New Paths: Exploring Mobile-Only and Mobile-Primary Internet Use in South Africa

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Introduction

"Dear customer, to open or log into your Facebook account where you can share information go to 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. For example, estimates from India (Telecom Regulatory Authority of India, 2007), and South Africa (Joubert, 2008) suggest there are already 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 raw 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.

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 (a) mobile internet user and (b) not a PC owner. Nevertheless, more than half of our respondents reported some kind of PC exposure. As we will show, the PC and the mobile handset are neither simply substitutes nor complements, vis-à-vis internet access and use; indeed, they might not lead to the same "internet". The variability we encountered in PC exposure is the centerpiece of this particular paper and helps us illustrate an important distinction between *mobile-only* and *mobile-primary* internet users in resource-constrained settings.

A look towards use, rather than adoption

Like many innovations before it (VCRs, PCs, DVRs, IMs, SMSs, etc), 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. 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 "impacts" or how to best promote its utility. Domestication and its variants (Haddon, 2006) 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 sprit, 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. For an early exception, see Kreutzer, (2008), who finds evidence of considerable mobile internet use among low-income schoolchildren in Cape Town. More research will surely follow, but the time is right to study mobile internet use in natural settings, rather than as "pilots" or NGO-led interventions, and to augment important quantitative overviews with more granular descriptions. Domestication studies of the mobile internet, currently restricted to developed-world settings (e.g., (Edirisingha, 2008; Pedersen & Ling, 2003)), can provide insight into 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 the broader world of individual users; while a focus on

actual use may reveal "beneficial" and 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 "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 we 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.
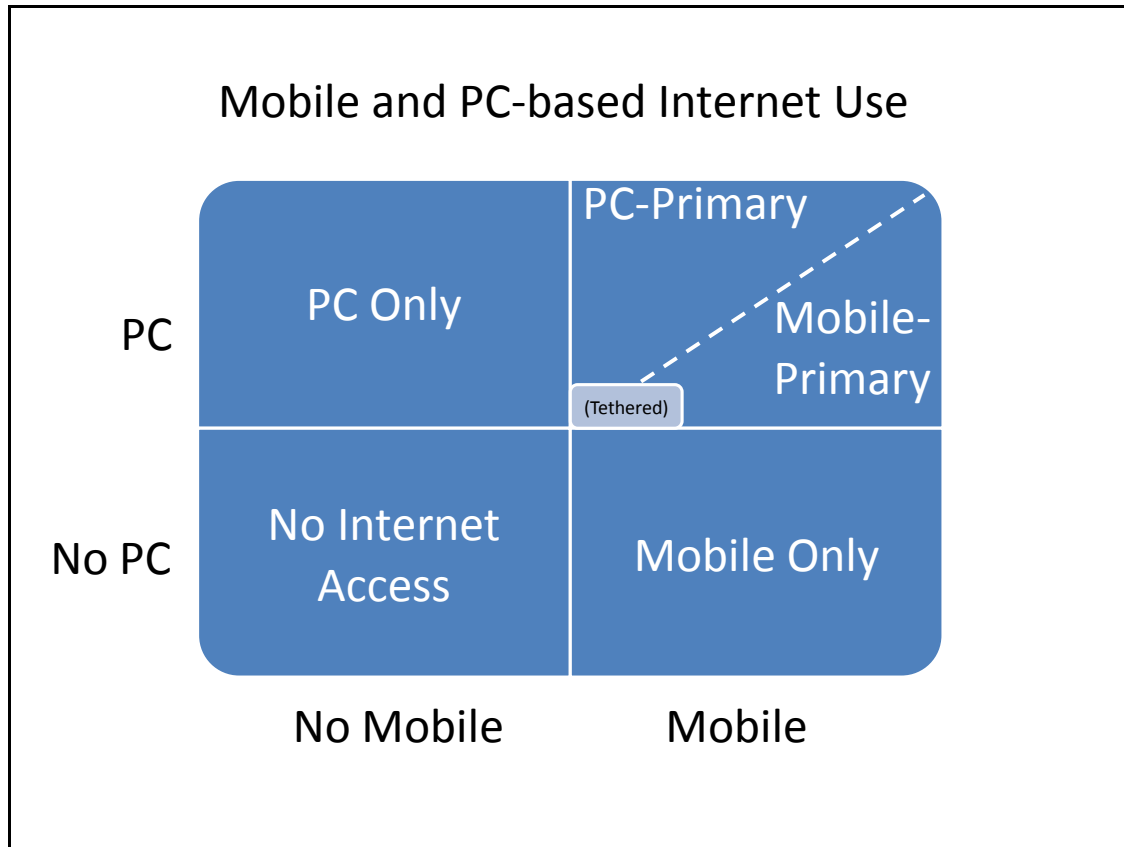
Respondents were recruited though a mix of sources. In some cases, respondents were approached via intercepts, in malls, taxi/bus stations, etc. throughout the Cape Town area. In other cases, respondents were introduced to us by Learn to Earn[1], an NGO focused on livelihoods and training in Cape Town's Khayelitsha, one of the largest townships in South Africa. To qualify, respondents had to own a 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. 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

As is often the case in qualitative inquiry, one finds almost as many ways to approach the phenomenon as there are participants in the study. 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.

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[1] http://www.learntoearn.org.za/

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

Mobile and PC-based Internet Use

	No Mobile	**Mobile**
PC	PC Only	PC-Primary / Mobile-Primary (Tethered)
No PC	No Internet Access	Mobile Only

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 presenting the results for this paper, we focus on the contrasts between the categories "mobile primary" and "mobile only". In doing so, we draw on a practice within domestication which assesses a technology such as a mobile phone particularly in relation to the "repertoire" (Haddon & Vincent, 2005; Licoppe, 2004) of other technologies present in the user's life – in this case it is the shared PC (or its absence) that helps structure the use of the mobile internet.

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	

Mobile-only internet users

As detailed in Table 1, our final sample included 15 individuals who are active users of the mobile internet, and have never touched a PC or accessed the "conventional" PC-based internet. Most of them are in their twenties, and had managed to get through school (generally some high school or completed high school) without PC training. If employed, they work in settings offering no PC access.

MXit, a downloadable South African Mobile Social Network Service was the primary draw to the mobile internet for half of the mobile-only users. Waseema explains that his data use "started off when my friend downloaded MXit for me on my first phone—she even taught me how to get new contacts and stuff". 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. MXit is not without its detractors; rumor of photo-doctoring and media stories of illicit chats have fueled moral panics in South Africa and concern for children. However, there seems to be a range of behaviors; 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.

Another draw to the internet is information search. 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. Evuya recently graduated and is looking for work, but, when he was in school, he did a report on the xenophobic attacks in South Africa, using mobile search engines to search for news and images. 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.

The importance of keeping costs low drives other mobile internet behaviors as well. Virtually all users in this group have pre-paid accounts, and all pay for bandwidth by the bit. Thus 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". The actual details of how much they pay per bit 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.

The knowledge gained from friends, siblings, shopkeepers, and customer service technician is often incomplete. Nontembo needed to have some music on her phone, but the customer service at her service provider offered little help—all they could tell her is to use her WAP:

> 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".

Despite the incomplete guidance and the lack of alignment with what she knew (Bluetooth transfer), she persevered. She has explored her phone and has managed to get the music.

Some of the MXit users were not aware they were using the internet. 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...". Another was not aware that his phone had the capability to browse websites, even though he was using MXit. The internet does not begin and end with the browser, and applications like MXit and the carriers' own premium content provide experiences which are internet based without being internet centric in the eyes of users.

The mobile-primary path

Despite not owning a PC, more than half of respondents had some kind of PC exposure, and many of those had accessed the internet via a PC. Given our small and non-representative sample, 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 to PCs and/or the PC-based internet prior to learning how to access the internet on their mobile handsets. Some had learned in school, others from friends or roommates. Still others had been "tag-alongs" to internet cafes, perhaps using a PC only in the way an audience member "uses" a cinema projector—simply to watch a film or a music video over someone's shoulder. But most 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, others, Facebook. For instance, Edmond would tag along with his friend when he wanted to send out his CV; he said, "When I wanted to pass my CV to apply for jobs, where my friend showed me how to use the internet to send my CV, he opened for me the email address me and showed me how to send it". 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. As Kasheifa put it, "Oohh yes, every second person I know is on MXit and Facebook…. It is the cheapest form of communication".

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, a 23-year-old high school dropout living in a middle-income suburb, for whom 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. He checks 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 on his phones. And 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". But 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, a 21-year-old Zimbabwean immigrant, 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 accounting-trained 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, expresses a similar sentiment: "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, a Zimbabwean living in Cape Town, uses his phone to keep tabs on politics back home: "If I heard [a rumor] before, I would have to wait for the evening news, but with this, I just go and check if it is true". Not 100% comfortable with bookmarks or navigation, Crispen 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 have recently opened an email account on Crispen's behalf. Further, that same friend is now teaching Crispen the conventional, PC-based internet. Despite the help, Crispen is confident about learning new things; he says he'll just play with the phone until he figures it out, and that it won't take long.

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. Often, children are not taught to use the internet as the computers are not yet online.

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 between 2.5" mobile browsers and CRT screens, between T9 keypads and full-size QUERTY keyboards, etc, though this would be an important avenue for future research.

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.

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, while in China, QQ mobile attracts many individuals to a GPRS/mobile data-enabled experience for the first time. 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 arena where PCs are particularly scarce, among a population of particular 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 will

take to the mobile internet as more and more handsets are data ready, and more services appear to captivate them.

There are three immediate lessons for those who would seek to apply the mobile web 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. This is reminiscent of an emergent and locally negotiated mobile literacy, and of structurational forces at work (where a community of users adopts 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.

Second, it is impossible to avoid the role of social and expressive functions in drawing people to the channel. MXit was the number-one draw. Information seeking about soccer teams, such as Soweto's Kaiser Chiefs and the not so-local Manchester United received more mentions than searches for health information or political news. So, too, are the concerns about mobile internet broader than those about development. The moral panics about pornography, illicit chats, and unsupervised youths 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 mobile internet users in the developing world will eventually be *mobile-primary* or *mobile-only,* we must remind ourselves that (at least for now) most policymakers, designers, and academics are *PC-primary* … indeed some are probably 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 and deploy m-applications which promote social development, we need to be cognizant of the preferences and trade-offs 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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