



**HAL**  
open science

## Does the "digital divide" exist ?

Éric Guichard

► **To cite this version:**

| Éric Guichard. Does the "digital divide" exist ?. 2003. halshs-00343373

**HAL Id: halshs-00343373**

**<https://shs.hal.science/halshs-00343373>**

Preprint submitted on 1 Dec 2008

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# Does the ‘digital divide’ exist?

Éric Guichard  
INRIA - ENS  
Eric.Guichard@ens.fr

5th September 2003

## Abstract

This text begins with a criticism of discourses about the notion of ‘digital divide’. Regardless of the identity of their authors (politicians, G8 ‘experts’, activists), these speeches are mostly based on technical determinism and on a confusion between information and its support. This paper studies the quality and the functions of the measures of the supposed ‘digital divide’, that serve above all to legitimize *a posteriori* this notion of divide, whilst expressing prejudices about nations and societies, mostly on the basis of one indicator: the ratio of Internet users of each country. Potentialities of digital writing are outlined, as well as the knowledge needed to profit from them. This knowledge is unsurprisingly linked to traditional kinds of capital (economical, social, and intellectual). Hence, few people can benefit from data processing. Finally, behing the ‘digital divide’ and the solution proposed to bridge it (investing in equipment), one discovers a very deep cognitive segregation related to the diffusion of the digital systems of writing.

then shows that the internet is merely a revelator of the rifts of our societies, the most critical one being the cognitive divide.

## 1 A fuzzy concept

The notion of ‘digital divide’<sup>1</sup> is as well spread as it is badly defined. Politicians pick it up, the World Bank and the G8 pretend to bridge it, activists worry about it. This wide consensus to use an unclear notion, among social groups opposed to each other, makes this notion appear fragile from a scientific point of view.

### 1.1 Virtues of the ‘new technologies’

The word ‘divide’ suggests a separation between people who have access to digital information, and the others, who don’t; it induces the idea of a barrier, where one side is much more comfortable than the opposite one. To avoid this, some argue, one must ensure that every citizen accesses the

---

<sup>1</sup>In French, *fracture numérique* or *fossé numérique*.

‘new technologies’, or that the coming ‘information society’ should have no outsiders. These discourses, widespread among the administrators of the European Union, are actually directly imported from the USA: as early as 1992, Al Gore evoked the virtues of the ‘information society’. Bangemann introduced them in Europe in 1994.

Behind the project to take care of the poor and of the electronic have-nots, lies the promise of a great departure towards a bright future, of a collective adventure offered by the ‘new technologies’. This belief has a name: *technical determinism*; it maintains that technology determines the organisation of society. The idea is surely seductive, but naïve and old. For David Edgerton [Edgerton 1998], the evocation of the positive effects of the modern techniques on the social organisation is a recurring event in all the twentieth century; its main effect is the reduction of political criticism: the promise of a close future, happy and without worry, limits the protest against the present world. The diffusion of technical determinism, including its generous speeches about diminishing the digital divide (for instance by Third World activists) further promotes the ruling order.

When the notion of digital divide is linked with technical determinism, it appears to be an ideological or a political concept rather than a scientific one.

## 1.2 Uses of information

One can hope that the notion of information is more relevant than invocations of modernity to explain socially differentiated uses of digital items. Indeed, digital information brings opportunities of ‘manipulation’ and treatment which are not offered by former supports. But the notion of information vary between pure noise<sup>2</sup> and texts with a real informative value. And mostly, the latter sense is preferred: any sequence of bits is quickly considered as informative. Nevertheless, one can doubt that the received spam advertising Viagra, Xanax, or naked girls on videos is really the ideal way to bridge the digital gap.

If one adds to this electronic pollution the proliferation of worms and other electronic viruses, and the on-line sales of bad films, the probability is high that, all things considered, the quality of electronic information is very poor and without any added value: effectively, this way to valorise raw information masks the modes of appropriation of those to whom it is addressed, and the treatments they can apply to it. This point will be argued later; but a study on digital tools of treatment of the information (for instance lexicometrical or cartographical ones) quickly reveals how meager their use is, and that the benefit of such tools on non digital ones is not granted, especially if one includes time in the costs<sup>3</sup>.

In a general way, any study of information and its uses refers to writing, knowledge (and its ways of transmission and assimilation), and more generally, to the notion of *literacy*. But this concept is most complex, subject of deep debates between anthropologists, linguists and historians. The risk is high that the politicians who implicitly employ the notion of literacy in the context of digital information use it in fact as an advertising slogan,

---

<sup>2</sup>As data flows, in the historical meaning of Shannon when he conceived his information theory.

<sup>3</sup>For instance, the time waisted to eradicate a virus, to restore lost datas, etc.

without understanding it. For instance, the French president Jacques Chirac claimed in 2000 that ‘the communicating computer becomes the universal encyclopaedia of the twenty-first century’ [Chirac 2000]. The formulation is nice, but it totally eludes the whole range of social and cognitive processes occurring in the constitution and the transmission of knowledge: is it the paper fibre which makes the value of the encyclopaedia or its contents? How is the network of people constituted which engages in such a production? The French President implicitly evokes the Diderot Encyclopaedia, which is the archetype of the French production of the Age of Enlightenment. But does he remember that this was mostly the work of political opponents, who were savagely censured by the political power of the time?

Lastly, how can one evoke a store of knowledge without wondering about the language in which it would be written? Undoubtedly, the encyclopaedia of today would not be written in French...

Thus, the call for information, and its supposed virtues when it is in digital form, or accomplished in a social dimension, hardly seems convincing when the digital gap and its stakes are evoked.

### 1.3 Dictatorship of numbers

What remains?

The speeches on ‘new technologies’ are a consequence of the technical determinism, and those on ‘information society’ an element of political logorrhea. The possible benefits of a supposed society of knowledge and information being too difficult to explain and measure, people frequently choose to estimate them through statistics applied to material objects. One could for example compare knowledge of countries by counting the number of trucks of each one, since the books are mainly distributed by terrestrial routes. That is partly what the administrators of the European Union propose: « It is necessary to give to Europeans the knowledge which they need to live and work in the new economy. That starts at school. The schools must have multimedia computers in a sufficient number and quick Internet connections», Erkki Liikanen affirms [Liikanen 2000]. Here, the confusion between measures of a possible mental activity and statistics about material stuff is manifest, and nourishes the critics claiming that the evocation of the digital divide aims above all to making people buy computers.

This material estimate has certain advantages : it makes it possible to recycle the figures which the salesmen of data processing and associated services produce to have an idea of the number of their current or potential customers. Thus the concept of ‘Internet user’ appears: it is of course a person who connected herself to the Internet. But when and with which frequency? These questions are almost indiscreet. The current tendency consists in forgetting the frequency and in considering simply that any person approaching a computer connected to a network once per quarter is an Internet user. With rare exceptions, the questions relating to the duration and the quality of connection are also forgotten.

From there, various organisations, e.g. CIA, endeavour to measure, for each country, indices of the digital practices. Those are rather fuzzy, and seem in fact indices of comfort or modernity: one points out gross domestic

product (GDP) and population, then the numbers of main lines of telephone, mobile cellular telephones<sup>4</sup>, ISP (Internet service providers) and finally Internet users. One then learns (from the CIA, but also from other organisations or companies, because they all give the same results), that there was one fixed telephone line per capita in Monaco, but one for 250 in Mali<sup>5</sup>; two million Internet users in Belgium, against 30 000 in Angola (both countries have the same population, but the Belgian GDP *per capita* is 20 times higher than the Angolan one); that there are a thousand times less cellular telephones in Cuba than in Sweden, for populations appreciably equivalent<sup>6</sup>.

I shall not here seek to check the relevance of such numbers<sup>7</sup>.

However, both this kind of indicators and the comparisons which they induce show that one measures wealth or a propensity to spend, rather than real or potential abilities. A complementary proof is given by the strong correlation between the percentage of Internet users and the GDP *per capita*: 0,87 (calculated for the 163 most populated countries). The number of luxury cars or private jets would have been quite as relevant to classify the nations. 'New technologies' are here confused with equipment, and the reference to the information and its uses is swept away by indicators dedicated to the telephone companies. That is what the map of the Internet users in 2002 shows (see Fig. 1).

If one uses the rate of Internet users measured by the CIA as an indicator of the richness of the nations, the inverse reading of this map shows a phenomenon known for a long time, but often understated: the slip of many Central and Southern European countries (among which Germany, Spain, France and Italy) into the 'second World': in Europe, only the Netherlands, Great Britain and the Scandinavian countries (Sweden, Norway, Finland, Iceland, Denmark) have high rates of Internet users. Apart from these countries, the only ones to exceed a rate of Internet users of 50% are the United States (59,17 %<sup>8</sup>), Australia (51,47%), and the two ambivalent 'satellites' of China which are Hong-Kong (53,81%) and Taiwan (51,45%). On the other hand, the very poor countries, like the African ones, have obviously the lowest rates of Internet users. However, if account of their GDP is taken (or of the electric supply cover of these countries), one is not surprised by these figures.

The authors of the statistics even fall into their own trap: if one divides the number of Internet users by the GDP, which is a good way to eliminate the *nation wealth* parameter, one discovers that the first country for this indicator is... Palestine (7,83), followed by Estonia (3,81), Taiwan (2,99), Sweden (2,57) and South Korea (2,56). Other countries, like the United States

---

<sup>4</sup>This insistence on telephony in the statistics on the uses of digital items is strange: the true instrument of communication with which the user does not feel the effect of the digital item is the telephone, mostly used for oral communication.

<sup>5</sup>45 000 main telephone lines in Mali in 2000, date of the estimate, for 11 340 800 inhabitants; 31 027 lines in Monaco for 31 987 inhabitants. For these datas and the next ones, the source is [CIA 2002]

<sup>6</sup>3 835 000 in Sweden (estimate of 1998) for 8.9 million inhabitants, and 2 994 in Cuba (est. 1997) for 11,2 million inhabitants.

<sup>7</sup>Even if one would have liked to know the sampling protocol enabling to find the 50 000 Sudanese Internet users or the 2 994 Cuban owners of cellular phones.

<sup>8</sup>Third position behind Sweden — 63,54% — and Iceland — 60,13% —.

### Uses of the internet in december 2002

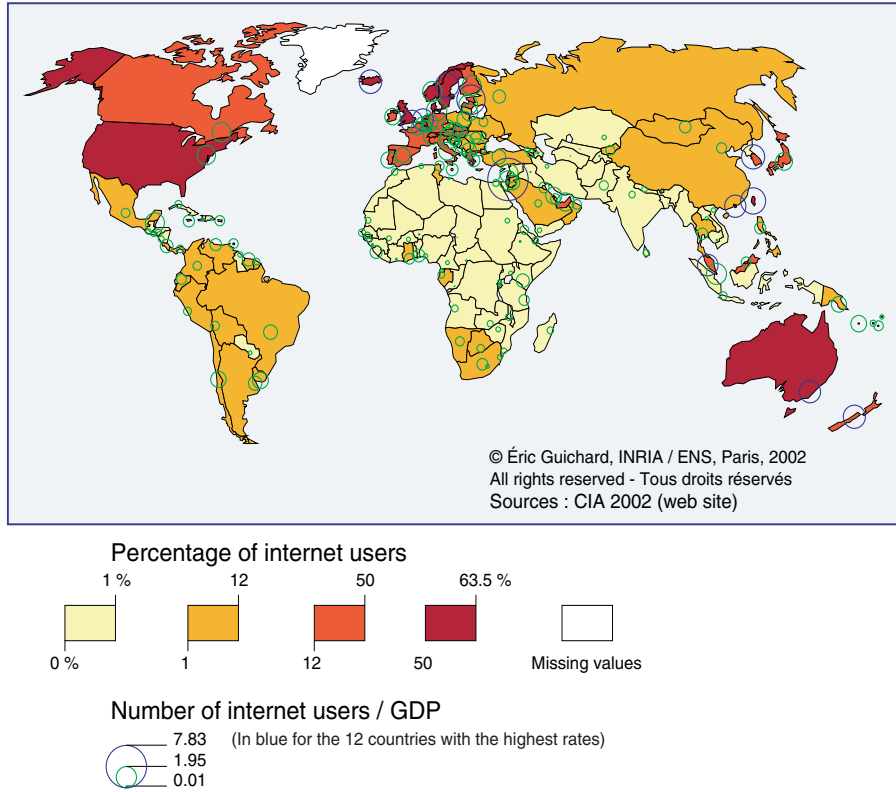


Figure 1: Internet users. The original map is in the file carteMondeNB.pdf. Here is just a (small) copy for the editors, but not for the publisher.

or France, are far behind (1,63, rank 23; and 0,77, rank 53). One can then explain this strong use of the electronic communication in Palestine by the argument that this non-state is reduced to a sum of parse prisons which one cannot leave. Consequently, the immaterial tools of communication are over-used. But one can also be cynical and consider that Palestine is an ideal market for the companies of telecommunication, which can make large profits there, since there are a few million people, undoubtedly very poor, but ready to spend for the Internet. One could accordingly present Palestine like a model solution of the digital divide problem in the Third World, as some experts of G8 do not hesitate to do with Bangladesh<sup>9</sup>.

#### 1.4 Concepts legitimated *a posteriori*

It is important to bear in mind the power of figures and indicators, when they once have been produced. No matter if they are false, or produced from erroneous perceptions of social phenomena: once published, they get a value of truth such that they become references for political debates; thus, they legitimate the concepts which they are supposed to evaluate. As that frequently happens in the social sciences, the figure produces the category more than being its consequence or measure.

Some authors refuse these figures because they are used to hide others. For instance, Daniel Pimienta maintains that the compassion concerning the digital divide is used by G8 to give itself good conscience, and perhaps to make people forget the permanent medical and food divides [Pimienta 2002]. That is all the more possible since, as seen above, the material measures of the digital divide naturally invite to reduce it by investing in equipment.

More generally, the reasoning which one can build on such figures is weak. For example, if one returns to the ratio *Internet users / GDP*, one can offer a thousand interpretations, all of them *a posteriori*: the situation of Palestine would symbolize the possibility of resisting oppression thanks to 'new technologies' (proof of their democratic virtues?); that of South Korea would highlight the impact of the use of 'new technologies' on the economy (while offering a publicity for liberalism); that of Sweden would prove their social function. And so on.

On the other hand, from the mere rate of Internet users, an analyst in a hurry and in love with synthetic figures like the GDP or the IQ, will compare Hong Kong and Norway, since their rates of Internet users are similar (53,81% and 54,14%); or Japan and Austria (37,08% and 36,72%), France and Malaysia (19,58% and 18,09%), Russia and Palestine (6,35% and 4,89%). However, every thing distinguishes these couples of countries: culture, industrial and political history, geography, etc.

---

<sup>9</sup>Here is an example of the rhetoric of the 'DOT Force', or Digital Opportunity Task Force, associating 'new technologies', access to knowledge and emancipation of the poorest of the poor, the women : 'As underlined in his first report to the leaders of G8, 'access to knowledge and information is essential for the modern human development'. This great principle underlies the continuous work of the GEANT and the determination of its members to increase the contribution of ICT to the development in all its kinds and levels. One now starts to see examples of the entitling capacity of these technologies. [...] In Bangladesh, many poor women see their quality of life increase thanks to innovative use of the cellular telephone.'. [DOT Force 2002].

Thus, any national prejudice or preconception can be inferred from *a posteriori* interpretations of this numerical list. This kind of abuse seems uniformly widespread when people absolutely want to *measure* social practices : among the engineers, the politicians and the activists, even among some economists, the figure has a crowned value, and prevents from questioning the foundations, even when those are in fact mere prejudices.

## 2 Which measures?

### 2.1 Technology of the intellect

Even though the myths of ‘new technologies’ and of the power of digital information appear disconnected from reality and to that extent irrational, they do have a modest logical foundation: computers were performed to count and write, and the Web was invented to facilitate the intellectual exchanges between scientists.

It should be borne in mind that data processing and the Internet take part of a recomposition of our writing systems, about which Jack Goody reminds us that they belong to the *technology of the intellect* [Goody 1994, Goody 2000]: our thought is not pure nor is it dematerialized, it is based essentially on the writing, which gives it technical and social dimensions. A social one, because the writing allows the confrontation with the thought of others. Technical, as one can see with the system of signs which one uses to write and communicate, a system which refers above all to methods and know-how (control of the alphabet, but also layout, use of abbreviations, etc.); but especially with the whole set of material (and industrial) objects which help us to read, write notes, carry out calculations, sort, produce diagrams: papyrus, codex, sliding rules, Cd-rom, etc. But this description is still too manicheist, giving the impression that the material serves the thought. In fact, even more than with a system of signs represented by a wide alphabet, the cognitive activity and the supports of the writing are closely bound by the procedures, the tools which we invent to apprehend the text; for instance, tables of content at the end of the books, index or their current generalization: search engines. Softwares fall under this category. The tools we conceive belong completely to the writing (the system of signs is not distinct from the whole of the instruments which are used to apprehend it<sup>10</sup>) and at the same time to the cognitive activity (it is difficult to think without writing and reading, and thus without controlling the whole of the instruments associated with the writing).

In this context, a recomposition of the instruments of writing virtually transforms our mental capacities. For instance, the ability to produce and handle (and hence to reorder, classify, etc.) long lists of words, of figures, contributes to the constitution of a reasoning, and shows in a different way the contents of these lists<sup>11</sup>; the same for the ability to organize our thought from the multiple maps and graphs we carry out, through numerical or textual

---

<sup>10</sup>This is very clear with data processing: the binary code of the writing, stored on an electronic medium, is not accessible without *drivers* and software.

<sup>11</sup>Process of distanciation.



data. For these kinds of productions, the potential effects of the computers and softwares are manifest.

But between these virtualities and reality, there is a gap. And there, the concept of *literacy*, this blend of culture and alphabetism, takes sense. The mental activity is often acquired by training. It takes approximately 20 years to control the whole of the instruments and methods related to the exercise of a rational thought. It is difficult to see how the diffusion of material items could shorten this time of training, if these devices are (as they seem to be) objects of consumption rather than tools which prolong the processes of writing: one imagines with difficulty how to seek a book in a library if one cannot read, as one scarcely imagines to become a mathematician merely because one was offered a digital TV.

## 2.2 Cognitive segregation

This 'gap', this vast question of the intellectual benefits of the digital writing is rarely, if ever, clarified. The reasons are obvious: the acquisition of an intellectual capital adapted to the digital writing and the realisation of such potentialities are particularly delicate and are reserved to a very small number of people, the scholars of today (notably, data processing specialists, and academics).

Here can be expressed the digital divide, and in a violent way: before benefitting from the contemporary systems of writing, one necessarily needs a strong economical capital, to acquire a computer and a link to the networks; but also a social capital, to get help when one does not understand how a software, an on-line service, or one's computer works (or not); and finally a cultural one, as we have then to know how to find the information which we seek, and to treat it.

However the people in the world who have such wealths are rare. And neither the cybercafés, nor the networks of teenagers can make up such deficits, whatever all the 'experts' of the DOT Force can say. Moreover, one can measure these forms of inequalities. For example, lack of cultural capital: a survey among 4 million of Internet users, in France, 2001, showed that 87% of them could not use properly a search engine [Guichard 2002]. This figure, enormous, is nevertheless coherent with surveys carried out among students and academics: the control of these intellectual instruments of a new type is really not easy, and needs years of training. One thus realises the huge disparity between a cognitive Utopia (acquisition of knowledge via the ICT) and its alleged measures through rates of equipment.

Finally, even if one accepts the figure of the CIA relating to France (19,58% Internet users), the French rate on the bad side of the digital barrier would be 97,5%<sup>12</sup>! If that is so, which is the rate of the Third World countries?

The digital divide exists, but it is merely the translation of a violent cultural and intellectual segregation, which further develops *with* 'new technologies'.

---

<sup>12</sup>  $100 - (19,58 * (1 - 0,87))$

## References

- [Chirac 2000] Jacques Chirac. Mon projet pour la France numérique, 2000. [http://www.journaldunet.com/itws/it\\_chirac.shtml](http://www.journaldunet.com/itws/it_chirac.shtml).
- [CIA 2002] CIA. The World Factbook, 2002. <http://www.cia.gov/cia/publications/factbook/fields/2001.html> and others (2004, 2119, 2150, 2151, 2152, 2153, 2154).
- [Edgerton 1998] David Edgerton. De l'innovation aux usages. dix thèses éclectiques sur l'histoire des techniques. *Annales Histoire, Sciences Sociales*, 4-5:815-837, 1998. Histoire des techniques.
- [DOT Force 2002] Digital Opportunity Task Force. Les technologies de l'information au service de tous, 2002. Rapport du Groupe d'experts sur l'accès aux nouvelles technologies, Juin 2002, <http://www.dotforce.org/reports>.
- [Goody 1994] Jack P. Goody. *Entre l'oralité et l'écriture*. Presses Universitaires de France, Paris, 1994.
- [Goody 2000] Jack P. Goody. *The Power of the Written Tradition*. Smithsonian Institution Press, Washington and London, 2000.
- [Guichard 2002] Éric Guichard. *L'internet: mesures des appropriations d'une technique intellectuelle*. thèse de doctorat en sciences de l'information et de la communication, École des hautes études en sciences sociales, Paris, 2002. URL: <http://barthes.ens.fr/atelier/theseEG>.
- [Liikanen 2000] Erkki Liikanen. Assurer le succès de eEurope: L'Europe peut-elle combler son retard?, 2000. [http://europa.eu.int/comm/information\\_society/speeches/liikanen/paris\\_10102000\\_fr.htm](http://europa.eu.int/comm/information_society/speeches/liikanen/paris_10102000_fr.htm). See also <http://www.publicservice.co.uk/pdf/europe/spring2002/p40.pdf> for a slightly different speech two years later in English.
- [Pimienta 2002] Daniel Pimienta. La fracture numérique: un concept boiteux?, 2002. [http://funredes.org/mistica/francais/cyberotheque/thematique/fra\\_doc\\_wsis1.html](http://funredes.org/mistica/francais/cyberotheque/thematique/fra_doc_wsis1.html).