Much ado about unicorns and digital divides

> "In the field of mass communication as in almost every other field of enterprise, technological progress has hurt the Little man and helped the Big man"
> *Aldous Huxley, 1958*

Introduction

In November 1988, my travels through Central America brought me to Puerto Barrios, a small village and harbour on the Caribbean coast of Guatemala. I have few memories of the place, apart from waiting long hours in the local bus station and being obliged to watch the local television set. Amidst the American programmes – Miami Beach it was, if I remember correctly – there was suddenly an ad for canned cat food with tuna, chicken or rabbit flavour, and I was struck by the divide between the television broadcast and the local setting. The divide was one of language, but also of relevance. No cat in Puerto Barrios could dream of getting canned food with special flavours, let alone being served a meal in the first place. The concept of canned pet food was so alien to the circumstances in Puerto Barrios that it made the whole situation hilarious.

A decade and a half later, talking about the divide is popular. The digital divide is on everybody's mind. London is said to have more internet domains than the whole of Africa, the gaps between information rich and information poor are widening, access to internet is the foundation for a digital apartheid. In my opinion, little has changed or is changing. The information divide between the developed and developing world is omnipresent but not new and if not for its dramatic consequences, the current situation would have been as hilarious as advertising canned pet food in Puerto Barrios. I will indicate that the current hype around internet as a tool for social development is not new, but bears many resemblances to the medieval belief that a unicorn horn could prevent death from poison.

Differences in access

In 1995, the North American weekly magazine Newsweek described the average internet user as being politically conservative, white, male, single, native English speaker, living in North America and professional, manager or student. A lot has changed since that time, if only through the now widespread availability of internet in Western countries. Seldom has a technological innovation gone through such a rapid diffusion process. And although the speed of diffusion seems to be slowing down a bit, the community of internet users still grows every month. The latest figures for the United States report an additional 2 million users every month.

Despite this fast diffusion process, it is obvious that there are significant differences among those having access and those not having access. The *Falling through the Net* series of surveys of the US Department of Commerce probably holds the most recent and extensive dataset on internet access. Its September 2001 data[1] indicate several divides: high income households are more likely to have internet access than low income households, people who are employed are more likely to be computer and internet users, children and teenagers are the most likely internet users, households of married couples with children are more likely to be internet users than other types of household, the higher a person's level of education, the more likely it is for them to be internet user. Each of these divides is well researched and documented, both in the *Falling through the Net* studies as in surveys in other countries.

Similar inequality in access level can be discerned between nations. Industrialized countries, with only 15% of the world's population, are home to 88% of all Internet users. Finland alone has more Internet users than the whole of Latin America (quotes from World Economic Forum). "The 400.000 inhabitants of Luxembourg between them share more international Internet bandwidth than Africa's 760 million

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[1] Published under a new title (*A Nation Online*) but basically a continuation of the earlier studies.

citizens." (ITU World Telecommunication Development Report 2002). Inequality is not limited to internet access but expands to other products and services of the so-called information society, such as mobile phones. Bangkok was once said to have more mobile phones than the whole of Africa, although that statement from 1997 is no longer valid.

Digital divides call for action. The past years saw an unusual shared interest of NGOs, governments and industry to address the issue and close the gaps. This has resulted in a myriad of initiatives, such as neighbourhood access centres (called community technology centres in the US, digital playgrounds in the Netherlands, the commercial variant is often called cyber café), low-cost computers (such as the Indian simputer or the Brazilian 'popular pc') and low-cost software (such as Linux and the work of the Free Software Foundation, see *www.fsf.org*). The *www.digitaldividenetwork.org* initiative of the Benton Foundation and the digital divide campaign at *www.oneworld.net* provide a near comprehensive overview of these initiatives and act as valuable sources of inspiration for those who want to fight the digital divide.

Changing positions
Looking at the statistics of who is and who is not on-line provides us with information on the current situation. More important however are the historic data that tell us whether the digital divides are increasing or decreasing.
In Western countries, the latest figures generate the clear message that digital divides between different socio-economic groups are decreasing. The gender gap that was so visible in the mid nineties has evaporated with now 53.9 % of the US male population being online versus 53.8 % of the female population. As noted, differences across income category still exist, but are decreasing. The growth of internet usage in low-income households was 25 % (US, between December 1998 and September 2001) versus only 11 % for high-income households. Slowly, the digital divide across income categories is closing. The same can be observed for other fault lines in the digital divide, such as education. The group who hold degrees beyond Bachelor level showed a growth rate of 9 %, while the group of those with only college degree showed a growth rate of 30 %.
At the same time, a new divide is emerging. Internet access is no longer simple internet access but needs to be differentiated in at least four categories: free low-service dial-in internet access, paid dial-in access, broadband access through cable or DSL, fibre to the home. Especially the jump from metered access where each time unit of computer connection results in costs and unmetered access where a monthly fee for unlimited access seems to be making a lot of difference in the way internet is used. Interestingly, broadband seems to diffuse well among low-income groups. Castells mentions no-income student groups as one reason and peer-to-peer music sharing (the old Napster application) as another possible explanation.
On a global level, a similar picture of ever-changing positions emerges. The position any specific country takes on the map of internet access continuously changes over time. Countries jump positions with other countries and improve or worsen their chances in the race of connecting citizens to the internet. Least developed countries like Togo or Benin are leaping ahead with mobile phones because in the early stages of diffusion, it does not rely on heavy investments (Kelly, Minges, & Gray, 2002). Some countries make the link between being connected and generating income, establishing imitations of Sillicon Valley, like the often quoted Indian Bangalore technology-valley in India or similar initiatives providing business-to-business technology services on the global market from Bangladesh, Ghana or Togo. Even individual companies embrace the web to upscale their local trading, such as at *www.ethiogift.com*.
Overall, both on the national and the global level, the process of diffusion of internet access is not surprisingly new but follows the structure of traditional diffusion processes of innovations, so clearly described by Everett Rogers. Over time, diffusion patterns follow an S-curve with a small minority of innovators taking the lead, followed by early adopters, an early majority, late majority and finally what Rogers labels the groups of laggards. At the start of a diffusion process, social inequality is unavoidable, but as ever larger groups embrace the innovation, exclusion diminishes. Additionally, as time progresses and diffusion increases, the original innovation takes on different forms. What once was just internet access now has many different forms, from dial-in connection to broadband or access over the mobile phone such as the Japanese DoCoMo or i-mode system.

Another layer of inequality

In the analysis of the digital divide, it is essential to discern the current fault lines of the divide and a historical perspective on the dynamics of differential access. In addition to that, it is elementary to highlight the similarity between the digital divide and the traditional socio-economic stratification on which individuals or countries can be ranked.

The Dutch social and cultural planning office generated a bit of a shock with their 2000 study on the digital divide by indicating that the digital divide is not digital at all. Differences in access to computers spread out across the population in much the same way as access to the labour market, to income, health care, to cultural activities. The so-called digital divide is yet another aspect of the omnipresent social stratification among individuals and households.

On a global scale, we can also observe the similarity between the so-called digital divide and traditional ranking of countries in terms of human development or economic status. The already mentioned statement that London has more internet domains than the whole of Africa can be coupled with the old statement that the telephone directory of Manhattan is bigger than that of the African continent. 80 % of the world population may not yet have heard about the internet, as was stated at the 2002 World Social Forum, but similarly 50 % of the world population has never made or received a telephone call. These data relate only to media access, not even mentioning access to a family doctor, clean water, or education facilities.

The world development indicators published by the World Bank and the human development indicators used by the UNDP clearly provide illustration of the correlation between internet access and other indicators. The situation of countries regarding access to the internet is not significant different from their position in terms of economy, health and other dimensions of social development. This observation of differences in internet access mirroring other layers of social inequality does not make the inequality less real or less in need of taking action. On the contrary, it stresses the importance of addressing inequality both on the individual and country level, at the same time highlighting the complexity of the issue of differential internet access.

Beyond access
The common rhetoric on the digital divide stresses the need to 'be connected', to have access to the internet. This could easily lead to the assumption that having such access will be a quantum leap forward in social development. Unfortunately, life is not so simple. There are several intermediate variables between having internet access and its contribution to social development.

Language
One critical variable is language. Estimations in 2000 were that 68% of the websites were in English, 16% in other European languages (such as Spanish, Portuguese, French) and 11% in Asian languages (Chinese, Arabic, Japanese). However, the estimated on-line population has a different distribution with 44% being native English speaking, 32% non-English European languages and 25% internet users having an Asian language as mother tongue. In terms of world population, the difference is even greater with only 14% of the world population having English as a native language. The status of English as 'lingua francae' is strengthened by these developments. Access to the information that is available on websites calls not only for the appropriate hardware and software and connections, but also for good working knowledge of the English language. Fortunately, with more non-native English citizens and organisations being connected, this imbalance will gradually decrease. My expectation is also that in other parts of the internet (e-mail, chat), the language imbalance is much smaller than for websites. Meanwhile, the need continues for initiatives from the public sector (such as UNESCO's investments in the universal networking language) or the private sector (e.g. Altavista's babel fish translation service or the English-Arabic translations at *www.ajeeb.com*).

Relevance of information
There is a lot of information available on the internet. It dwarfs the Encyclopaedia Brittannica, for so many ages the symbol of comprehensive data. But is the information that is available the information we need? Is internet information relevant to social development?

There is no editorial board for the internet, and as a consequence information on a myriad of topics is available. Whether you want to know all about marquis de Condorcet or Pieter Breughel, search machines as Altavista or google know it all. But equally, if you want to gamble for money or watch pornography or play online games, the same internet offers it all. It is an illusion however to think availability of much is equal to availability of everything. I would dare to state that there is a negative correlation between availability of information and its relevance to social development. The information

that is most essential to social development is lacking, whereas information that is trivial or harmful to social development is abundant.

In the mid seventies, the information needs of poor households in the United States were researched. Relevant information needs included access to good and cheap child care, how to get rid of lead in the plumbing, where to get money to bridge the time to the next pay check, how to get rid of rats in the vacant neighbouring building. Although most local authorities in Western countries now have an extensive webpage, very few provide information on these topics. You can easily find the agenda for the next local council meeting, but nothing about whom to call with concerns about decreasing safety in the street. The North American Childrens' Partnership made it clear in a 2000-report: there is a lack of local information, too much literacy is assumed by the authors of information, too much information is in English only and there is hardly any cultural diversity in what information is available.

On a global scale, we see a similar disparity between the availability of information on the internet and its relevance towards social development. Imagine the following case. Bangladesh is one of the poorest countries in the world. Health and health care are problematic. Cholera is widespread due to the need to rely on lakes and ponds for drinking water. Improvements do not always call for big investment, a subtle change of behaviour could make for big changes. Several organisations started promoting the use of an old sari as a water filter by folding it several times and placing it over the mouth of a jug before collecting water. This simple technique creates a barrier against plankton that carry the cholera bacteria. Would access to the internet be of much help here? Using internet, once you know about using saris as a filter, you would be able to get full details on how and why. But would using the internet get the initial message to Bangladesh people in a more timely and convincing way ? Another case equally puts the relevance of internet access into perspective. On UNDP's human development index, Niger scores even lower than Bangladesh and ends on the one but last position in the ranking of countries by level of human development. Life expectancy at birth is extremely low at 44.8 years. Among the health risks in Niger, malaria is prominent. Again, a reasonably simple and effective method is available in the use of mosquito nets at night. Would access to internet in Niger help to spread awareness of that simple health measure?

In case you still have doubts about the relation between availability of information and its relevance to social developments, open your favourite internet search engine and compare the results for searches on 'cat canned food' and 'sari clean water'.

Responsibility
There is a final issue that needs to be mentioned as part of the analysis of the digital divide and it deals with the balance between public, private and individual responsibility on closing the digital divide. I can only introduce it here as an issue calling for our attention, without providing answers or suggestions how to deal with it.

There is currently obvious differential access to internet both within and between countries. But who should be responsible for reducing these inequalities? In the US, the Heritage Foundation and the Benton Foundation fought an interesting debate on which share of the burden should be carried by the public or the private sector. But what about the individual? To what extent should the risk of the digital divide be a shared risk? Allow me to introduce three situations to substantiate the thinking about the responsibility of the individual citizen or country. The first example comes from the latest Belgium budget survey, but no doubt has its parallel in other (Western) countries. The 2000 household budget survey confirmed that poor households spend fewer resources on computer and internet. While the average household spends 68 euro a year, a poor household only invests 6 euro a year in new media, a difference of 62 euro. This is no surprise and explains the differential internet access of households. However, the same budget survey found that a poor household spends 78 euro more per year on cigarettes than an average household. Should the welfare department of a local authority invest in providing computers for poor households or should these households be encouraged to stop smoking and restructure their consumption patterns?

A similar situation can be found on a global scale. The investment made by international organisations and Indian society to create initiatives like the Bangalore silicon valley are well known. But how to relate these investments to the news that in early February 2002, India and Russia signed an arms deal including India's purchase of long-range strategic bombers, the continued shipment of T90 tanks and several decommissioned fighter aircraft. This new deal adds to an earlier record arms deal that allowed Indian firms to build Su-30 MK1 warplanes under license. Again, the question can be asked about who is responsible for investing in getting connected.

The third situation that is relevant to our questions goes back to both old and new research. The children's television programme Sesame Street failed its original goal to decrease the inequality in

language skills between children from poor and other households because although language skills increased by watching Sesame Street, those of children from average households increased much more than those of children from poor households, thus increasing rather than decreasing the inequality. Despite this it was an instant commercial success. Following the success and failure of Sesame street, Tichenor and others did a seminal study into the information behaviour of households and found that lower-income households make less use of the information they receive. Recent research on internet use among Swiss households found that less educated people use the internet predominantly for entertainment, while more educated people use the internet in a more information oriented way. This also relates to the earlier mention of low-income households being surprisingly well represented among broadband users as a consequence of Napster-like applications. The message that comes across is that even in circumstances of equal access to information, there is a significant difference in who succeeds in translating information access into social development and who does not.

As indicated, the issue of responsibility is introduced here as something we need to take into account when analysing the digital divide, without providing clear answers as to how to address the issue. It relates to the broader discussion on the democratisation of responsibility and ties in with the work of people like Anthony Giddens on modernity and Ulrich Beck on the risk society. It goes to the core of the egalitarian model that we wish to see reflected in social welfare and social development: equality of opportunities versus equality of outcome.

Conclusion: the digital divide and the unicorn

It is useful to summarise the main elements of our analysis here before turning to the intriguing title and explain the communalities between unicorns and digital divides.

The initial observation about the digital divide was that there is no divide, but rather several divides, a multitude of fault lines in the statistics on internet access. Neither is there a divide because there are no two very distinguished positions, but a continuum stretching from zero access via access in the local community technology centre and dial-in access to full broadband at home. The positions of specific socio-economic groups or individuals on that continuum change regularly.

Secondly, we observed that the digital divide is not strictly digital, but another aspect of traditional social and economic stratification. Poverty of internet access neatly corresponds with poor health care, poor labour market opportunities, etc.

Thirdly, we made the observation that the digital divide – which by now is neither a divide nor digital – is not about access to the internet, but about accessibility of information, relevance of information and information literacy. Finally, I touched upon the difficult issue of personal responsibility and the public/private sector's remit regarding the digital divide.

Having made these observations, it is now easy to see why digital divides are so similar to unicorns. Both come with a lore, with significant sections of society being fascinated and attracted by it. Just like noblemen and adventurers searched for the valuable unicorn horn, a strong but weakening effort has been present to find and 'capture' the digital divide. This was reflected in an unusual common goal of NGOs, governments and business organisations. Both the unicorn and digital divides also thrive on partial sightings. Just as the unicorn horn was very real and an interesting commodity for Danish merchants[2], fault lines in statistics on internet access are very obvious and real. The *Falling through the Net studies* in the US and similar surveys in other countries, the data in the UNDP 2001 report on human development and many other data sources provide ample illustration of differential access to internet. Unfortunately, both unicorns and digital divides also share the naïve belief of humanity in quick fixes, in easy solutions. The presence of a unicorn horn did not save anybody from poisoning, because the underlying causal model was simply wrong. Similarly, getting citizens in the developing world connected to the internet as a stepping stone to social development is too often based on a grossly simplified causal model. The relation between internet access and social development is a highly complex one, to the point where investments in health care, road infrastructure, education and other services might be much more appropriate than the ultimate goal of being connected.

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[2] The unicorn horn was in reality the tusk of male Narwhals, a species of small whales found in the Artic seas.

There is no shortage of policy statements on the global digital divide. Recently Kofi Annan strongly voiced the message of such statements: "this digital divide can - and will - be bridged". There is equally no shortage of meetings about the digital divide, with the planned world summit on the information society in 2003 as a major next and possibly powerful step. It is organised by the key players in this field: the International Telecommunications Union (ITU), the United Nations Conference on Trade and Development (UNCTAD) and the United Nations Development Programme (UNDP).

It will be clear from the previous that I support such initiatives but have little hope about their effects if they continue to single out the digital divide as a key problem and/or solution. Technology is just one aspect of global inequality in social development. Equally, technology is just one piece of the solution. If the link between being connected to the internet and social development is not explicitly present or strengthened, having internet is as useful as owning a unicorn horn to prevent poisoning. Beating the drum about the importance of 'being connected' in such situations is equal to advertising canned cat food in Puerto Barrios.

> "The test of our progress is not whether we add more to the abundance of those who have much; it is whether we provide enough for those who have too little." Franklin D. Roosevelt

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