

2004

It's Not the Digital Divide - It's the Socio-Techno Divide!

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Recommended Citation

Roode, Dewald; Speight, Hilary; Pollock, Michael; and Webber, Russell, "It's Not the Digital Divide - It's the Socio-Techno Divide!" (2004). *ECIS 2004 Proceedings*. 112.

<http://aisel.aisnet.org/ecis2004/112>

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IT'S NOT THE DIGITAL DIVIDE – IT'S THE SOCIO-TECHNO DIVIDE!

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Abstract

This paper aims at contributing to the debate about the digital divide. We first focus on what to us constitutes the root problem: the typical approaches to the development of people through and by the use of information and communication technologies (ICT). In contrast to governmental, political and technological attempts that focus almost exclusively on providing access to digital communication technologies, and expect “development” naturally to flow from that, we argue for a focus on “development” which is based on our notion of sustainable socio-economic development. We refer to “technocentric approaches” when the approaches propose and pursue technological interventions and show little regard for the actual needs of the people involved. At the other end of the scale, where the focus is on people and their developmental needs, we will speak of “sociocentric approaches”. This presents us with a different divide, which we will refer to as the “socio-techno divide”. We argue that it is this divide that has to be addressed – not the digital divide – and then present an analysis of the socio-techno divide. This illuminates the issues that need our attention and indicates an agenda for constructive engagement about the use of ICT for development in the Third and Fourth worlds.

Keywords: Digital Divide; Human Scale Development; Socio-Economic Development; Critical Discourse Analysis.

1 INTRODUCTION

Much has been written about the ‘digital divide’. Kvasny and Truex (2001) remark that “until recently, the ‘digital divide’ was understood to be a reference to classes of people at risk of being excluded from the rising tide of economic prosperity fueled by great advances in information technology.” They continue to point out that “governments, researchers, and politicians have turned attention to how to address the digital divide and resolve some of the intractable problems ...”. The intractability of the problem has been emphasized by the fact that most attempts at bridging the divide have indeed contributed to the widening instead of the closing of the divide.

This paper aims at contributing to the debate about the digital divide by first focusing on what to us constitutes the root problem: that of the development of people through and by the use of information and communication technologies (ICT). Our focus on “development” is in marked contrast to governmental, political and technological attempts that focus almost exclusively on providing access to digital communication technologies. We will refer to approaches that propose and pursue these attempts as “technocentric approaches”. At the other end of the scale, where the focus is on people and their developmental needs, we will speak of “sociocentric approaches”. This difference presents us with a second order divide, which we will refer to as the “socio-techno divide”. We argue that it is *this divide* that has to be addressed – not the digital divide, and then present an analysis of the socio-techno divide. This illuminates the issues that need our attention and indicates an agenda for constructive engagement of ICT for development in the Third and Fourth (Castells, 1998) worlds.

The paper is organized as follows: in the next section, we revisit the concept of “development” to arrive at a definition and understanding of sustainable development and briefly discuss typical projects to achieve this through ICT at the local level. This is followed by an analysis of selections from speeches by several South African Ministers to show the technocentric governmental and political approaches to the problem of the digital divide in Africa. Next, we discuss the concept of the Socio-Techno Divide and conclude by arguing that this divide, in contrast to the digital divide, can be bridged. We briefly indicate an agenda to achieve this.

2 DEVELOPING NOTIONS ABOUT “DEVELOPMENT”

Very often work in this field seems to accept that “development” is commonly understood. While this is far from true, it is sadly also true that workers in this field seem to pay little attention to this very important starting point for all research into ICT for development. If the research community had general agreement about the concept then naturally it should not be necessary for each piece of research work to preamble its analyses and findings by a manifesto about the concept of development. However, this being not the case it would seem not out of place to discuss the development of our thoughts about “development” and briefly to put on record our approach to it (Roode, 2002).

Two groups of authors were instrumental in the development of our thoughts: Todaro (1991) and the Chilean group of Max-Neef, Elizalde and Hoppenhayn (1991).

2.1 Todaro’s new view of development

“Development” was seen purely as an economic phenomenon during the 1960’s and 1970’s. It referred to the capacity of a national economy to generate and sustain an annual increase in its gross national product, or to the growth rate of the per capita GNP. A new view of development, articulated by Todaro, and much earlier by Schumacher (1973, reprinted in 1999) captures the complexity of the process and its essentially people-oriented nature:

“Development must ... be conceived of as a multidimensional process involving major changes in social structures, popular attitudes, and national institutions, as well as the acceleration of economic growth, the reduction of inequality, and the eradication of absolute poverty. Development, in its essence, must represent the whole gamut of change by which an entire social system, tuned to the

diverse basic needs and desires of individuals and social groups within that system, moves away from a condition of life widely perceived as unsatisfactory and toward a situation or condition of life regarded as materially and spiritually “better”. (p. 88)

This begs the question as to what constitutes a condition of life that is materially and spiritually better. Todaro and others (*Cf.* Mumford (2003)) believe that at least three basic core values could serve as a conceptual basis and practical guideline for understanding the inner meaning of development. These core values are life-sustenance, self-esteem, and freedom. They relate, Todaro believes, “to fundamental human needs that find their expression in almost all societies and cultures at all times”.

The second major influence on our thinking about socio-economic development came from the work of Max-Neef, Elizalde and Hopenhayn (1989) and their notion of human scale development.

2.2 Human Scale Development

Schumacher (*op. cit.*) pioneered the challenge of the basic assumptions of modern economics. In a similar vein, Max-Neef *et al.* argued against the policies of developmentalism and monetarist neo-liberalism and proposed an approach intended to create conditions for a new praxis based on what they call Human Scale Development. Such development, they explained, “is focused and based on the satisfaction of fundamental human needs, on the generation of growing levels of self-reliance, and on the construction of organic articulations of people with nature and technology, of global processes with local activity, of the personal with the social, of planning with autonomy, and of civil society with the state.” (p. 12). “Articulation” here refers to the construction of coherent and consistent relations of balanced interdependence among given elements.

Max-Neef *et al.* see human needs, self-reliance, and organic articulations as the pillars which support Human Scale Development. These pillars, they pointed out, “must be sustained on a solid foundation which is the creation of those conditions where people are the protagonists of their future. If people are to be the main actors in Human Scale Development both the diversity as well as the autonomy of the spaces in which they act must be respected. Attaining the transformation of an object-person into a subject-person in the process of development is, among other things, a problem of scale. There is no possibility for the active participation of people in gigantic systems which are hierarchically organized and where decisions flow from the top down to the bottom.” (p. 13).

The Human Scale Development approach of Max-Neef *et al.* is founded on three postulates. First, that development is about people and not about objects; second, that fundamental human needs are finite, few, and classifiable; and third, that fundamental human needs are the same in all cultures and in all historical periods. An important aspect of the work of Max-Neef *et al.* is their distinction between needs and satisfiers. They provide an analysis first pointing out the fundamental difference between needs and satisfiers, and second, stating that human needs must be understood as a system of inter-related and interactive needs. Each economic, social and political system will adopt different satisfiers for the same fundamental human needs. One of the aspects that define a culture, they point out, is its choice of satisfiers. “Satisfiers are not economic goods.... [they] may include, among other things, forms of organization, political structures, social practices, subjective conditions, values and norms, spaces, contexts, modes, types of behaviour and attitudes, all of which are in a permanent state of tension between consolidation and change.” (pp. 26-27). The need to understand fully the dialectic between needs, satisfiers, and economic goods is an important condition for the creation of a human economy, in which goods empower satisfiers to meet fully and consistently fundamental human needs.

Max-Neef *et al.* advocate self-reliance at all levels. They understand self-reliance “in terms of a horizontal interdependence and, in no way, as an isolationist tendency on the part of nations, regions, local communities or cultures.” (p. 49). Relationships of self-reliance have greater synergic and multiplying effects when they flow from the bottom upwards. Local self-reliance thus stimulates regional self-reliance, which, in turn, fosters national self-reliance.

In this notion of self-reliant human scale development we found a satisfactory way to formalize a definition of sustainable development (Roode, 2002): *Sustainable development is achieved through self-reliant human scale development which flows from the individual level to the local, regional and national levels, and which is horizontally interdependent and vertically complementary.*

The most popular way of introducing ICT at the local level into Third World countries has been through telecentres (Whyte 2000). 'Telecentre' is a loose term for a centre that provides a local community with access to communication and information where the customers pay, per use, at rates set by the telecentre operator. Telecentres are believed by many to be the vehicles through which micro and small enterprises at the community level can obtain and evaluate timely market information and source better and less costly inputs. The elusive problem, however, has been to create the know-how, in the community, to leverage this "transformative" power of the telecentre to initiate significant economic development (Rhodes, 2003).

The USA (Universal Services Agency) is a South African statutory body responsible for ensuring universal access to all telecommunications services for disadvantaged communities. Its programme is committed to providing sustainable telecentres and socio-economic information services to disadvantaged communities, but is unclear on how ICTs in disadvantaged areas could be used for development purposes, and has not moved beyond the rhetoric of universal access to ICTs. Most telecentres established by the USA have been seriously underutilized and unable to raise income to support operational expenditure. Few of the centres make sufficient income to pay salaries or to provide for equipment depreciation (Stavrou, Benjamin, Burton and McCarthy, 2000). The USA Telecentres are heavily dependent on donor support, and although the projects stress community participation and sustainability, to date none have proven that they can be self-sustaining post external funding.

On a more positive note, Grimes (1992, quoted in Rhodes, 2003) reported the results of field trials with Norwegian telecottages where the strategy employed was to provide teleservices as a form of import substitution to municipalities. He concluded that where municipalities think locally in purchasing goods and services they could play a significant role in helping small enterprises become established. This is in line with the concept of sustainable development as defined above, and underlines the point that activities at the local (community) level need to be complemented from higher levels – in this case, from the local (municipal) level.

Our view is that interventions such as the establishment of telecentres at the local level in a community should attempt to create a stable network of aligned interests of all the community stakeholders. Since self-reliance does not, as noted above, imply "isolationist tendencies" on the part of the local community, a further stable network has to be formed between the different communities through aligning their different interests by accepting their mutual interdependence. In the vertical dimension, communities need support from first, the local (municipal) level, and through that, from the regional, the national and even the international level. This implies that further stable networks have to develop around aligned interests between these different levels. This alignment, Monteiro (2000) noted, "... is not the result of any top-down plan or decision. It is the achievement of a process of bottom-up mobilization of heterogeneous 'things'" But what are these interests? At the local (community) level we may assume an interest of sustainable socio-economic development through the development of the people of the community. At the higher levels *prima facie* evidence seems to indicate that the interests are quite different.

In the next section we examine the interests at higher government levels as portrayed in different political speeches.

3 THE VIEW FROM THE TOP

3.1 The authorized way of seeing and constructing the world

Kvasny and Truex (*op. cit.*) remarked that the new economy is driven by information and communications technologies, and said: “Thus it has become a matter of faith that everyone must be technology literate, web connected, and willing to change at Internet speeds.” Their analysis of transcripts of speeches made by US government officials concerning the digital divide made it clear that “technology is treated as this magical force that will erase centuries of discrimination and inequality” and that politicians often hide the interests that underlie their statements. “Technology firms see these [deprived] communities as new markets that they can tap to sustain growth, and the politicians view these communities as sources of additional votes.”

Even more explicit in its clarity of agenda is the statement by US Assistant Secretary Gregory Rohde in his speech (Rohde, 2000) to the Federal Communications Bar Association: “We are also working to make certain that our philosophies of innovation, competition, open markets and universal service are adopted around the world.”

We next turn to the analysis of three recent speeches of South African politicians, in which they address issues around the digital divide. These analyses were done using Critical Discourse Analysis (Fairclough, 1989, 2002), following the adaptation of Thompson (2002).

3.2 South African echoes and power displays

Thompson (2002) used critical discourse analysis to critically analyse a speech delivered by the President of the World Bank Group on Information and Communications Technology (ICT) and associated socio-economic development within developing countries. His analysis highlights the fact that such discourse is replicating and extending a markedly North American worldview into the developmental sphere.

According to Widdowson (2000), critical discourse analysis is the uncovering of implicit ideology in texts. It exposes underlying ideological bias and therefore, the exercise of power in texts.

Fairclough (1993, quoted in Sng 2001) explains that critical discourse analysis begins with a view of language as a social practice. Critical discourse analysis explores how discursive practices, events and texts arise from, and are ideologically shared by relations of power and struggles over power. It explores relationships between discourse and society, and society in itself is seen as a way of securing power and hegemony (Sng, 2001).

Comparable with Thompson’s paper, our purpose is to critically analyse speeches presented by South African government officials with regard to ICT development in Africa and to show the resonance with speeches alluded to in section 3.1.

Three recent speeches have been selected for analysis: an address by Dr BS Ngubane (Ngubane, 2002), Minister of Arts, Culture Science and Technology, delivered on 4 November 2002 to the IST2002 Conference Workshop on “Bridging the Divide” in Copenhagen, and two speeches by the Minister of Communications, Dr Ivy Matsepe-Casaburri (2002, 2003), delivered on 3 June 2002 at the ICT Sector Summit at Gallagher Estate in Midrand, South Africa and on 12 March 2003, addressing the African Telecom Summit 2003 in Maputo. The full texts of the speeches are available at the web addresses given in the references. Each of the speeches has been analysed in full, but space restrictions prevents us from giving the full analyses of the speeches. The selections made from the full analyses are to illustrate the viewpoints of the officials that are relevant to our discussion.

Before we turn to the analysis of sections of the speeches, it is necessary to pause and briefly introduce NEPAD, the New Partnership for Africa’s Development, to which both speakers refer.

3.3 NEPAD – The New Partnership for Africa’s Development

NEPAD (2001) is a vision and strategic framework for Africa’s renewal. The NEPAD strategic framework document arises from a mandate given to the five initiating Heads of State (Algeria, Egypt, Nigeria, Senegal and South Africa) by the Organization of African Unity to develop an integrated socio-economic development framework for Africa. NEPAD is designed to address the current challenges facing the African continent and has four priorities: Establishing the conditions for sustainable development, policy reforms, increased investment in certain priority sectors (one of which is ICT) , and mobilizing resources. Expectations about the contribution of ICT to sustainable development are high (Chetty, 2003).

We now return to the analysis of selections from the three speeches.

3.4 Analysis of selected speeches

When analysing a section of text using CDA, generic and specific speech genres and discursive types are acknowledged. It is the usage and “mixing of (often contradictory) speech genres and discursive types that provide units of discursive practice, and hence discourse, with its unique power” (Thompson, *op. cit.*).

Given that the (sections of) speeches to be analysed in this paper is of a similar nature to that analysed by Thompson, the same speech genres and discursive types were identified from the text. These are shown in Table 1 below:

Speech Genre (SG)	Discursive Type (DT)
1 Confidence	1 Technocracy
2 Factual information	2 Legitimacy
3 Humour	3 Neutrality
4 Persuasion	4 Corporatism
	5 Tech(nological) optimism
	6 Pragmatism

Table 1. *Speech Genres and Discursive Types Identified in this Analysis (adapted from Thompson (2002))*

There is a subjective judgement in identifying these speech genres and discursive types and applying them to specific references (sections of text). Our subjectivity is grounded in our notion about sustainable socio-economic development, discussed earlier. In order to compensate for such subjectivity, the analysis is presented in a tabular format. Although this departs from previous applications of CDA, Thompson (*op. cit.*) argues that such a format places the author and reader in a comparable position to interpret the text, thus actively supporting the development of individual judgements. Furthermore, “a direct link can be traced from the source material (text column), through the initial identification of units of discursive analysis (ref column) and description of these (description column), to the derivation of speech genres and discursive types (interpretation column), through the macro-level power relations which, it is proposed, are replicated or altered as a result (the explanation column)” (Thompson, *op. cit.*). In the tables below, the reference column indicates the line number in the text of the speech.

First speech selection: Dr BS Ngubane on the Digital Divide

The speech was given by Dr Baldwin Siphon Ngubane, the Minister of Arts, Culture, Science and Technology of the Republic of South Africa, to an audience of academics and researchers at Information Society Technologies (IST) 2002 in Copenhagen on 4 November 2002. The IST conferences are organized annually by the European Commission as a networking and collaboration opportunity for anyone engaged in European information society research. Ngubane was invited to

address a conference workshop discussing the digital divide between the developed and developing worlds.

Ref	Text	Description (Text Analysis)	Interpretation (Discursive Practice)	Explanation (Social Practice)
37-44	It should ... be emphasised that science and technology are tools for, and not mere rewards, of development. In this context, the role of ICTs, by providing dramatically improved access to information and communication, thus, breaking down barriers to knowledge and participation, is critical. Indeed, the NEPAD strategy identifies several areas where intensive use of ICTs can bring unprecedented comparative advantages to Africa.	Europe has prospered more than developing world. Deterministic view that ICT are tools of development. Developed world has erected barriers to knowledge.	Prosperity and selfishness of developed world highlighted. Co-opting of corporate terminology. Corporatism (DT4) Persuasion (SG4) Tech Optimism (DT5) Pragmatism (DT6)	Avoids analysis of reasons behind developing world situation, by focussing on Europe's relative prosperity. Listing of some developing world problems to garner support for view that developing world has been oppressed.
61-69	The question of course is, will these tools reach and will poor people effectively use them? In other words, which factors constitute the infamous digital divide, which is preventing the creation of a truly inclusive global information society? For Africa, the response is unequivocal: It is poor ICT infrastructure, combined with weak policy and regulatory frameworks and limited resources, as well as a lack of local-content software, which has resulted in inadequate access to and utilisation of affordable telephones, broadcasting, computers and the Internet.	More developing world problems given. Unusual comment for a government minister.	Need for developed world's help re-emphasized. Persuasion (SG4) Confidence (SG1) Tech Optimism (DT5)	More developing world's problems revealed as further evidence of the need for help from the developed world.

Table 2. *Analysis of Selections from a speech by Minister BS Ngubane (2002)*

Second speech selection: Dr Ivy Matsepe-Casaburri on the ICT Sector

The speech is by the South African Minister of Communications, Dr Ivy Matsepe-Casaburri, and was made during an ICT Sector Summit, held on 3 June 2002 in South Africa. The speech was given to leaders of organized labour, leaders of organized business, leaders of community constituencies, ambassadors, and other invited guests.

Ref	Text	Description (Text Analysis)	Interpretation (Discursive Practice)	Explanation (Social Practice)
63-74	Let us seize this opportunity, as South Africans, to develop an ICT sector framework that gives overall direction to achieve the desired objective of sustainable economic growth and development..... Government has already taken giant strides in this direction ... The purpose ... is to provide a plan to ensure that people are equipped to participate fully in society, to be able to find or create work, and to benefit fairly from it. In this regard you should align your initiatives with the national strategy ...	Need to co-operate to develop ICT sector. Highlighting of government's initial efforts. Command ("you should") to follow government's direction.	Legitimacy (DT2) Persuasion (SG4)	Calling all parties together to help to develop ICT sector. All parties must align with the government and follow their lead in developing the economy. Because the government claims that it was successful in various tasks, all involved parties must follow the government's lead and direction in developing the ICT sector.
129 - 139	As government we have developed and implemented policies aimed at ensuring that such areas have access to infrastructure necessary for modern development. ... These policies find concrete expression in projects in the areas of telecommunications, broadcasting and postal service such as: telecentres, multipurpose community centres, public information terminals, citizen post offices, community radio stations and rollout of telephone services. Our objectives to promote universal access are being realised through the implementation of these projects. In sum, the plight of under serviced areas is being put on the agenda; awareness of ICT benefits is being created in these rural communities; entrepreneurship is being promoted through ICT services and thus bridging the digital and knowledge divide.	The government is implementing policies to ensure the growth of the ICT infrastructure into rural areas.	Technocracy (DT1) Tech Optimism (DT5) Legitimacy (DT2) "As government we have developed ... policies..." Confidence (SG1)	Government has put the policies in place to improve South Africa's ICT competitiveness, but other stakeholders need to get involved to help with this development. Government is the main driving force behind bridging the digital divide. At the moment government alone is driving ICT development in rural areas.

Table 3. Analysis of Selections from a Speech by Minister Matsepe-Casaburri (2002)

Third speech selection: Dr Ivy Matsepe Casaburri on the Digital Divide

The speech was delivered by the South African Minister of Communication, who is also Chair of the NEPAD Ministerial Oversight Commission, to an audience of high-profile African leaders and politicians at the African Telecom Summit 2003 entitled “Readiness for a Networked Africa, Vision, Strategies and Institutional Arrangement under NEPAD”, in Maputo, Mozambique on 12 March 2003.

Ref	Text	Description (Text Analysis)	Interpretation (Discursive Practice)	Explanation (Social Practice)
5-12	The UN Human Development Report of 2002 recognised both the benefits and negatives of the new era of globalisation that has affected each and every one of us in the world. ... Basically it is about "using technology to solve problems of the majority".	Globalization affects everyone and more people need to be involved in decisions that shape their life.	Establishment of disparities in globalisation that need to be addressed. Factual information (SG2) Legitimacy (DT2) Persuasion (SG4) Pragmatism (DT6) Elucidation that technology is the only solution. Tech optimism (DT5)	Establishment of need for developmental initiatives and the need for more widespread integration of African nations in globalization; indication that lack of technology infrastructure is responsible
50-60	Of course, crucial to our discussion today was the recognition of the importance of ICTs in enabling Africa's recovery and competitive entry into a globalising world. As part and parcel of the priority of bridging the infrastructure gap, emphasis was now placed on bridging the digital divide by investing in ICTs. Thus capacity-building in the ICT sector and improving our overall our (<i>sic</i>) ability to deploy, harness and exploit ICTs to advance our own socio-economic development was regarded as a priority as a NEPAD initiative. The use if (<i>sic</i>) ICTs thus became important in the following ways: (i) bridging the divide between the rural and urban areas within a given country (ii) bridging the gap between countries of a given sub-region (iii) bridging the inter-regional gap and (iv) bridging the gap between	Importance of ICT development – natural and inevitable enabler of success in the globalised economy	Persuasion (SG4) Factual information (SG2) Tech optimism (DT5) Technocracy (DT1) Neutrality (DT3) Pragmatism (DT6)	Replication of assumption that ICT is essential for Africa's recovery; relationship between ICT development and Africa formalised; once again affirmation is given that ICT will be used in ways most suited to African's problems

	Africa and the rest of the world			
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Table 4. Analysis of Selections from a Speech by Minister Matsepe-Casaburri (2003)

3.5 Interpretation

The analyses indicate a clear technocentric approach with technological optimism. The development problems of Africa can be solved by the availability of and access to ICT. These convictions are legitimized by the speakers through force of persuasion, and not on the basis of factual information. It is an implicit assumption that ICT infrastructure and access to it, suffice to bridge the digital divide. This is in line with the findings of Kvastny and Truex (*op. cit.*), and emphasizes the divide between the technocentric and the sociocentric approaches alluded to earlier.

In our definition of sustainable socio-economic development an important aspect is the alignment between activities at the grass roots level, and strategy at the national level. The definition emphasizes that vertical complementarity is a precondition for sustainable development. There is clearly no complementarity here: Matsepe-Casaburri declares unequivocally (speech 2, selection 1, ref. 74): "...you should align your initiatives with the national strategy ...". And this national strategy clearly has one objective: access to ICT as the magical bullet to bridge the digital divide.

The discussion above has given us ample material to describe the socio-techno divide and reflect on its implications. This is taken up in the next section.

4 THE SOCIO-TECHNO DIVIDE

The socio-techno divide manifests itself between the grass roots, community level, and the higher governmental levels. At the community level the interest of key actors is the development of people, and may be, for purposes of argumentation, construed to be in line with the human scale development approach discussed earlier. (It is certainly true that many community projects do not have this approach, and would actually conform to higher level, technocentric interests – especially when they are government-initiated, such as the telecentres discussed earlier. We assume a sociocentric approach at the community level as the approach that we believe *should* be followed to demonstrate the divide between the interests at the community level and the higher levels.)

The interests of key actors at the higher governmental levels have been shown above to be the bridging of the digital divide through investment in ICT, providing access to ICT and providing Internet-based government services. The approach is instrumental, and the explicit belief is that providing technology will resolve the problems associated with the digital divide. The technocentric interests exhibited at higher governmental levels are in no small measure informed by similar interests of donors. This has been exemplified in Thompson's (*op. cit.*) analysis of the speech by the president of the World Bank Group.

What are the implications of this socio-techno divide? In very practical terms it means that organizations and groups involved in development projects in communities find it difficult to obtain donor money and government support for approaches that would follow along the lines of self-reliant human scale development towards sustainable development. Funding and support follow the policy and strategy of providing ICT and access to it, expecting, as we have shown, the magic of technology to transform deprived communities into thriving hubs of economic activity and, naturally, concomitant social development. The socio-techno divide, therefore, is no curious mental construct that simply serves to draw the attention of researchers. It has to be addressed if we ever want to make progress through ICT in the Third and Fourth Worlds.

If the socio-techno divide is ignored we will continue to see development efforts and projects aimed at “bridging the digital divide” through technocentric approaches, which inevitably will continue to fail. One might argue that “time will heal” these wounds, and that in due course things will be done “the right way”. We live with a clear example that such miracles do not come our way: the software industry has been plying its trade for a good many decades, and yet we still read about the dismal rate of success of software projects. Some will again argue that these problems will eventually be resolved, and some (the present authors included) will point out that in many cases, the failures of the software industry can be traced back to a lack of understanding of the deeply rooted social aspects of information systems. It could be said that here we have another instance of the socio-techno divide: a lack of understanding of the social nature of information systems by those who develop and believe in purely technical solutions. Somehow, the industry has been able to survive its own failures – perhaps because of the intermittent successes of purely technical solutions where the problems addressed were purely technical – although signs are there that the business world is becoming increasingly uneasy about the value of continuous and increased investment in IT.

In the present situation we will also see “successes” in terms of technical solutions, when governments or donor organizations would claim “the connection of people in a rural area to the Internet”, but the point is that these technical solutions would not by itself achieve any marked development success, and would most likely, as in the case of the Telecentres of South Africa, technically wither away in a short time. This does not even create the opportunity for an upcoming generation in the developing world to acquire, as would seem to have happened in the developed world, the skills and benefits of the Information Age by a process of osmosis. We therefore argue strongly that the socio-techno divide should be vigorously and explicitly addressed, and point out below that this is, in principle at least, possible. We just need the resolve to do this.

5 CONCLUSION

We provided a new perspective on the digital divide by showing that the real problem that has to be addressed, concerns the divide between the sociocentric approach of human scale development, and the technocentric approach of providing ICT and access to it. Unlike the digital divide, the socio-techno divide is (relatively) stable and does not exhibit the growth properties of the digital divide, which seems to widen with all efforts at closing it, and which has given it the reputation of insolvability. The bridging of the socio-techno divide, in contrast, would seem to be possible through constructive engagement.

If vertical complementarity (in terms of our definition of sustainable development) is to be achieved, stable networks of aligned interests have to be built between the local and the national through the various intermediary levels. This would entail the translation of the interests of the various key actors which currently are non-aligned, and separated by the socio-techno divide.

Translating orthogonal interests to align could prove to be well nigh impossible, but this is not the case with the different interests at play in the socio-techno divide. The techno interest centres on the provision of access to technology, and we agree that, if ICT is to be involved in the developmental process, then access to ICT is certainly necessary. Thus we have at least a starting point for the translation of interests: the infamous concept of access to technology. The failure on the techno side is the failure to appreciate the delicate and complex interplay of many more factors than merely the access to ICT in creating a developmental process. According to Max-Neef *et al.* (*op. cit.*, p. 13): “There is no possibility for the active participation of people in gigantic systems which are hierarchically organized and where decisions flow from the top down to the bottom.” Also, they said, relationships of self-reliance have greater synergic and multiplying effects when they flow from the bottom upwards. Thus, the developmental process has to start at the individual level within (deprived) communities, and the translation of interests is a process that will have to be started from the bottom upwards.

At the risk of sounding arrogant, we believe that key actors with a sociocentric approach to development at the community level, should have a greater understanding of the interests of key actors at the higher vertical levels, rather than *vice versa*. This implies that the initiative should be taken by IS researchers and implementers working at community level to engage key actors with technocentric interests at higher vertical levels in a process of translation of interests to achieve an alignment of interests which is the necessary prerequisite for building stable actor-networks across the full range of levels. We are not implying that this will be an easy task, but we believe it is a do-able task. Addressing the socio-techno divide constructively in this way could well herald the beginning of the end of a period of immense waste of resources through repeated and futile attempts to bridge the digital divide.

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