-constrained environments in the developing world, it will remain difficult to identify its socioeconomic impacts or how to best promote its utility. Domestication and its variants (Haddon, 2006; Silverstone & Hirsch, 1992) provide particularly potent theoretical frames to explore use. Predating mobiles by a decade or more, domestication has been used recently to explore how mobiles are “tamed” and “appropriated” – made normal, comfortable, useful, and part of everyday life in settings ranging from British suburbs (Haddon, 2003) to Indian cities (Kavoori & Chadha, 2006) to villages in Burkina Faso (Hahn & Kibora, 2008). Other projects exploring mobile use in the developing world do not use domestication as a core lens, but share a similar spirit, exploring the complexities of use in varied contexts. Horst & Miller (2006), offer one such in-depth treatment of mobile use among low-income Jamaicans.

It is only in the past few years that data-enabled mobile phones and prepaid data plans have made the mobile internet broadly accessible. Thus, research on the users of mobile internet among resource-constrained communities in the developing world remains understandably rare. That said, researchers in South Africa have begun to explore mobile internet use (W. Chigona, Beukes, Vally, & Tanner, 2009; W. Chigona, Kamkwenda, & Saffia Manjoo, 2008; Kreutzer, 2009), as well as the specific use of a popular mobile instant messaging application called MXit (Bosch, 2008; Butgereit, 2007; A. Chigona & Chigona, 2009; W. Chigona, Chigona, Ngqokelela, & Mpofo, 2009)

Kreutzer, (2009), finds evidences of considerable mobile internet use among low-income schoolchildren in Cape Town. In a large (but not nationally representative) survey of 11<sup>th</sup> grade students in low-income schools in Cape Town, 77% of respondents reported owning a handset; and a remarkable 68% reported using a mobile phone on the previous day to access the internet. Chigona and his colleagues (W. Chigona, Beukes et al., 2009) also find early indications of mobile internet use among low-income urban south Africans, but little evidence of impact on economic well being or social inclusion, beyond the cultivation of social networks for discussion.

More research will surely follow, but the time is right to continue to study mobile internet use in natural settings, rather than as “pilots” or NGO-led interventions, and to augment important quantitative overviews with thicker descriptions of mobile use in daily life. Domestication studies of the mobile internet, currently restricted to developed-world settings (e.g., (Edirisingha, 2008; Pedersen & Ling, 2003)), can provide insight into these new forms of internet access and use.

As an added advantage, domestication studies of mobile internet use may help bridge the gap between the research frames of the “information and communication technologies for

development” (ICT4D) community (and its subgroup, mobiles for development (M4D) (Donner, Verclas, & Toyama, 2008) and the “technology and society” community. While a focus on actual use may reveal beneficial, instrumental uses of the mobile internet—just as studies of voice telephony have indentified important productivity gains (Jensen, 2007)—the domestication lens does not presume such developmental impacts, nor does it exclude a whole range of other more supposedly frivolous uses, from self-expression and family connections to flirting, chatting, and entertainment. If these are part of the draw—and early indicators suggest they are—the ICT4D community should see this part of the picture.

## **Methods**

This study draws on first-stage data from an ongoing project in Cape Town, in which the authors are working with a range of relatively low-income mobile internet users. An initial batch of 17 interviews were brief and explicitly exploratory, during which we uncovered themes for deeper inquiry. The second set of 22 interviews had more structure, were recorded and transcribed, and followed a standardized interview protocol.

Respondents were recruited though a mix of sources. In some cases, individuals were approached via intercepts, in malls, taxi/bus stations, etc. throughout the Cape Town area. Others were introduced to us by and at Learn to Earn<sup>4</sup>, an NGO focused on livelihoods and training in Cape Town’s Khayelitsha, one of the largest townships in South Africa. To qualify, respondents had to own an internet-enabled mobile phone (or have family access to one), and report doing some sort of GRPS or data-based activity on the phone, meaning news, chat, browsing, email, social networking, or visiting the premium content available on the operator’s networks. Prepay data is available in South Africa, meaning anyone with a top-up/prepay voice account can shift airtime over to GPRS data credits if their phone supports data. Familiarity with the words “internet” or “GPRS” were not preconditions for inclusion. In addition to the adults, three persons under eighteen were interviewed, each with his or her parents present.

## **Results**

### ***Social Influencers***

Following (Fulk, Schmitz, & Steinfield, 1990) and particularly (Campbell & Russo, 2003), this proved to be another instance in which the use of a communication technology (in this

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<sup>4</sup> <http://www.learntoearn.org.za/>

case the mobile internet) was strongly influenced by trusted, local others in respondents' social networks. Without a guide and a little help, many of the individuals we spoke to would have been unable to configure their handset for the mobile internet, and would have little idea what to do with the mobile internet in any case. As Leilah a salesperson who says she has "no interest in technology" explains:

My brother is the one who teaches me in the evenings... he showed me how to go to webmail [webmail.co.za] to check my email, now I can go even to yahoo and Google. My brother downloaded [Opera-mini] for me, he said it is better as it looks the same in the computer... He is younger than me, you know the next generation is faster than us...he likes to play around with this things, so he just showed me how to go about and I have learnt from him most of the things...he even pulls apart a computer and puts it back together

MXit, a popular, ad-supported South African Mobile Social Network Service (Bosch, 2008), was the primary draw to the mobile internet for many respondents. Unsurprisingly, would-be chat partners help recruit new MXit users, explaining how to download, install and use the software, which relies on GPRS. Kashiefa explains:

About the same time I got my phone, I was at home and friends came to visit me and showed it to me. She showed me how to download and to get the MXit on my phone, and I just started using just like that, so when I got my other phones I was able to go to the MXit website and download it for myself

Meanwhile, Garieth's MXit experiences ebb and flow with his love life:

I see friends of mine using it and I asked them what it was, they told me it is something that will help you meet new people and friends, so I asked to get it for me. My friend downloaded it on my other phone and he taught me how to use it, and then I started to use....My other girlfriend wanted me to talk to her all the time and when I refused she break up with me, so when I get this new one I download it myself and started using it...but she did not come back

Beyond friends and relatives, others rely on super-users, particularly skilled members of their social network with the knack (and desire) to help them navigate the phone's data settings—no easy task). For example, James, who works in a local market, has acquired the nickname *Fundi* [Swahili for expert] from his friends. Claims James, "People are always looking for me to

put internet in their phones, those numbers are very important and so far I think I have set up more than 100 phones”.

George, says that Fundi “would always come with some news about Man-U [Manchester United]...and I also wanted to be able to know that so I bought a phone with internet.” Following James’ assistance, George was able to get to various internet sites; however James still played a critical role, as the one who ‘supplied’ George and his friends with URLs, and tips about new phones and features. When one of them acquires a phone that has more features than the others, James will study it and show them how to use it, like the time he discovered internet radio on phones.

Thiery, a refugee from the Congo is a computer science graduate who works as a driver with a local tourist firm. During breaks, Thiery teaches other drivers, like Edmond, how to use various technologies. Edmond recalls:

When I wanted to pass my CV to apply jobs, where my friend showed me how to use the internet to send my CV, he opened for me the email address and showed me how to send it... Thiery taught me everything about the internet. He taught some other three people how to use, when he was teaching, he said that the internet can help you find information like jobs and it was true... when he is in the car he is always in the internet, wanting to learn something new, and when he finds something new, he always comes and teaches us.

A few respondents mentioned exploratory discussions with customer service representatives or shopkeepers, among these is James, the *fundi*, who first came across mobile internet from a ringtone marketing brochure; he contacted his mobile service providers directly, to learn more about internet access. Similarly, Nomtambo visited a shop, to figure out to share music with friends:

I went to a shop ... and asked how to put a song in. How I do it because there is no Bluetooth on this phone? He told me... I’m gonna use the WAP and I must choose what I want ... then after that it will display all the songs and I must choose the one I want... and that’s all”.

Our sense is that while confident and tech-savvy users were more likely to teach themselves, or to feel comfortable approaching customer service, the preferred channel for introduction is via *fundis*, friends, and family.

### *Self expression*

Tariq puts it rather bluntly: “Most of my customers are looking for a phone that can access Facebook and MXit”. Granted, as a salesperson in a mobile shop, Tariq is in the business of ‘selling the sizzle’, but his point is useful: the majority of the respondents we spoke to were layering mobile internet behaviors onto mobile phone behaviors – using the phone as a way to maintain or expand their social networks. Self-expression, rather than utility, information search or email, was the most common initial use.

Patience, a young economic refugee from Zimbabwe, explains, “I was at camp and everyone was talking about Facebook this and Facebook that ...and when I learnt what it was about I wanted to upload photos from camp as well as talk to my friends who are mostly in the UK.” Zanele echoes, “my sister was using the MXit... but Mama took her phone because she was not listening properly, because MXit, when you have started it, it’s hard to get out of it...then my sister downloaded it to me... so I use it and I like it.” Waseema, who lives in a dangerous neighborhood, is thrilled by MXit:

It is a good thing they made, you see now I can talk to people outside Mitchell’s Plain. You know there, there is so much insecurity and I don’t even have friends there, so I meet my friends either here [the mall in century city] or on MIX-IT...it is nice, because I do not have to worry about security and stuff like that if I am talking to them on my phone

As in Kreutzer’s (2009) study, MXit proved more popular and more recognizable to most of our respondents than the currently niche/upscale Facebook. Some people we spoke to had dozens of active MXit contacts, and others used it only to communicate with a spouse or a close circle of friends. Lundwe, a high school student adds that “As far as I know all my friends are on MIX-IT and Facebook so I think they know about mobile internet. Yet MXit is not without its detractors; rumors of photo-doctoring and media stories of illicit chats have fueled moral panics in South Africa and a widespread concern for children (A. Chigona & Chigona, 2009).”

### *News, Information, Entertainment*

Second to social networking, we found respondents using their mobile internet as a means to access news, from the frivolous to the deadly serious. Patience, the Zimbabwean immigrant, accesses celebrity gossip to keep tabs to “who is wearing what and who is doing what.” Crispin says that his wife, who he taught how to access internet on his mobile, “is always showing—did you know this one? Have you seen this one?...like the singers from our



country...did you know that this one divorced this one?" Sports are also popular. M.C., a Nigerian entrepreneur has bookmarked [www.soccernet.com](http://www.soccernet.com) on his so that he can "easily access the scores and updates about Man U."

On a more serious note, the immigrant community uses the mobile internet to access news and information items on both the economic and political situations in their countries of origin. For instance M.C. has bookmarked the BBC news site so he can "measure the political climate in Africa"; Crispen uses Google to access news from Zimbabwe: "when I hear something [a rumor] I do not have to wait until evening for the news I can access it there and then".

George, a Kenyan living in Cape Town, took some training to become a chartered accountant, but had never used a PC. Now he runs a curio shop. He checks foreign exchange rates at Standard Bank's mobile website for a few days, to get a sense of how the Kenyan Shilling is doing, before deciding when to send money back home.

The desire to search is not universal, however; when we asked Luluma whether he used the mobile internet to "search for information", he replied "Not really, because I grew up in the Eastern Cape areas", as if, to him, a modest background in a very poor rural community precluded him from information searches.

### ***Cost cuts both ways***

The conventional wisdom in ICTD circles is that low-income mobile users are reluctant to invest in the hardware and data plans necessary to take advantage of mobile internet – that cost is a barrier. Because we spoke only with current mobile internet users, we could not assess this factor. However, we did see cost structuring people's behaviors.

Asanda's comments spotlight the relationship between MXit and telecommunication costs: "When I don't have money to phone somebody I just go to MXit". Her costs break down to roughly 30 Rand (3 USD) per week, 21 SMSs, 5-6 calls, and 14 hours of MXit per week (two hours of MXit per day). She has been using MXit for 6 months, and says that MXit chats have replaced many phone conversations and SMS messages with her friends, saving her lots of money. Often turning to friends or siblings to help with the configuration and downloads, users have sought out MXit as a low-cost communication option (W. Chigona, Beukes et al., 2009; W. Chigona, Chigona et al., 2009; Kreutzer, 2009).

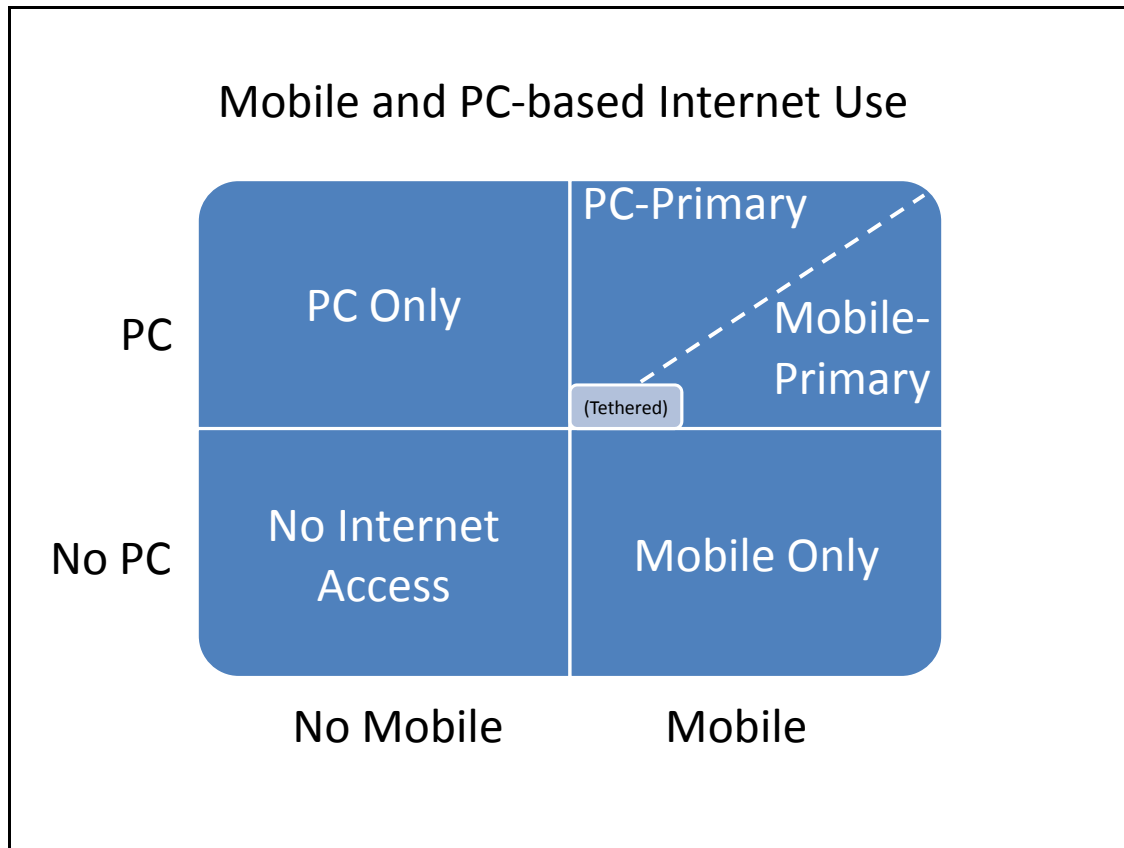
To many, the mobile internet is not the first means of mobile-mediated data transfer. Of course, text messaging was fairly common, but so too was the use of Bluetooth to share multimedia. This cheap means of 'file' sharing is prevalent even in the poor neighborhoods of

Khayelitsha Township, where most of the people we spoke had used or had knowledge of using Bluetooth in this way.

In 'pay as you go' environments, many people can closely manage telecommunications expenditures (Zainudeen, Samarajiva, & Abeysuriya, 2006). Says Zainoo, a cashier, "MXit is cheaper than sending an SMS, it costs me 1ct on MXit and more than 50 cents on normal SMS". That said, metering bandwidth consumption is more difficult than counting discrete SMS or MXit messages, so savvy users steer towards websites which have been optimized for mobile use. B.M. explains how "going to *Nation* [a Kenyan newspaper] costs so much more than going to BBC. To cut down on cost I first go to Google and write the news item I am looking for, getting it from Google is much more cheaper than going to *Nation* itself". This cost consciousness is also displayed by users of the download sites *wapking* and *waptrick*. Spread by word-of-mouth, these sites offer links to free content, as opposed to the enticing fee-based options provided by operators. The actual details of how many bits are used may not be clear, but many users are able to meter their use and have learned, by trial and error, which behaviors are likely to drain their account more quickly.

Finally, some recognized that a mobile internet communication is cheaper in comparison to a cybercafé. As Miguel puts it, in the café, "we pay 5 Rand (\$.60) for 30 minutes, while here I can use 1 rand for the whole day without having to leave my stall."

*Figure 1: A typology of mobile and PC-based internet use*



***Mobile Centric Internet Use: Mobile-Only vs. Mobile Primary***

Miguel’s comments comparing the mobile internet to the cybercafé are a nice transition to our final topic: the nature of *mobile-centric* internet use. Indeed, though we had set out to study mobile-only users, and none of our respondents were PC owners, more than half had some exposure to the internet or to a PC. These proportions echo those in Kreutzer’s (2009) survey of students in Cape Town, which found 33% mobile-only users, 34% mobile and PC users, 5% PC only users, and 27% non-users.

Thus, the typology in Figure 1 is as critical as it is commonsensical. The left side contains PC-only internet users, who either own a PC or have access via friends, employers, cybercafés or telecenters. The tiny box of “tethered” users refers to the common practice of using a mobile handset as a modem, tethered to a PC, to bypass unreliable, expensive, or unavailable dial up or wireless internet access. The right side contains a spectrum of mobile internet users, from those who use the mobile as complement to personal or shared PCs, to those who literally have never touched a PC. In focusing on the contrasts between the categories “mobile primary” and “mobile

only”, we draw on a practice within domestication which assesses a technology in relation to the “repertoire” (Haddon & Vincent, 2005; Licoppe, 2004) of other technologies present in the user’s life. The shared PC (or its absence) helps structure the use of the mobile internet.

### ***Mobile-only internet users***

As detailed in Table 1, our sample included 15 individuals who are users of the mobile internet, and have never accessed the PC-based internet. Most of them are in their twenties, and had managed to get through school without PC training. If employed, they work in settings offering no PC access.

Some of the MXit users in the mobile-only group were unaware they were using the internet. For example, Zukiswa, a high school student, when asked whether she knew the internet, answered “Yes I do, but I don’t get into it”. However, when we asked her about MXit, she showed us how to get to the download site via WAP and said, “Yes I have been on MXit for 4 years...first I was on my mother’s phone then I got my own phone.” As discussed elsewhere (Kreutzer, 2009; Marsden, 2007), the internet does not begin and end with the browser, and applications like MXit and the operators’ premium content provide experiences which are internet based without being internet experiences in the eyes of users.

### ***Mobile-primary internet users***

Despite not owning a PC, more than half of respondents had some PC exposure, and many of those had accessed the internet via a PC. Given our study design, we cannot estimate the prevalence of this condition in the broader population of South Africa. Nevertheless, the interplay between the PC and the mobile seems common enough to complicate the false dichotomies presented in the “digital divide” discussion. We found two kinds of *mobile-primary* users: those whose PC exposure predated their use of the mobile internet, and those who began on the mobile and have moved on to the PC. In each case, a repertoire of channels, some owned, some shared, allows for greater choice, autonomy, and control.

#### ***Mobile Primary, PC Previously***

These individuals had some exposure the PC-based internet prior to learning how to access the internet on their mobile handsets. Some had learned in school, or from friends or roommates. Others had been tag-alongs to internet cafes, perhaps using a PC simply to watch a film or a music video over someone’s shoulder. Yet many were able to imagine the internet as viewed through a web browser. They could use words like “download” and conceptualize an internet search. Some had email, the most savvy, Facebook. Social networking sites carried the

same dual draw as to mobile-only users: they are both low-cost substitutes for other communication channels, and an entertaining phenomenon unto itself.

Those with access to PCs have choices to make. Lwazi, a student, explains, “It is generally easier to use [mobile internet] as you are not stationed in one place; no modems, no problems. The PCs in schools have a lot of websites blocked [including Facebook] so they are not that helpful”. Kasheifa feels the same way: “We do have computers at work, but I do not use them to go to the internet, because it easier to on my phone and I will not get into trouble with anyone”.

In the same way that Mxit has introduced new communication options, replacing some phone calls and SMS, the mobile browser has replaced some visits to the cybercafé. Kareem, an artisan, says he has easy access to a PC in a neighboring cyber café, but he says he has not used it for several months, because he only needs it when he wants to print an order, and nowadays he just emails to the carvers (from his phone) who can print his orders from their end.

Even more skilled is Miguel, mentioned above. To Miguel, a 23-year-old high school dropout living in a middle-income suburb, his mobile has become “his soul”. Miguel learned the internet at school, but it is the mobile internet which is at the center of his digital life. On it, he composes email, updates Facebook, downloads ringtones and music, checks his favorite band’s schedule, plays online games, searches for work on Gumtree (like Craigslist), and checks his soccer team webpage. For his small business, he has taken advantage of fax/email/fax web-based services:

I do not need to have a fixed line now, as I can access my fax on my email which I read on my phone. There is no point of having those telecoms lines anymore.... I now can use my phone to run my business”.

However, Miguel is not completely cut off from conventional PCs – printing is one weak link. When the need arises, he visits his brother who owns a laptop; the surprisingly ubiquitous Bluetooth transfer moves the documents he needs to his brother’s PC and printer.

#### *Mobile Primary, PC Subsequently*

An intriguing development is the notion of the mobile phone as the first but not the last internet access device. Some of our respondents had started with mobile internet and had been intrigued enough to seek out PCs for further exploration. Patience explains,

I was not computer literate when I started using internet on my mobile phone so it was quite an eye opener. Now I want to learn everything, my uncle bought a computer two months ago and his wife has been teaching me some basics

It may be overly optimistic to expect a broad rush to the PC-based internet based on mobile exposure. George, the curio shop owner introduced above, presents a counterpoint to Patience's enthusiasm: "Learning computers is expensive and needs time. I do not have time and money, so why waste what I have when I can do in this [mobile] what I can do on computer?" Ebrahims, a call center agent, echoes him: "I cannot stand computers because of the many upgrades requiring more learning.... The mobile phone is the new computer, and it has the advantage that I have it on me all the time. It is even easier to type on it".

That said, nine *mobile-primary, PC-subsequent* users in our sample were all *mobile-only* users at one point. For example, Crispen, is not 100% comfortable with navigation, so he goes only to Google, where he types "Zimbabwe News" and is taken, every time, to the BBC. His computer-literate friend taught him this routine and has recently opened an email account for Crispen.

The biggest factor in determining the internet repertoire may be exposure in schools. Here, children are benefiting from two trends: greater and earlier access to internet instruction in schools, and from exposure to the mobile internet via friends and family. Of our two youngest respondents, Carlo, age 11, has been playing around with mobile internet on his uncle's phone, including MXit, which his mother carefully monitors. Kashiefa, a mother of 2, also allows her children to access the internet: "No, I do not mind them going there ... my oldest has started using MXit on my phone and sometimes even uses my boyfriend's phone". Carlo doesn't get internet training in school until next year/age 12. Amile, 13, is older, and has shifted from *mobile-only* to *mobile-primary* internet use as she begins to get instruction on her school's PCs. Despite the exposure to the PC, she still thinks of the mobile phone as her ally as all her friends are using it and because it is private. Cindy, a primary school teacher, says that many of her students know how to access the internet through their mobile, and they use it as a primary tool of communication amongst themselves. The phone may be their only option. In Cindy's school, the 700-800 students receive 15 minutes of "computer time" per week, having to share 25 PCs between them.

## Discussion

As exploratory research, this project cannot definitively identify all the new paths to the internet, nor the relative frequency with which individuals choose these paths. However, these early findings illustrate current practices in mobile-centric internet use among low-income and low-middle-income individuals in South Africa, as well as emerging opportunities and constraints for policymakers interested in promoting or leveraging internet use among a much broader community of the world's inhabitants.

In this paper, we distinguished between archetypal *mobile-only* internet users and a more fluid category of *mobile-primary* internet users. PC-based internet exposure is not a particularly clear or useful variable, in a causal sense. Rather, it is a combination of interrelated factors, socioeconomic status, age, income, proximity to a cybercafé, proximity to a brother with a laptop, and so on. Nor has this analysis plumbed the differences in actual internet experiences and usability (in multiple languages) between 2.5" mobile browsers and CRT screens, between T9 keypads and full-size QWERTY keyboards, etc, though this would be an important avenue for additional research (Marsden, 2007)<sup>5</sup>.

However, with a nod to the domestication lens, which treats adoption as closer to the beginning of the story than to its end, we have been able to describe how both *mobile-only* and *mobile-primary* internet users make sense of the technology, and how they make it their own. It is clear from the interviews that *mobile-primary* users are (naturally) comparing their mobile internet time to their PC internet time, making trade-offs, adjustments, and alterations to routines in light of their new options. All of this is done with the assistance of friends and family, influencers who play a strong role in shaping people's mobile internet experiences. Further, we have suggested that the sequence of introduction to PC and mobile based internet is an important an under-examined aspect of use; that experiences with the first platform drive expectations for the latter.

South Africa is an interesting place to conduct research on mobile-only internet users, but it is not the only place to find them. iMode has a following in Japan (Ishii, 2004), while in China, QQ mobile attracts many individuals to a GPRS/mobile data-enabled experience for the first time (Yu & Tan, 2005). In the US and Europe, it is possible that some people have entirely abandoned a PC in favor of a touchscreen smartphone. However, this exercise has helped tease out differences in an environment where PCs are particularly scarce, among a population of particular

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<sup>5</sup> See for example, (Deumert & Masinyana, 2008) for an analysis of different linguistic styles of text messaging emerging in South Africa

interest to the ICT4D community. In this arena, many children leave school before they have the chance to touch a PC, while many adults have never owned a PC. When this scarcity is contrasted with the remarkable rapid spread of mobile telephony, and the diverse adoptions and appropriations of mobile internet, South Africa can serve as an early indicator of how populations across the continent may approach the mobile internet. In that spirit, there are four immediate lessons for those who would seek to apply the mobile internet towards goals of social development.

First, we often speak of cost as barrier to mobile internet behaviors. However, in South Africa, cost is a driver towards mobile internet (W. Chigona, Beukes et al., 2009; W. Chigona, Chigona et al., 2009; Kreutzer, 2009). This is reminiscent of an emergent and locally negotiated mobile literacy, and of structurational forces at work (where a community of users adopts and influences a system in ways which make the most sense for them). As is the case with missed calls (Donner, 2007; Fjuk, Furberg, Geirbo, & Helmersen, 2008), the use of the mobile internet to communicate inexpensively at a distance requires the negotiation and construction of norms of interaction—it must be understood to be “OK” to swap a phone call for a instant message. And yet, those same cost considerations can discourage exploratory browsing, or from visiting sites which they perceive to be bandwidth inefficient. What does it mean for Kenya’s civil society, for example, when its own leading newspaper is not as popular as the BBC, for lack of a mobile-optimized version? Efforts must continue to ensure that a range of locally-relevant content is not only available, but available in an highly efficient way,

Second, it is impossible to avoid the role of social, expressive, and entertainment functions in drawing people to the channel. MXit was the number-one draw, while Information seeking about soccer teams received more mentions than searches for health information or political news. Although this might be alarming to those who wish to leverage the mobile internet for important tasks in health, education, agriculture, etcetera, it need not be. Instead, policymakers, NGOs, designers, and so on should remain aware of the ways in which mobiles are inherently enablers of social expression (Katz & Aspden, 1997), and might consider ways to work with these forces rather than against them (Kolko, Rose, & Johnson, 2007). This is not to say that every “M4D” application needs draw on a social/expressive model, but *Maths on MXit* (Butgereit, 2007) for example, is an application which works with the grain of expression and interactivity in ways which will feel natural to mobile-only and mobile first users.

The concerns about mobile internet go beyond its role in the development process. The emergence of the mobile internet as a ‘safe’ place to convene, compared with the streets, mirrors some tensions experienced by other parents as their children have joined PC-based social



networking sites (boyd, 2008). Conversely, the moral panics about pornography, illicit chats, and unsupervised youths (A. Chigona & Chigona, 2009) are illustrative of a technology that is woven into the complex fabric of everyday life, not relegated to a narrow informational role.

Finally, while the bulk of internet users in the developing world will eventually be mobile centric, either as *mobile-primary* or *mobile-only* users, we must remind ourselves that most policymakers, designers, and academics are *PC-primary*. Perhaps some are still *PC-only*. To our surprise, many of our respondents preferred the mobile to a PC, because it was easier to type on a familiar numeric keypad than on a QUERTY keyboard. As we design m-applications to promote social development, we need to be cognizant of the preferences expressed by *mobile-primary* users and of the different experiences created and interpreted by *mobile-only* users. The internet looks different when it is usually (or exclusively) 2.5” across.

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**Table 1: Respondents in the Study**

Mobile-Only Internet Users	Mobile-Primary Internet Users	
	PC First	Mobile First
Nantembeko, 29F, Till Packer	M.C, 36M, Microentrepreneur	Crispen, 42M, Microentrepreneur
Ziyaad, 29M, Driver	James Daniel, 33M, Curio Seller	Edmund, 26M, Driver
Asanda, 25F, Unemployed	Collin, 31M, Supervisor	LeiLah, 25F, Art Curator
Sbusiso, 25M, Hair Dresser	Salim, 30M, Microentrepreneur	Ebrahim, 23M, Call Center Agent
B.M, 24M, Microentrepreneur	Karim, 29M, Microentrepreneur	Patience, 21F, Cosmetic Sales
Zainoo, 23F, Cashier	Collins, 28M, Microentrepreneur	Mandle, 20M, Unemployed
Mzwamadoda, 22M, Unemployed	Lovemore, 27M, Microentrepreneur	Evuya, 18M, Unemployed
Wandisile, 22M, Unemployed	Tarique, 27M, Phones Sales	Zukiswa, 17F, Unemployed
Lulama, 21M, Unemployed	Kasheifa, 27F, admin work	Amile, 13F, Student
Touffeq, 21M, Merchadiser	George, 25M, Microentrepreneur	
Waseema, 19F, Sales Assistant	Miguel, 23M, Microentrepreneur	
Gaarieth, 20M, Student	Cindy, 21F, Teacher	
Solomzi, 18M, Student	Laura, 19F, Waitron	
Carlo, 11M, Student	Taohir, 19M, Student	