THE DIGITAL DIVIDE AND THE KNOWLEDGE GAP IN SOUTH AFRICAN INTERNET USAGE

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ABSTRACT

Few theorists of the digital divide internationally have used figures from the developing world. This article examines recent trends in South African online usage, examining whether they support any current theories of the digital divide. It concludes that the most apt description of trends here is in Bonfadelli's "knowledge gap" model (2002) in his study of Swiss Internet usage. In pointing out how frequent users have outpaced more sporadic or infrequent users, the study confirms Bonfadelli's findings, while problematising current models of the digital divide in the developing world.

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INTRODUCTION

Theorists of the digital divide have tended to ignore the developing world or, when considering it, have in general been content to paint with broad brush strokes rather than in fine detail. (Castells 2001; Fuchs & Horak 2008; Norris 2001; Peter & Valkenburg 2006; Van Dijk & Hacker 2003; Van Dijk 2006; Wilson III 2004). As South Africa has strong industry research, our situation allows us to examine three of the most feasible current accounts of the digital divide: (a) that the digital divide will simply disappear; (b) that old inequalities will persist and even grow because of the internet; and (c) that new social advantages and disadvantages will result from the internet (Van Dijk & Hacker 2003).

This study, while it cannot finally arbitrate between these complex and no doubt not completely exclusive possibilities, tends to support the persistence and growth model, particularly as articulated by Bonfadelli in his study of the "knowledge gap" in Switzerland. He found that, despite Internet access increasing steadily across demographical groups of the population, the gaps between these groups continued to increase as access increased (Bonfadelli 2002).

South African growth in Internet access from 2002-2008

Statistics from the South African Advertising Research Foundation (SAARF) (2008) on the frequency of Internet access among adult South Africans provide the basis for an analysis of Internet access in South Africa. According to SAARF's AMPS (All Media and Products Survey) from 2002-2008, frequency of Internet access has grown according to three measures of frequency of access. This thesis draws on three research questions from SAARF's AMPS Internet usage survey to investigate frequency of Internet access, namely:

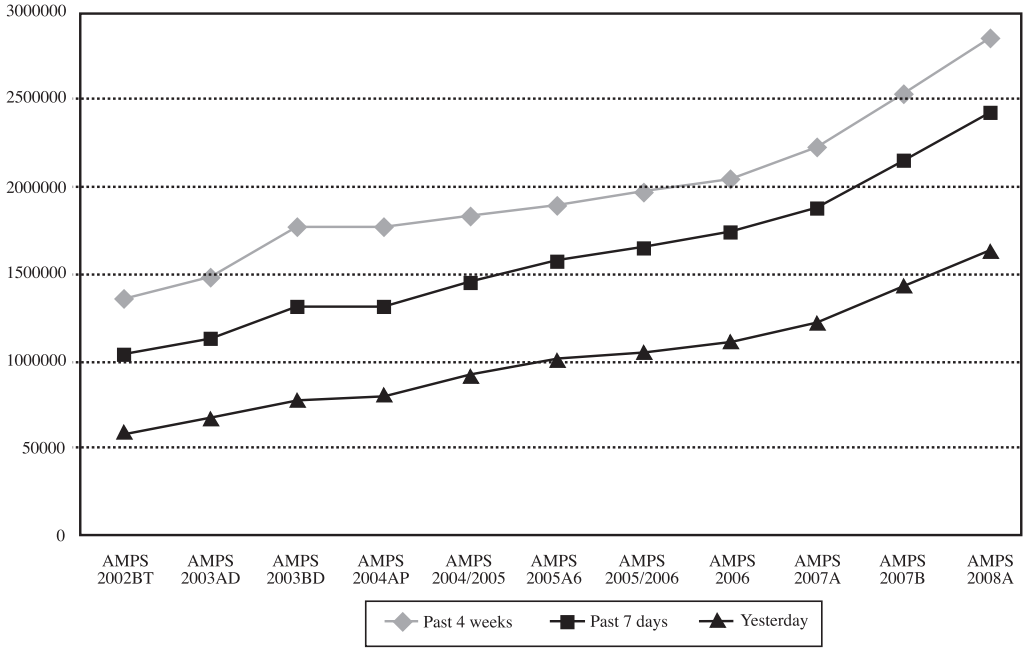
- Have you personally accessed the Internet/World Wide Web in the past four weeks?
- Have you personally accessed the Internet/World Wide Web in the past seven days?
- Did you personally access the Internet/World Wide Web yesterday?

Respondents were required to answer either "yes" or "no" in sequential order. If respondents answered "no" to either of the first two questions, they were told to skip ahead to the following section. The cumulative effect of these three questions is that users who said they had accessed the Internet "yesterday" were automatically included in the tally of users who had accessed the Internet in the "past seven days" and "past four weeks". Similarly, users who had only accessed the Internet in the "past seven days" were also included in the tally of those who had accessed the Internet in the "past four weeks". This means that each successive group consists of a sum of different kinds of Internet users, and is not a reflection of "only" those users who had used the Internet within a certain period. These three categories can reasonably be described as high, moderate and low Internet users assuming that frequency of use indicates user behaviour.

The following graph depicts the SAARF statistics gathered over a six-year period as the basis for an investigation into Internet access in South Africa. Internet access in South

Africa, as measured by frequency of access, is shown by the total numbers of adult South Africans who fitted into each category, extrapolated from the numbers who responded "yes" to each question (Figure 1). The figures take into account changes recorded by SAARF in the country's population over this time.

FIGURE 1: ADULT SOUTH AFRICANS WHO ACCESSED INTERNET "YESTERDAY", IN THE "PAST SEVEN DAYS" AND IN THE "PAST FOUR WEEKS"



(SAARF 2008)

The first thing to note is that a profound digital divide still exists in South Africa – in 2008 fewer than three million adult South Africans said they had accessed the Internet in the "past four weeks", and even fewer adult South Africans reported accessing the Internet more frequently than that. Thus while Internet access increases, it is in a small segment of the population. Over a six-year period the number of people who reported accessing the Internet in the "past four weeks" has doubled; the number of people who reported accessing the Internet in the "past seven days" has increased almost 2.5 times; and the number of people who reported accessing the Internet "yesterday" had nearly tripled. This appears to support theorists arguing that there is a disappearing digital divide with a steady increase in Internet access over time. However, it remains to be seen if the other element of the disappearing digital divide model, particularly that "once access gaps are bridged, there will be homogenous Internet use patterns" (Peter & Valkenburg 2006), can be proven.

While the disappearing digital divide model is thus to some extent correct in describing Internet access in South Africa since 2002, it appears to oversimplify what would

otherwise be a concerning trend of low levels of Internet access in South Africa. Over a long-enough period, the digital divide in South Africa may disappear, but that does not account for new differences of usage that are emerging or will emerge or the effects the inequalities of access may have.

Further interrogation of these statistics reveals significant trends already developing, particularly when the SAARF figures for each category of frequency of use are isolated. This reworking helps understand what kind of Internet access has grown the most over the sample period.

By separating the growth of internet usage among the three groups of frequent, moderate and low users, we can see if Bonfadelli's "knowledge gap" approach (2002) holds in South Africa as well. In his study, Bonfadelli attempted to track the differences between groups of the Swiss population with access to the Internet over time. Bonfadelli found that not only did access across demographical groupings increase over time, but that significant differences between these groups' access to the Internet did as well (*ibid*.: 75).

To see if significant differences between kinds of usage was emerging, the SAARF aggregate figures were broken down into three categories by subtracting the percentage of people who had accessed the Internet "yesterday" from those who had accessed it in the "past seven days" (which included those who accessed it "yesterday") and doing the same for the "past seven days" and "past four weeks" categories as well. The results – a measure of those who had accessed the Internet in the "past four weeks" (but not in the "past seven days" or "yesterday"), the "past seven days" (but not "yesterday") and "yesterday" – are recorded in Table 1:

TABLE 1: REVEALING THE CUMULATIVE EFFECT

	AMPS 2002BT	**AMPS 2003AD**	**AMPS 2003BD**	**AMPS 2004AP**	**AMPS 2004/ 2005**	**AMPS 2005A6**	**AMPS 2005/ 2006**	**AMPS 2006**	**AMPS 2007A**	**AMPS 2007B**	**AMPS 2008A**
Population Size ('000s)*	*29 583*	*29 773*	*29 773*	*30 310*	*30 656*	*30 656*	*30 903*	*30 903*	*31 109*	*31 109*	*31 303*
4W (%)	*4.6*	*5*	*5.9*	*5.8*	*6*	*6.2*	*6.4*	*6.6*	*7.1*	*8.1*	*9.1*
Percentage of infrequent users	**1.1**	**1.2**	**1.5**	**1.5**	**1.3**	**1.1**	**1.1**	**1.0**	**1.1**	**1.2**	**1.4**
7D (%)	*3.5*	*3.8*	*4.4*	*4.3*	*4.7*	*5.1*	*5.3*	*5.6*	*6*	*6.9*	*7.7*
Percentage of moderate users	**1.5**	**1.5**	**1.8**	**1.6**	**1.7**	**1.8**	**1.9**	**2.0**	**2.1**	**2.3**	**2.5**
Yesterday (%) Heavy users	**2**	**2.3**	**2.6**	**2.7**	**3**	**3.3**	**3.4**	**3.6**	**3.9**	**4.6**	**5.2**

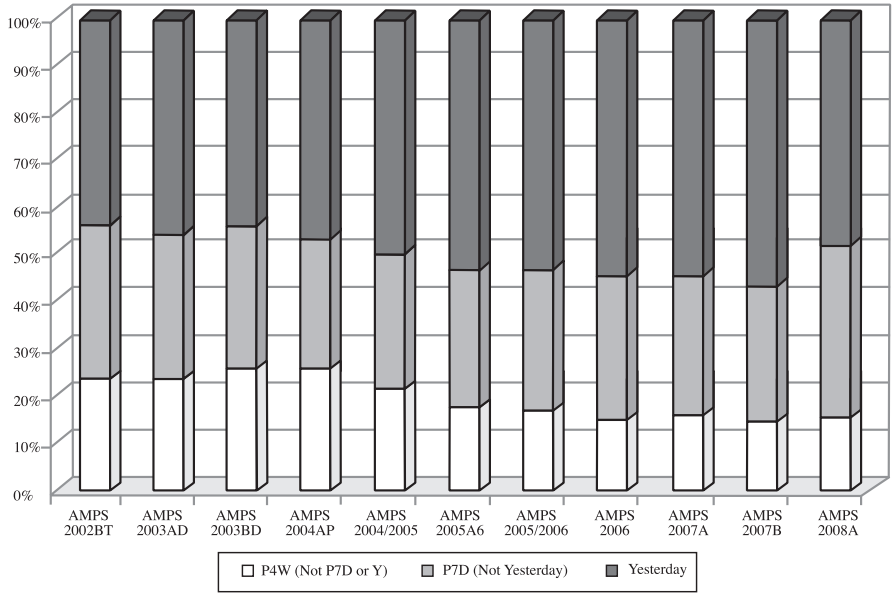
*SAARF Universe: Adult population in '000
(SAARF 2008)

This chart has thus broken down aggregate figures into three groups of users and allowed us to track the growth of each of these groups over the period. According to these figures, the percentage of South Africans who have accessed the Internet "yesterday" – the group defined as heavy users – has grown sharply, from 2% to 5.2%, or by some 260%, over the last six years. The percentage of South Africans who have accessed the Internet in the "past seven days" – the moderate users – has grown from 1.5% to 2.5% or by some 67%, while the infrequent user group has grown only from 1.1% to 1.4% or by some 27%. While it may thus initially appear that Internet access is improving uniformly in South Africa, this further drilling down into the groups reveals an uneven growth across kinds of users.

In Figure 2, we show how the three groups have changed as percentages of the total sample over the period. Figure 2 demonstrates how, out of every 100 Internet users in 2002, 24% of Internet users were likely to be infrequent Internet users ("past four weeks"), 33% were likely to be moderate Internet users ("past seven days") and 43% were likely to be frequent Internet users. By 2008, that distribution had changed to 15%, 27% and 58% respectively. What this means for those who had not yet accessed the Internet at all by 2008 is that the "typical" Internet user is far more likely to be accessing the Internet frequently than in 2002, and thus the gap between Internet users and non-users as measured by frequency of the Internet user's access is increasing. Put another way, non Internet users need to access the Internet far more frequently in 2008 than in 2002 in order for them to become a "typical" Internet user in South Africa. The required change in behaviour – from non-user to frequent user – is far greater than in 2002.

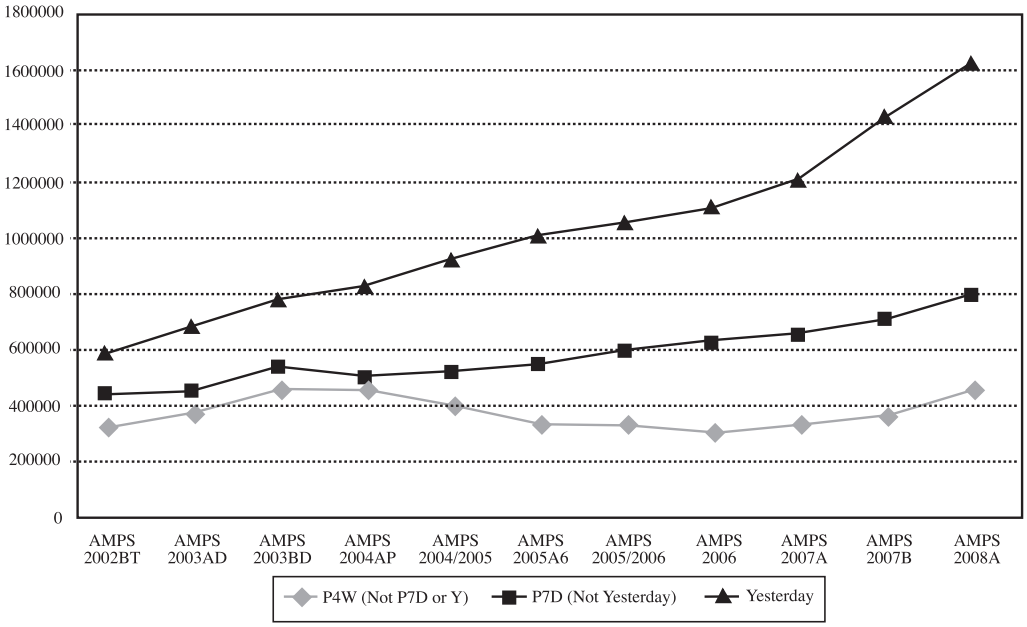
In Figure 3, we take into account changes in population growth, to reach real numbers of Internet users in the different categories during this period. As this graph shows, the numbers of South Africans using the internet frequently has climbed sharply, while those only accessing it infrequently actually dropped for the period 2004–2006 and has grown far more slowly. In 2002, the distribution of infrequent, moderate and frequent Internet users was far more even than in 2008. For example, in 2006, around 800 000 more people had accessed the Internet "yesterday", according to SAARF, than the infrequent user group that had accessed the Internet in the "past four weeks". By 2007, that figure had risen to over one million, and by 2008 that figure was close to 1.2 million. In contrast, in 2006 some 300 000 more people had accessed the Internet in the "past seven days" than had accessed the Internet in the "past four weeks" and by 2008 that difference was still below 400 000. There is not a steady growth in all user groups but a trend towards regular use as the norm.

FIGURE 2: PROPORTION OF "YESTERDAY", "PAST SEVEN DAYS" AND "PAST FOUR WEEKS" OF INTERNET USERS



(SAARF 2008)

FIGURE 3: NUMBER OF PEOPLE ACCESSING INTERNET "YESTERDAY", IN THE "PAST SEVEN DAYS" AND "PAST FOUR WEEKS"



What conclusions can we reach from these trends? Industry observers during this period commented on the shift of Internet users in South Africa to more frequent access. In December 2005, a World Wide Worx report (Goldstuck 2007) stated that:

> Despite great expectations, growth in Internet access among the South African public has slowed to a crawl, with the dial-up market experiencing no growth in subscribers for the first time since the industry was launched in 1993…While the arrival of broadband or high-speed Internet access has transformed the Internet access landscape in terms of technology choice, its impact has been felt far more strongly in existing users migrating from dial-up usage than in new users coming on line.

By 2007, further World Wide Worx research revealed that this trend continued. World Wide Worx Managing Director, Arthur Goldstuck (2007), noted:

> The harsh reality is that broadband has not yet made a major impact on overall connectivity numbers, even while dramatically increasing the usage of those who are already connected. The majority of broadband users are simply migrating up the connectivity food chain, from dial-up to broadband. So, while the haves get more, the have-nots remain locked out.

Goldstuck attributes this blockage to the high cost of landline Internet connectivity and the monopolistic environment brought on by the state-owned Telkom. Goldstuck also notes that up to a third of broadband subscribers also have access to "another form of connectivity", suggesting that the "haves" enjoy a choice and range of Internet activities.

The differences between dial-up and broadband Internet use help contextualise different frequencies of Internet use. Studies show (Assael 2005; Chaudhuri, Flamm, & Horrigan 2005; Firth & Mellor 2005; Fox 2005; Horrigan 2009; Papacharissi & Zaks 2006) that frequency and particulars of Internet use correlate directly to the kind of Internet access available. While the overall increase in users who had accessed the Internet "yesterday" rather than over the past four weeks cannot be attributed to broadband adoption alone, this privileged form of access clearly played a major role. And, as Goldstuck's comments suggest, this trend provides more support for the persistence and growth or knowledge gap models (in which the real-world rich become digitally richer) or, alternatively, the emerging digital differentiation model, rather than the more utopian disappearing digital divide hypothesis.

Goldstuck's argument relies on the assumption that there is a steady migration from dial-up to broadband, from low or moderate to heavy use, without a general increase across all groups. The SAARF figures support this argument rather than suggesting that all groups of Internet users have increased their frequency of access steadily over time. A perfect model for random or widespread growth would be a steady increase across all groups.

While it is thus impossible to describe with certainty what is fuelling the varying growths in these three groups of Internet users, it is clear that the number of infrequent ("past four weeks") and moderate ("past seven days") Internet users – whoever they may be – is not growing at anywhere near the same pace as frequent ("yesterday") Internet users.

Considering that Internet access is still fairly new in South Africa and, as it has already been demonstrated, that it is enjoyed by a small minority of South Africans, it seems likely that the more rapid growth in frequent Internet access was in those able to access the Internet frequently because of their household earnings or education levels, in other words those able to use their existing social advantages in new ways. This group form part of Castells' network society as opposed to those who have fallen into his dystopian black holes of informational capitalism (Castells 1996; Castells, Muller, Cloete, & Badat 2001).

A further consideration is that many of the frequent users are using the Internet at work because they are in the formal, skilled economy, where applications such as e-mail are indispensable. For them, frequent Internet usage may not be so much a matter of social choice as of economic necessity.

CONCLUSION

This interrogation of SAARF Internet access figures, which at first sight present a picture of steady growth in Internet usage, and thus of a disappearing digital divide, has revealed more complex trends and disturbed any notion of steady growth among the public at large. The disappearing digital divide model has some cogency but the relatively low numbers of Internet users in South Africa as a whole, combined with the time it may take for these numbers to increase, render this model insufficient. The trends described give support to the persistence and growth model (the Internet users would tend to be overwhelmingly white, affluent, formerly privileged) or the emerging digital divide model (where, possibly, a new younger, educated urban elite would benefit at the expense of those, of whatever racial group, who were older, less educated, rural) or perhaps some combination of these.

More qualitative research is necessary to investigate the factors driving these patterns and changes. This investigation can not yet shed light on what these factors may be, but it has suggested that broadband adoption in South Africa is one likely factor.

In undertaking this research, we are aware that we have neglected the extent of cell phone access to the Internet in South Africa – something which many industry observers and researchers suggest may complicate any South African model considerably. Nonetheless, it should be observed that while cell phone access may give a rapid boost to digital access and thus to the disappearing digital divide model, the clear socio-economic and perhaps age divide between those having broadband and those accessing the internet through phones, in many cases in a fairly rudimentary form like MXit, is likely to mean that important differences between the groups remain and

create new forms of social and cultural capital. The SAARF figures, in ignoring younger users of the Internet, may not be able to predict whether a major drive for Internet adoption in schools may lead to a sudden surge in adult usage, and thus to a rapid increase in Internet access more broadly, but these figures may also underestimate the number of privileged younger users with access in households.

Our findings about computer access to the Internet thus allow a more nuanced understanding of the leading theories of the digital divide and their relevance in South Africa. They suggest that the disappearing digital divide model is inadequate, and while it is impossible to test the persistence and growth model or the emerging digital differentiation model without more information on who South African Internet users are and what they are doing online, our suggestion is that this model most closely approximates Bonfadelli's, suggesting that to those that had, things are still being given, online.

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