

Digital Divide, Social Divide, Paradigmatic Divide Daniel Pimienta, July 2007.

ABSTRACT

The digital divide is nothing other than the reflection of the social divide in the digital world. The use of ICT for human development does offer opportunities to reduce the social divide for individual beings or communities; yet there exists a series of obstacles to overcome to make it possible for ICT use to bring the opportunities closer to these people and these groups of people. The very lack of existence of an infrastructure for connectivity is only the first obstacle, although it often receives an exclusive focus, due to the lack of an holistic approach. Offering an access to ICT does not necessarily imply that the people who benefit from the technologies can thus access opportunities for human development; education, more specifically a digital and information literacy, plays an essential part in the process. Telecommunication systems, computer hardware and software are predictable prerequisites; however, the true pillars of human-focused information societies (or societies of shared knowledge) are education, ethics, and participation, interacting together as a systemic process. As long as decision makers in the field of public policies or of ICT4D (ICT for Development) projects are not ready to consider these issues, and keep on favoring a mere technological vision, we will suffer from the most dangerous divide in terms of impact: the paradigmatic divide.

Keywords: ICT, ICT4D, Internet, digital divide, ownership, development, human development, information literacy

Any resemblance to characters, projects, or policies in real life IS quite intentional.

INTRODUCTION

In 2000, the G8 initiated the “Digital Opportunity Task Force”¹ (Dot Force) to raise international awareness on the subject. Since then, a concept has prevailed: the fight against the **digital divide** is a priority because ICT offers many possibilities for development for people, as well as for communities and countries. The concept of **ICT for development** (ICT4D) is now used by many international, regional and national organizations, and by all sectors (international, governmental, corporate, civil society, and the academy). We all share the same *belief* that the use of ICT for development holds very important promises.

Yet, this is only a belief. Although it appears very credible, it remains a belief, because the highly remarkable lack of an impact evaluation has prevented the results of ICT4D projects in the last two decades from being clearly stated.

¹ <http://lacnet.unictaskforce.org/Docs/Dot%20Force/Digital%20Opportunities%20for%20All.pdf>

The belief sometimes becomes myth or magic... for instance when one thinks that the mere fact of connecting a person to the Internet is going automatically to initiate a process causing this person to escape his/her situation of poverty. That shows a serious lack of *perspective*, ignoring that the digital divide is no more than the reflection of the social divide² in the virtual world; moreover, there is an error of *focus*, which has very serious consequences when the error comes from decision makers in the public arena.

A PROBLEM OF FOCUS

Field observers can see that some projects seem to have positive impacts whereas others are never completed or do not have noticeable impacts.

What are the criteria which allow the former to be distinguished from the latter?

Can we identify the components that make it possible for public policies on the information society or ICT4D projects to produce positive impacts on the society?

In this paper, we would like to make an hypothesis about the criteria, as well as to bring some elements to the analysis which are likely to sustain the hypothesis.

The main hypothesis is that the crucial element is the approach; it matters more than being efficient in the ways policies are designed and projects are managed.

- An approach based on technology has every possibility of ending in failure for both policies and projects.
- An approach based on contents and applications will guarantee products but may fall short when it comes to the desired societal changes.
- An approach based on a paradigm shift is the key to success in obtaining a positive societal impact.

Policies and projects should concentrate on education, that must serve as a support. The task related to digital and information literacy is both a priority which is seldom fully considered in policies and projects, and a rare challenge, considering the great effects that it should have in the whole society.

The greatest strategic element for the transformation towards information societies is education of the citizenship in the digital world as well as paradigm shifts linked to a new vision of society based on knowledge sharing. Be that as it may, the bottleneck

² See "The Digital Divide: the same division of resources?", D. Pimienta, Funredes, March 2002, http://funredes.org/mistica/english/cyberlibrary/thematic/eng_doc_ws11.html

lies in the decision makers' awareness and in the negative multiplying effects of their decisions when they have not adopted or not understood the correct approach (and its natural implications regarding the importance that multistakeholder partnership deserves). These facts suggest that in addition of the social divide which lies behind the digital divide, there exists another divide that is not so clearly visible, that is not properly taken care of, and whose effect on the digital divide is still greater: **the paradigmatic divide**. This divide exists when decision makers in the field of the information society start from an erroneous approach, and keep on working within the logical framework of a previous societal paradigm, where society does not participate in the decision process.

BACKGROUND

This article compiles and synthesizes elements that come from several speeches delivered at international conferences on the information society in recent years³; it is based on a series of concepts that were elaborated or collectively discussed⁴ among the Virtual Community of ICT4D actors in Latin America and the Caribbean⁵ between 1999 and 2006.

The very concept of *paradigmatic divide* rose very naturally (although with some frustration in the context) during a presentation made⁶ by the author of this paper. The newly formed concepts (see "Pimienta's Law", *infra*) were warmly welcomed by the audience which however was composed almost exclusively of academics, civil society actors, and staff from international institutions. Therefore, the message that had been designed for governmental decision makers could not reach these people, because they had decided to hold a parallel session, on the other side of the wall, in order to make decisions... while the other sectors were meeting to elaborate the criteria for well-focused decision making processes.

Since then, multistakeholder dialog has been being considered as an essential element of the policies for the information society. This tendency has been still greater since the World Summit on the Information Society⁷ (WSIS). Nevertheless, this example presents a situation where the concept of multistakeholder approach is in fact perverted, in some countries.

³ See some presentations in <http://funredes.org/presentation>

⁴ See more specifically "Working the Internet with a Social Vision", MISTICA Virtual Community, http://www.funredes.org/mistica/english/cyberlibrary/thematic/eng_doc_olist2.html
Illustrated version, in Spanish: <http://funredes.org/mistica/castellano/ciberoteca/tematica/trabajando.pdf>

⁵ <http://funredes.org/mistica> (Methodology and Social Impact of ICT in America)

⁶ Regional Preparatory Ministerial Conference of Latin America and the Caribbean for the Second Phase of the World Summit on the Information Society, June 10th, 2005, Rio de Janeiro, Brasil
<http://www.riocmsi.gov.br/>

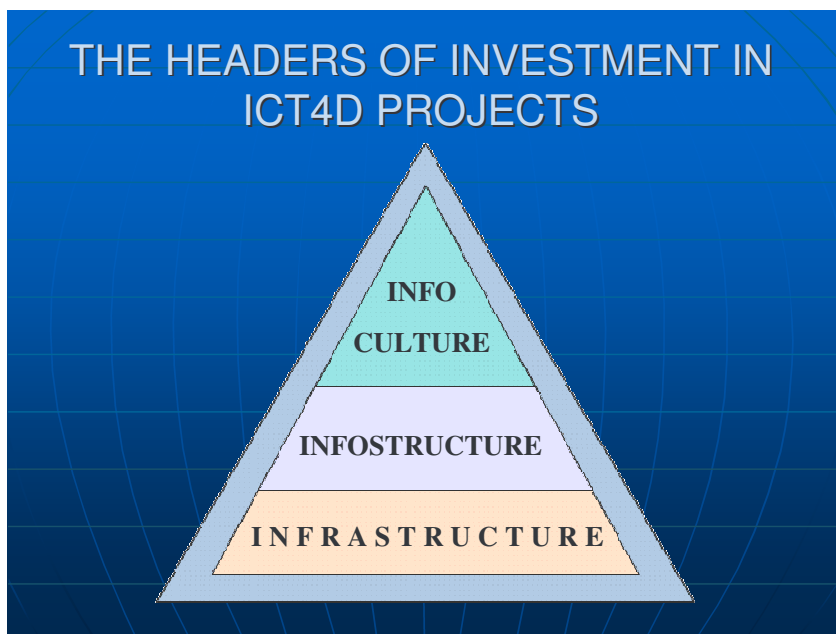
⁷ <http://itu.int/wsisis>

There are many ways to misuse the concept. The first and most frequent occurs when government representatives themselves select their interlocutors from the other sectors: thus, they eliminate those to whom they are not eager to listen. Hence they conspire against the essential pluralism and they expose civil society to a great contradiction, because the concept of representation is irrelevant in a framework of participative democracy. Another way to misuse the concept is quite common: it consists in organizing sham multistakeholder meetings, where the effective paradigm actually keeps being “top down”, and where other sectors are supposed only to listen and approve governmental speeches so that government representatives can auto-attribute the seal of participation to themselves. Unfortunately, and in spite of its efforts, civil society has not managed to include the task of relevant evaluations in the priorities of regional agendas; such task would consist in evaluating all activities which are labelled as “multistakeholder partnership” with solid criteria. There still exist concrete cases when the official discourse contradicts the facts⁸.

A QUESTION OF INVESTMENTS - DEFINITIONS

The analysis of ICT4D projects that do not produce impact in the field reveals that a blatant and obvious macroscopic cause is to be found in a bad distribution of the budgets among the main project headings.

The various headings can be seen in the following pyramid:



⁸ See for instance <http://funredes.org/undp.do>

“**Infrastructure**” (of ICT) refers to the devices that permit the signal to be transmitted (such as lines, microwaves, satellites), and to be carried (such as protocols for communication and routing devices), as well as the computer hardware and software that are involved in the transport of the information (operating systems, in the very broad sense, and communication protocols), reaching the users, whether through individual terminals or through terminals shared in a community (telecenters).

“**Infostructure**” refers to the contents and the applications that are located, are given access, and are executed above the infrastructure. It includes the software, the databases and the websites that are hosted in the computers which work as servers in the network. It is obvious that an *information* structure necessarily works closely linked with a *communication* structure. This leads to the concept of “commustructure”; for practical reasons, it is seen as part of the “infostructure”, and the virtual communities as an integral part of this layer, next to the contents.

“**Infoculture**”⁹ refers to the sum of knowledge, methods, practices, and rules of good conduct that the people *possess* when they have appropriated the use of information and communication networks. What is required in order to acquire this culture (through an ownership process) is a **digital and information literacy** process¹⁰, as well as practice of uses which are relevant to the situation of these people. It is obvious that in a context of ICT4D where the paradigm shift is the essence of the change, cooperation and multistakeholder partnership are concepts that are parts of this layer.

The “**ownership**” process is the learning process that leads people, groups or organizations, to have a control over ICT uses in coherence with their own environment. We can distinguish *technological ownership* and *social ownership*: the former occurs when the technology becomes transparent from its use, the latter when the technology becomes transparent from its social or economic function, hence when it becomes a mere tool. The process of ownership by people, groups and organizations who have not had the opportunity to reach such a close relation with ICT, due to their history or to their education, requires a specific **support** that combines education, practical

⁹ The meaning of the word “infostructure” is not standardized yet in the specialized literature; there is even less standardization for the term “infoculture”. Various definitions can then be found.

¹⁰ See http://en.wikipedia.org/wiki/Information_literacy.

In Spain, the phrase “*alfabetización informacional*” was adopted in the late 90’s. See (in Spanish) “La alfabetización informacional y la biblioteca universitaria. Organización de programas para enseñar el uso de la información”, J. Gómez-Hernandez, in *Estrategias y modelos para enseñar a usar la información*, Murcia: KR, 2000. <http://eprints.rclis.org/archive/00004672/05/EMPEUicap4.pdf>.

Also see “Que es la alfabetización informacional”, F. Benito, (a person who introduced the concept in Spanish education using the concept of “Documentation literacy”): <http://pinakes.educarex.es/numero3/descargbas/colaboraciones2.pdf>.

skills, and meaningful uses of one's environment. On the one hand, the size and the complexity of this support process cannot be underestimated; on the other hand, the rapid never-ending evolution of these technologies clearly raises the issue of lifelong learning.

The “**digital literacy**” process consists in equipping a given population with ICT concepts and methods, and putting the people in a situation in which they can make use of those technologies in order to get a real mastery (ownership) of them (particularly the use of a computer in a network context¹¹). This should not be mistaken for office automation classes (i.e. courses oriented to the use of the computer office applications, generally on specific platforms). The acquired concepts must be independent of any platform, although practical training can take place on a given platform among the existing ones, for practical reasons. Training should be directed at ability to read/write using digital multimedia, the functionalities of the applications, as well as methods for good use and knowledge of the usages and practices of the environment. These kinds of programs are usually long and progressive, unlike office automation classes.

The “**information literacy**” process consists in providing the people with concepts and training in order for them to process data and transform them into information, knowledge and decisions. It includes methods to search and evaluate information, elements of information culture and its ethical aspects, as well as methodological and ethical aspects for communication in the digital world. These kinds of programs are usually very long and progressive, and they require an appropriate combination of theory and practice.

If the practical part is missing, the efforts invested in literacy prove to be insufficient to obtain a real social ownership. As far as national programs are concerned, the support must involve all the sectors in the design of applications and contents that have a social and a national sense.

This terminology just begins to prevail, not without being sometimes rejected by some professionals in the education field, who fear a perversion of the (basic) concept of literacy. The expression “ICT training” is still very widely used, although some ICT professionals reject it because it carries an instrumental and oversimplified image and does not convey a correct idea of the complexity of the processes at stake. Education in ICT or in the digital world represents valid options to describe the concept. A consensus has been reached among the group of ICT professionals regarding the terminology of *information literacy* (ALFIN, in

¹¹ It is obvious that in a near future, the interface used by the network may well be a hybrid of a computer and a cell phone, maybe of digital TV as well.

Spanish¹²) and the proclamation of the central part that this group should play (see the declaration of the Prague¹³ and the declaration of Toledo by the Spanish information officers¹⁴). That group does not always differentiate between digital literacy and information literacy and does include both concepts in the same terminology.

The “**management**” (of ICT projects) includes all the processes that, starting off with the very setting of the project (which includes user support and traffic management), ensure the organizational, financial and institutional sustainability of the project, and integrate, from its beginning and throughout the life of the project, the evaluation of results and impacts. It must be clear, however, that the processes of **multistakeholder partnership**, an essential ingredient of the success of an ICT4D project, require specific elements of management.

Multistakeholder partnership is a process in which citizens and economic actors actively participate in all the stages of national policies. That makes it possible for them to fully appropriate ICT for development, and brings consensual solutions to elaborate national policies embedded in national culture and structures¹⁵. For practical reasons, the effort may be initiated with key actors (i.e. those who have legitimate and well-informed interests in the process), then expand, giving more capacity to those key stakeholders, and creating motivation to diffuse to the other citizens¹⁶.

The term tends to progressively replace “public-private partnership” insofar as it conveys the idea of participation of all the groups (global governments, national governments, local governments, private sector and civil society, academics being sometimes distinguished from civil society) in a clearer and more precise way. The concept prevailed as one of the key elements of the World Summit on the Information Society (WSIS) and of its recommendations, because it seems obvious that the participation of all sectors is required to build a society (and it is precisely the point when we talk of information society)...

¹² See the ALFIN blog: <http://alfin.blogspot.com/>

¹³ <http://www.cult.gva.es/dglb/images/DeclaraciondePragaAlfabetizacionInformacional2003.pdf>

¹⁴ http://www.lectores.info/formacion/file.php/38/Modulos/Documentos/Dec_Toledo.pdf

¹⁵ An exemplary effort was made in Bolivia towards a participation process (<http://etic.bo>); unfortunately, it seems that the process could not survive a change of government.

¹⁶ See an example of methodology at: http://cmsi.funredes.org/inc/multistakeholder_en.htm

A MATTER OF INVESTMENT – PIMIENTA’S LAW

This four-layer frame allows to establish “**Pimienta’s law**”¹⁷, which was coined in a presentation during the meeting mentioned above, as a provocative way to deliver a message from civil society to the governments which manage ICT4D projects: infrastructure in itself cannot represent an end, and must not receive all the attention. In short, the message is that fighting against the digital divide does not amount to the simple issue of connecting everybody.

“Pimienta’s law” enunciates that:

- 1) An ICT4D project of which the proportion of infrastructure exceeds 60% will in all probability end in serious trouble due to deficiencies in the other dimensions.
- 2) An ICT4D project of which the proportion of infrastructure exceeds 80% will in all probability end in a disaster...
- 3) An ICT4D project which receives almost 100% of its budget for infrastructure should be an object of scrutiny for the offices in charge of detecting and preventing corruption... a strong probability exists indeed that its purpose is to generate substantial commissions to buy equipment which will become obsolete in a few years, before it is properly used, because nothing has been planned for this use...

THREE FOCUSES - THREE WAYS

Where does this “spicy” law come from? From a thorough econometric analysis? Actually, there is no mathematical economy behind it, but only a simple observation of public management for the past few years in various places. How many computers, bought with foreign currencies, end up in the corner of a school, without being used (when they do not remain in their boxes) because no support has been planned to train the teachers -just to mention an example! How many modern telecenters end up with equipment out of order because there was no consultation before selecting a technology which is not appropriate, and no planning for maintenance!

Although in case 3 (100% for infrastructure) the honesty of the people who manage such projects can be put in doubt, in most cases the error is based on a fundamental misunderstanding of the nature of ICT4D use and of the reality of the information society.

¹⁷ “Pimienta” is both the name of the author and the word for “pepper”, in Spanish. Hence an amusing pun on the spiciness of the theory (translator’s note).

To make the point clearer, perceptions and approaches can be classified in 3 categories

I- ICT for the Sake of ICT: ICT as Ends in Themselves

The technological approach assigns an excessive importance to infrastructures. The ground for this is strengthened by the explicit goal to install technology or by the implicit belief that a bottom-up process will automatically occur. For that reason the results of those projects boast the number of computers installed and the bandwidth... without too much concern for the real and effective use of the technology and still less for the social impact. This vision leads to a bad use of national (or international) resources and it is a smoke screen on the real needs of development. It is clear that this approach is less and less assumed today, because government discourse adjusts to international discourse; nevertheless, behind those pretty speeches, it is not difficult to find that the promised support is almost empty, and to perceive the reality of a disastrous approach for development.

II- ICT for Development: ICT as Means Serving Development

This approach focuses on the contents and the applications. In this approach, ICT are only tools which allow applications and contents: in short, real uses, that do matter and that are going to be the leading elements of development. ICT are given the sole importance of being tools, sometimes with the belief that they can be neutral at the economic level, and at the cultural one regarding societal impacts. This vision clearly surpasses the technological vision, and it allows the development of applications and contents which support development. The approach sensitizes to the necessity of indicators that reflect uses rather than the technology; without a doubt, it is efficient in terms of development (because it integrates the essential components of support for the use).

However, it is not sufficient regarding the essence of the paradigm shifts. That makes this approach too tolerant to the perversions of multistakeholder partnership processes. It is often naive when it tries to ignore the huge cultural and linguistic implications that come with technology and its standardized uses. Its very characteristics make this vision come naturally with the traditional world of international cooperation, through its bilateral and multilateral agencies, and it tends to ignore a major contradiction: talking of an information society the central element of which is relations in

networks, without changing the very obsolete paradigm of international cooperation management for relations of these kinds¹⁸...

III ICT for Human Development: ICT as catalysts/facilitators of the paradigm shift

This approach focuses on infoculture, cooperation, and participative processes. The ground for this approach is the conviction that ICT are more than simply tools serving development: they are the catalyzing and facilitating factor for deep changes that the society needs and that should occur **independently** of the existence or the presence of ICT (which does not prevent these changes from occurring, in a more natural and more effective way thanks to the use of ICT).

In this sense, the common thing between e-government, e-health and e-education is not the weak “e” as in “electronic”, but the potentially hidden “p”, as in Process, Participation, and Paradigm.

It is not “the fault of ICT” that education must change to something more focused on the group, that the function of professors must shift from knowledge suppliers to facilitators of learning processes, that the relationships between the actors in the field of education must adopt a network configuration which needs to teach to learn rather than to focus on erudition... These changes are certainly required by the evolution of the society; thinking that the cause of the change lies in ICT represents a fatal error of focus. ICT do not replace pedagogy; an education project integrating ICT cannot work if pedagogy is not integrated in the new framework.

In many places, representative democracy is reaching its operative limits; introducing new modalities of participative democracy is necessary to restore credibility with citizens. That is not because ICT demands it -once again, thinking this way is a deep error of perspective. ICT clearly offers valuable resources for participative democracy as well as wonderful examples of participative collective construction (Wikipedia¹⁹ for example). However, once again, it plays its part when it accompanies a political will for change; it cannot replace this will.

¹⁸ See “Perspectivas de la Cooperación Sur-Sur (CSS) en el marco de las Sociedades de los Saberes Compartidos: Visión desde el terreno.”, 2007, S. Jansen y D. Pimienta.

<http://funredes.org/mistica/castellano/ciberoteca/tematica/css-si-final.pdf> (translation into English to come, to be checked at <http://funredes.org/mistica/english/cyberlibrary/thematic/>)

¹⁹ <http://wikipedia.org>

Finally, we can safely state that there are situations where organizational changes are required without ICT implications; on the contrary, ICT should never represent per se a valid justification to proceed to organizational changes.²⁰.

Anyone can think of various other fields in which deep changes are required (e.g. Health), analyze them and find out that although ICT are perfect tools to speed up the changes, they are neither the cause nor the justification for making them. Hence a principle everyone should share: if changes are led by the mere application of technology, without thinking in terms of organisation, a failure can be foreseen.

A way to measure the focus of a generic information society project or of a specific ICT4D project uses the following graph: it consists in drawing dots for the corresponding approaches, and in evaluating the position of the project according to the concentration of drawn dots.

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APPROACHES	ICT4ICT	ICT4D	ICT4HD
Starting point	access	information	knowledge
Extent	specific	general	holistic
Economy	consumption	use	production
Evaluation	results	use	impacts
Project management	results	products	process
Modalities	top down	consultation	participation
General	technology	application	paradigm

Some governments still do have an “ICT4ICT” approach: this can be observed in the deficient support to infrastructure investments, or in the fact that training support limited to classes on the use of some software applications is too often taken for real information literacy (although associated costs differ by a scale factor of 1 to 100).

The world of international cooperation has for some time now been in favor of a focus on ICT4D, and has begun using the vocabulary of ICT4HD. However, words do not always show the deep complexity of the concepts, especially about participation. It is equally true, though, that it is difficult and delicate for intergovernmental organizations to lecture to their State members.

Among civil society, the movement involved in the information society is the group which has the clearest concepts, and which makes a real effort (it is not easy!) to

²⁰ Considered as a thermodynamic process, computer technology accentuates entropy: a well-organized company which gets equipped with computers will have a still better organization; a weakly organized company which gets equipped with computers without previously paying attention to its organization model will have a still weaker organization, and will probably be in danger of going bankrupt.

lead its interlocutors towards paradigm shifts; this was noticeable in the WSIS process. Be that as it may, results vary, due to existing misunderstandings and to the lack of long-term impact evaluations in the field.

A PROCESS-ORIENTED VIEWPOINT ON THE DIGITAL DIVIDE

How is it possible to fight so fundamental a misunderstanding that decision makers make investments in the name of the fight against the digital divide which actually do not fit priorities, and only take into consideration the technological aspect?

This section aims at both presenting a constructive framework to understand the complexity of the digital divide and clearly demonstrating that providing an infrastructure is hardly one of the 10 commandments of the right to communication and knowledge...

We are now going to identify the various elements the digital divide is made of, thanks to 3 graphics, labelled “*the hurdle track from ICT to human development*”²¹. The whole process is seen as a resolution process. The sequence has its own logic, although it should be clear that obstacles do not always appear in real life as indicated here, and that support strategies can choose a different order (especially after obstacle #6).

Picture 1: The Framework of the Process



²¹ First published in English at Global Knowledge Partnership “Beyond Tunis: Flightplan”, D. Pimienta, A. Blanco, 2006 <http://www.globalknowledge.org/gkpbeyondtunis/INDEX.CFM?menuid=33&parentid=30>

ICT DH

- 1 Existing, open and reachable ICT infrastructure.
- 2 Affordability of infrastructure pricing.
- 3 Sustainability of infrastructure (maintenance, organization, traffic management...).
- 4 Capacity to read, write and understand in one's own language (functional literacy).
- 5 ICT interface respect to one's language and culture.
- 6 Possibility of an efficient and productive use of ICT (requirements for digital literacy begin here).
- 7 Technological ownership
- 8 Meaningful usage
- 9 ICT made transparent from social usage/impact.
- 10 Empowerment
- 11 Social innovation

When the action of transforming the social reality triggers original solutions.

When the options of freedom are laid open and capacities are expanded.

When usage has social meaning in one's society (content production, virtual communities).

When ICT usage allows the transformation of social reality (practical realisation of previous capacities).

When the action of transforming the social reality triggers original solutions.

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 (contact@funredes.org)

The possibility one has to physically access ICT

It is important to mention here the crucial issue of **accessibility**. The network and its applications absolutely must be designed in order to guarantee that disabled people can have full access, through adequate devices. For instance, a requirement would be that webpages should be designed so as to be scrolled and read by voice synthesizer software. Moreover, it is worth acknowledging that a website which

follows accessibility guidelines²² is more friendly to all users, not only to people suffering from any kind of disability.

Obstacle #2: Access/Money

The balance between the price of access to the infrastructure and the financial capacities of the users

Now, of what use is an infrastructure to me if I do not have the financial capability to pay the toll? The topic of “universal access” should be understood not only in terms of geographical cover (e.g. providing rural access), but also in terms of economic cover (providing low-income people with access).

That raises the issue of countries in the South²³ where people live in a situation caused by economic globalization: although wages are local (and generally speaking in an order of magnitude lower than in the North), prices are global, except that in many countries in the South, especially in Africa, charges for telecommunication services are even higher than in the North.

Obstacle #3: Access/sustainability

The organization of access resources should be durable and its development should follow demand.

Now, of what use is financial capability to me if the resource is not managed professionally in order to make it work in the future, and to adapt it to a growing demand without delays becoming main obstacles?

Sustainability is often a crucial problem for telecenters. In the best case, that is an organization issue. In the worst case, that is a financial issue: when external funding ends, the telecenter is not able to maintain financial balance between costs and income, or achieves it by charging a rate for its services which is higher than the market one.

Obstacle #4: Access/Basic functional literacy

Users should have the functional ability to read and write in order to have an adequate use.

Now, of what use is an access to information to me if I do not have the knowledge to decipher it, and to process it to produce new knowledge?

²² See <http://www.w3.org/WAI/> or, in the Spanish context, <http://www.sidar.org>

²³ See “Research Networks in Developing Countries: Not exactly the same story!”, Proceeding of INET’93, San Francisco, 8/93, FAB1-11
<http://ftp.funet.fi/index/ISOC/inet/INET93/papers/FAB.Pimienta>, or
<http://funredes.org/english/publicaciones/index.php3/docid/31>

It is of course possible (and necessary) to design innovating interfaces so that illiterate people can communicate using oral language and/or very intuitive icons. However, it would be quite difficult for the use of ICT by these kinds of people to reach a significant level in terms of development capacity. Let us be serious about priorities: before we imagine a digital literacy or an information literacy, let us begin with basics. Today, the first obstacle for ICT is still basic functional literacy. In the context of the development of mass media, this form of literacy cannot be limited to paper forms: it should consider new digital media (the first one being the screen), and take into account the fact that nowadays, the read/write ability must be designed in a way that integrates multimedia (because sounds and images which are integrated into the text tend to be both an integral part and an integrated part of communication).

Obstacle #5: Access/Linguistic localization

When using the system, people should be able to use their mother tongue

Now, of what use is access to me if the system I use is not able to communicate in my mother tongue?

The *location of a language in the digital world* refers to the treatment of the characters written in this language, through electronic means²⁴. English or Spanish, more generally all languages sharing the same alphabet, are clearly localized²⁵. However, the obstacle has not yet been overcome for many of the 7,000 languages still in use. UNICODE²⁶ is doing a great work in order to establish codes for different alphabets, yet there is a huge challenge for many languages which only exist in an oral form, and whose speakers have to agree on a written form to exist in the virtual world.

It should be underlined here that although the very existence of a written form and a code for electronic processing are basic components for localization, the requirements for a full use may well be more complex (keyboard, parser, translation software...)²⁷.

²⁴ See (in French only) “Comment assurer la présence d’une langue dans le cyberspace ? ” M. Diki-Kidiri, UNESCO, 2007 <http://unesdoc.unesco.org/images/0014/001497/149786F.pdf>

²⁵ Let us not forget, though, the long lasting problems which were due to a codification standard (ASCII) which did not have enough bits: this made it possible for English to be perfectly localized, because the language does not use diacritics, but diacritical characters (such as ñ, é or ç) were ignored until the MIME protocol made the integration of extended ASCII possible.

²⁶ <http://unicode.org/>

²⁷ See “La lengua que era un tesoro: el negocio del español y como nos quedamos sin el”, J.A. Millán, 2000 (in Spanish only): <http://jamillan.com/tesoro.htm>

Obstacle #6: Actual Use

The possibility of making an effective and efficient use of ICT.

Now, of what use is an access in one's mother tongue if the person does not know how to make a relevant use of the technology?

The requirements to make effective and efficient use of ICT are being able to handle digital tools as well as to understand conceptual, methodological, and cultural issues in relation with the digital environment. This introduces the double concept of **digital literacy and information literacy**, which are as crucial in the North as in the South, and which can be considered as the main challenge of integrating a given nation into the information society.

Obstacle #7: Technological ownership

Users should be skilful enough for the technology to be transparent for their personal use.

When people use tools skilfully enough so as not to be slowed down by technology, and so as to be able to create new uses answering their questions, they can concentrate on what they want to do rather than on how to do it. This ownership requires sophisticated capacities, which include being fluent in computer use and in editing software, as well as some expertise in searching for information whatever its digital form; that implies that the user must have come one step further than digital literacy, to a process of information literacy.

Obstacle #8: A Meaningful Use

Using ICT in a way which has a social meaning in the user's personal, professional, and community environments

Again, this paper does not deal with ICT use, but more specifically with ICT use **for development**. Hence, use is not restrained to playing games or communicating in an interpersonal way: using ICT makes it possible to meet some of the needs in the field of development. This includes the ability to produce content and/or to create virtual communities. The concept of "meaningful use"²⁸ implies that people evolve from being mere information consumers to producers of knowledge and social relations. That requires a fair level of information literacy, and enough digital literacy to bring complementary abilities to be a producer, of contents as well as of communities (i.e. to organize virtual communities).

Obstacle #9: Social Ownership

Users should be expert enough so that the technology is transparent from its social use

This level requires an exact understanding of the societal impacts of ICT use and of the cultural (culture of network or information culture) and methodological aspects

²⁸ Coined by our friend Ricardo Gómez in 2001, in Spanish, as "uso con sentido"; see: <http://funredes.org/mistica/castellano/emec/pro/memoria6/0145.html>

related to the medium. Those elements are part of the advanced level of information literacy²⁹. It should be clear that the education-learning process is necessary but not sufficient: in order to reach this level, it is absolutely necessary that the acquired concepts be put into practice. At this stage, a coherent project of literacy should plan practice work and “real” deliveries as part of the curriculum -not only examples, drills and training exercises.

Obstacle #10: Empowerment³⁰

Individuals or communities should be able to transform the social reality they live in through social ownership of ICT

This item deals with putting into practice the acquired capacities to reach the required level, at individual as well as collective levels. In principle, this level should be the one all the organized actors who are specialized in ICT4D have; they try to share with counterparts from civil society or communities working in other fields, for instance organizing workshops.

Obstacle #11: Social Innovation

The action of transformation should be likely to bring original solutions, designed by an individual or by the community.

“Underdeveloped people” do not exist! As an individual trained in Europe who has changed into a Latin American and Caribbean person in the last 20 years, the author is a privileged witness of a fact which is evident but often forgotten: underdevelopment is not a matter of people but of collective organization and institutionalization. And there is something more: the context of chronic difficulties in which people live in the South is a permanent motor for creativity. There is more daily creativity in a poor suburb in the South to face the permanent challenges than in a city of the North; however, the capacity to transform this creativity into innovation is limited by the lack of education and/or by the lack of “empowerment” (in the context of ICT as in any other context). For that reason it is crucial to surmount the previous obstacles (especially in the context of ICT, where adverse factors affect in smaller proportion³¹, due to the virtual and global nature of the framework -which is one of the strong arguments to maintain a belief in the “digital opportunities”).

²⁹ A classification of the various capacities which are required for the literacy process is presented in the article “Users Training: A Crucial but Ignored Issue in Remote Collaborative Environments”, D. Pimienta, C. Dhaussy: <http://www.isoc.org/inet99/proceedings/posters/157/index.htm> (please note that the article should certainly be updated, due to the numerous new features which have appeared since 1999 in the history of the Internet -obviously enough, the article does not deal with Web 2.0).

³⁰ The word stresses several important aspects at the same time: to gain capacities and the knowledge to use them to defend one’s (social) causes, eventually to gain (social) power in the process.

³¹ Apart from the case of electrical power, which should be paid attention to no matter which ICT4D project in several countries.

The Finishing Line: Human Development

Options for individual and collective liberty should become open to people (or to communities) who will now be able to take advantage of them.

The hypothesis could be confirmed in the future, when impact evaluation is given appropriate importance, and when criteria to analyze factors of success and of failure are agreed.³². This hypothesis is that the people who have overcome the first 10 obstacles have exceptional opportunities for human development, and can bring change to their personal lives as well as the life of their communities. Among these people, the most creative ones can demonstrate the huge capacities for innovation that exist in the South.

A METHODOLOGICAL TABLE

Besides trying to offer pedagogical material to fight the paradigmatic divide, the “hurdle track” can be used as a table for systematizing methodology. It has indeed been used as such in one of its early versions, in order to identify the obstacles to overcome in considering the question of linguistic diversity on the Internet³³. It should be possible to use it in the same way with other issues, as has already been done in various workshops.

INFRASTRUCTURE ACCESS	The possibility an individual or a group has to physically access ICT
FINANCIAL ACCESS	The balance between the price of access and the financial capacities of the person or the group of people
SUSTAINABLE ACCESS	The organization of access to resources should be durable and its development should follow demand
LITERACY ACCESS	Users should be able to read and write (in their mother tongue, obviously)
LOCATION ACCESS	Maternal languages should be used in interactions
USE	The possibility of making an effective (which reaches the set goal) and efficient (time-wise) use of ICT
TECHNOLOGY OWNERSHIP	Users should be skilful enough for the technology to be transparent for their personal use
MEANINGFUL USE	Using ICT in a way which has a social meaning in the user’s personal, professional, and community environments
SOCIAL OWNERSHIP	Users should be expert enough that the technology be transparent from its social use.
EMPOWERMENT	Individuals or communities should be able to transform the social reality they live in through appropriating ICT

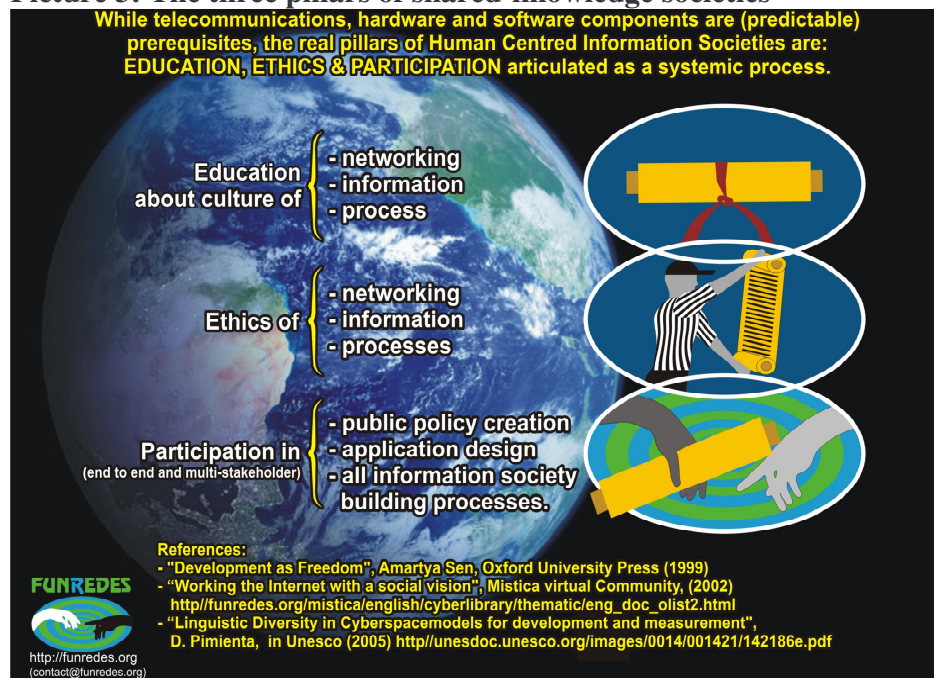
³² By the way, the trend which consists in creating databases of “success stories” should be observed with a little sane skepticism: daily experience teaches us that much more can be learnt from errors than from successes...

³³ “Measuring linguistic diversity on the Internet”, D. Pimienta, UNESCO, 2006
<http://unesdoc.unesco.org/images/0014/001421/142186e.pdf>

SOCIAL INNOVATION	The action of transformation should be likely to bring original solutions, designed by an individual or by the community.
HUMAN DEVELOPMENT	Options for individual and collective liberty should become open to people or to communities who are then able to take advantage of them

A WAY TO CONCLUDE

Picture 3: The three pillars of shared-knowledge societies



The main thrust of this article has been the issue of the importance of **education**, to reach a critical mass of citizens who can take part in the current transformation of society, and who do not mistake the technologies for the paradigm shifts at stake (or avoid being mistaken on that matter).

The recurring cry of the document has been the issue of the requirement for a real and organized multistakeholder **partnership** to build new social projects.

It should be clear that we are within a **systemic process**, where each component interacts with the others: the education process must be participative and education is necessary so that all actors of the society participate.

Ethics is the third pillar of an appropriate process for the building of **shared-knowledge societies**³⁴; it has not been explicitly dealt with in this article although it constantly appears as a watermark. Ethics consists, more precisely, in information ethics, communication ethics, network ethics. In this context, ethics is subject to the same systemic conditions; that raises the multiple issue of the necessity of ethics in education, of education in ethics³⁵, of ethics in participative processes³⁶ and of participation in an ethical discourse which must explore new frontiers.

³⁴ Adama Samassekou can be credited with the phrase “Sociétés des savoirs partagés”, which can be translated into English as “shared-knowledge societies”, bearing in mind that English does not distinguish between the concepts of “savoir” and of “connaissance”; Samassekou is President of the Academy of African Languages and of the MAAYA Linguistic Diversity Network (<http://maaya.org>); he facilitated the first part of the WSIS process. He thus gave an answer, from civil society, to the limitations of the phrases “information society”, “knowledge society”, or “communication society”. The plural form of “society” insists on the following point: no single model exists, and each nation must build its own, according to its culture and its history. On this topic, and/or for a plural vision from civil society of associated topics, see *Word Matters, Multicultural perspectives on information societies*, C&F Editions, 2005, online version at: <http://www.vecam.org/article698.html?lang=en>

³⁵ See “Educación para la democracia”, J.B. Toro, 2000 (in Spanish only): <http://funredes.org/funredes/html/castellano/publicaciones/educdemo.html>

³⁶ See “At the Boundaries of Ethics and Cultures: Virtual Communities as an Open Ended Process Carrying the Will for Social Change (the “MISTICA” experience)” in Capurro, R. & al. (Eds.) 2007. *Localizing the Internet. Ethical Issues in Intercultural Perspective*, Schriftenreihe des ICIE Bd. 4, München: Fink Verlag <http://funredes.org/mistica/english/cyberlibrary/thematic/icie/>