

# The voices of the digital divide: a deconstruction of the discourse within Information Technology<sup>1</sup>.

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## ABSTRACT

This work is an analysis of the conceptual domain of the Digital Divide to identify the characteristics this literature, and see whether it reflects the Center-Periphery relation described by the Theory of Dependence developed by CEPAL in the decade of 1960. The urgency for a digital integration may express a vision of totality and the perspective of the Post Fordist order, through narratives disseminated and validated by technical and scientific discourses. “Peripheral” territories accepted the digital divide without further evaluation or research that let them evaluate the cost-benefit equation of information technologies, thus facilitating a state of symbolic domination and dependence. The deconstruction of the Digital Divide was made using Domain Analysis. It included literature in three languages: English, Spanish and Portuguese. All documents were collected and retrieved using Google Scholar. We identified keywords in all the three languages and present bibliometric statistics of production and citation for these terms, including coauthoring and citation.

## Keywords

digital divide, brecha digital, exclusão digital, information technology, domain study, bibliometrics.

## INTRODUCTION

*“We cannot idealize technology. Technology is only and always the reflection of our own imagination, and its uses must be conditioned by our own values. Technology can help cure diseases, but we can prevent a lot of diseases by old-fashioned changes in behavior” Bill Clinton (Clinton & Gore, 1996)*

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Eighteen years ago in Knoxville, President Clinton made this statement, which was widely overlooked within the myriad of documents claiming for the construction of the Information Society around the world. The first decade of the XXI century witnessed an effervescence about the Digital Divide that now is lowering down, making it possible to examine its connotations and discursive. Understanding this is critical for developing countries as it gives them tools to differentiate between a mystical surrender to ICT, and a strategic appropriation that may serve better their own interest.

This research made a deconstructive exploration of the narrative about information technologies (IT) using as a subject of analysis the concept of Digital Divide. The research was produced within the field of Information Science using Domain Analysis, a method that combines four kinds of studies: (1) documentary, (2) historical (3) bibliometric and (4) critical. In this article we summarize the general outcome of the study.

### **WHY ANALYZING THE DISCOURSE OF THE DIGITAL DIVIDE?**

All societies in the globalized world have increased their levels of interaction, which means complex relations of power and conflict. In Crozier's opinion, this complexity of variables more than an obstacle to understand conflict and power, acts as a convenient curtain to veil our lack of intention for open discussions about them. Harmony and coherence are not natural states of human life neither their regulation principle. Contradiction is always present with unknown margins of adjustment. For Crozier the solution is to engage in open negotiation and for that, we need to identify the interacting powers, their self-referred logic and the rules they propose (CROZIER, 1970).

The power structure becomes visible through symbolic traces in areas like work, the market or the production of scientific narratives. Narratives lead into representations that conduct to habits which define the roles of dominators and dominated, maintaining them as they produce complex benefits for both. Power relations are the seed of social structures; they define the competence of each actor in controlling relevant sources of uncertainty within the system. Power games are covered under veils of legitimacy, humanitarianism or shame, disguising symbolic violence and ideologies into myths and stereotypes (Barthes, 1972; Bourdieu, 1994, 2005).

When analyzing the discourse of IT through the Digital Divide, the idea is not to deny its benefits, but to understand the rules of the game, the cards that have been played and how those players from developing communities may negotiate better results. To evolve from a global order of dependency (Di Filippo, 1998; Prebisch, 1986) to a more negotiated and heterogeneous world.

### **WHY DECONSTRUCTING THE DIGITAL DIVIDE?**

Every technology is a conceptual pack that embodies a vision borne into a particular place and time, prescribing materials, energy sources, production styles and social relations (Mumford, 1987). It acts as a template for human routines and social orders. Technology represents a source of maintenance or rupture of paradigms, a social arena where factions collide and cooperate (Gille, 1999). Every technology embodies an ideological vision so technological architectures and their narratives involve micro-power structures that regulate body and mind (Foucault, 1979,

2008a, 2008b), responding to particular values from their communities of origin. No technology is neutral or innocent (Nissenbaum, 2005; Postman, 1990, 1993; Winner, 1980, 1988).

Ideological structures are exported to host communities in an intended or unintentional way, spilling an alien discourse into them. If the receptor can get consciousness about it, then he might enter into negotiations about its use and meanings. But if technology is swallowed, lubricated by fashion, propaganda or authority, then it turns into a dominating doxa, an unquestionable rigid order of symbolic violence (Bourdieu, 1994, 2005), a demagogic discourse hiding alienation (Touraine, 1969).

The symbolic harmony or conflict around technological diffusion will determine its validation, appropriation and impact in different social domains, i.e. the market, the government, production, education, etc. (Bourdieu, 2003; Tamayo Gómez, Delgado, & Penagos, 2009). Technology creates patterns in time and space that facilitate certain scenarios and obstruct others: this is what is called “path dependence” (Nelson & Winter, 1982). In Western societies, the path created by IT determined that non-digitalized populations were considered to be out of the social state of “normality” in Foucaultian words (Foucault, 2002). The Digital Divide turned into an analogy of social disease. Such idea has been connoted through language in a narrative mystification (Barthes, 2001) of technology that veiled corporate interests and ideologies. These narratives turned into *isotopias*, semiotic iterations that shape the meanings and perceptions of people, infusing alien symbolic orders into societies (Blikstein, 1983). The technological order of IT and the Information Society transformed in what Lyotard once called the Grand Modern Narratives (Lyotard, 2004). A monumentalist view (Bataille, 1929) that feeds the existence of a discourse of totality (Day, 2001) regarding the inevitability of a digital world, a new “universal best way”.

IT “imposition” is not a brute exercise of force but a sophisticated act of seduction and Soft Power (Nye, 1990, 2004). What was produced in the end was a collision of worlds between informational *Hot* and *Cold* societies, a global state of discomfort and deepening divides in knowledge, power and information (McLuhan, 1951, 1964; McLuhan & Fiore, 1968). The new system configures what Zuboff called a Distributed Capitalism (Zuboff, 2013) and a tecno-cultural structure of neocolonialism defined by the concept of Electronic Colonialism (McPhail, 1981).

In this context our research wanted to know if any of these characteristics of dependency and domination can be seen into the production of academic literature, comparing what has been produced about the digital divide in English, Spanish and Portuguese.

## **METHODOLOGY: DOMAIN ANALYSIS OF THE DIGITAL DIVIDE**

Domain Analysis studies knowledge fields that conform the territory of thought and discourse of different communities (Birger Hjørland & Hanne Albrechtsen, 1995). When applied to international research, it shows how people interact with information in different places and what forces move the organization of such knowledge (Smiraglia, 2011). In this research we used four approaches from Domain Analysis following Hjørland (Birger Hjørland, 2002):

- (1) Documentary Analysis to construct a Literature Guide, condensing and organizing all relevant information about key documents of the domain.

- (2) A Bibliometric Study to characterize the documental structure and social networks within the Domain community.
- (3) A Historical Study to understand the background of the field and its discursive mainstreams.
- (4) A Content Study to make evident all relevant conceptual structures within the most representative works of the field.

The Digital Divide was studied by Warschauer et al (Warschauer, Knobel, & Stone, 2004) using Domain Analysis, applying content analysis to interviews made to teachers and students from high and low socioeconomic status at high schools in California, USA. The target was to identify the particular social practices involving IT. Critical Discourse Analysis (CDA) and Historical Analysis were used by Hwang to deconstruct the Digital Divide using key documents from ITU and ORBICOM (Hwang, 2006). Stevenson used Fairclough's model of CDA to study the *Falling Through the Net* series of documents (Stevenson, 2009). Thompson applied CDA to a speech of the World Bank president, James D. Wolfensohn, at Cambridge University in year of 2000. He aimed to show how the narrative of development was framed with TI (Thompson, 2004). Wilson also chased the connoted association between IT and development making a discourse analysis of a sample of documents collected from seven global key players in the field of IT and development (Wilson, 2003). Courtright analyzed the "language" of USA policy communities engaged in the debate about the Digital Divide and its metaphors. Some other authors took the discourse analysis out of the borders of the USA and studied possible forms of neocolonialism within the IT narrative (Avgerou & Madon, 2005; Cline-Cole & Powell, 2004; Yunusa Z. Ya'u, 2004; Y. Z. Ya'u, 2005).

As stated by Hjørland, it is desirable that all Domain Analyses blend a plural number of studies, as this enriches the empirical and interdisciplinary base of the research (B. Hjørland, 2002; B. Hjørland & H. Albrechtsen, 1995). For this research we blended Critical, Documentary, Bibliometric and Historic Studies, but in this article we will refer specially to the Bibliometric and Content analysis.

## **DOCUMENT RETRIEVE AND PROCESSING**

Google Scholar was chosen to retrieve the literature corpus, as professional databases like Scopus and Web of Science are expensive and thus, not a common tool for researchers in developing countries. Although the limitations of Google Scholar are well known (Falagas, Pitsouni, Malietzis, & Pappas, 2008; Jacsó, 2005; Torres-Salinas, Ruiz-Pérez, & Delgado-López-Cózar, 2009), this alternative had a benefit, which is to include production from non dominant, non English-speaking academic communities (Meho & Yang, 2007). Developed communities were represented by literature written in English and developing communities by literature written in Spanish and Portuguese in general. A second categorization was made using UN and PNUD classification of development in countries, resulting in four groups: "Center" (G8 countries and developed countries) and "Periphery" (Emergent economies and peripheral countries).

Documents with the keyword "in the title" were defined as specialized literature and the universe for research. For the study we considered a sample of 10% of the most cited documents within the specialized literature universe, a sample that proved to be statistically representative as it

represents between 60% and 100% of the citation. All works had to be academic or technical production as per commonly accepted practices and include complete information about their authors, institutions of origin and publisher.

Following these conditions we analyzed bibliometric indicators in four dimensions:

- (1) Identification and characteristics of the documents
- (2) Identification and characteristics of authors, institutions and countries
- (3) Identification and characteristics of publishing channels
- (4) Characteristics of content and methodology

The first three characteristics were surveyed with bibliometric indicators. The fourth characteristic was revised applying Content Analysis to the abstracts and summaries of the collected literature to produce a conceptual classification about the topic, the studied population or territory, the attitude of the study towards IT, and the kind of study that was developed. The sample included the 614 documents in English, 115 in Spanish and 81 in Portuguese.

## DOCUMENTARY ANALYSIS AND LITERATURE GUIDE

The data was collected between November 2012 and march 2014 with an update made in April 2015. The search about the keywords is shown in table 1. As seen, the keyword in Portuguese

Definition of keywords and distribution (last measurement 08/04/2015)				
Language	Key Term	In text	In title	% In title
English	Digital Divide	102.000	5.970	6%
English	Digital Exclusion	1.830	68	4%
English	Brecha Digital ②	303	3	1%
English	Exclusão Digital	67	1	1%
Spanish	Brecha Digital	13.400	672	5%
Spanish	Exclusión Digital	551	18	3%
Spanish	Digital Divide ③	2.130	39	2%
Portuguese	Brecha Digital	486	4	1%
Portuguese	Exclusão Digital	4.850	145	3%
Portuguese	Digital Divide	1.260	14	1%

Table 1: Number of documents with the keyword in all the text and in the title

does not refer to “divides” (English) or “gaps” (Spanish), but to “inclusion” (1,830 documents) and “exclusion” (155 documents). Seems Brazil thinks more in terms of “solving the problem” than in about the problem by itself.

Next graphs (illustrations 1, 2 and 3) show the evolution of the production and citation of the collected sample, showing clearly that the Domain is decreasing at an important rate.

The interest in the domain, represented by the “demand of the terms related to it” (Illustration 1), has decreased almost 80% during the past ten years and the tendency is to keep falling down. This behavior is strong in the English literature and less drastic in Spanish and Portuguese.

The golden years of production and citation about the Digital Divide were between year 2001 and 2003; after that, the number of documents produced and cited began to fall. (illustration 2 & 3).

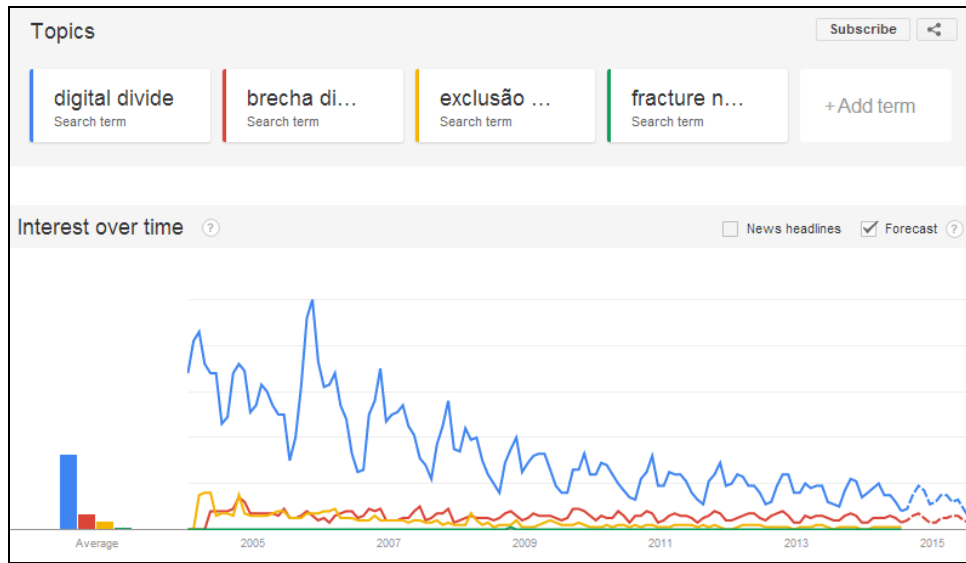


Illustration 1: Demand of the terms related to Digital Divide measured with Google Trends (01/12/2014)

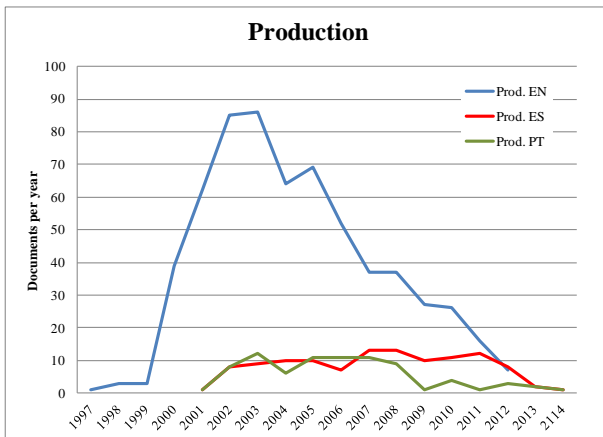


Illustration 2: Production of documents in the domain.

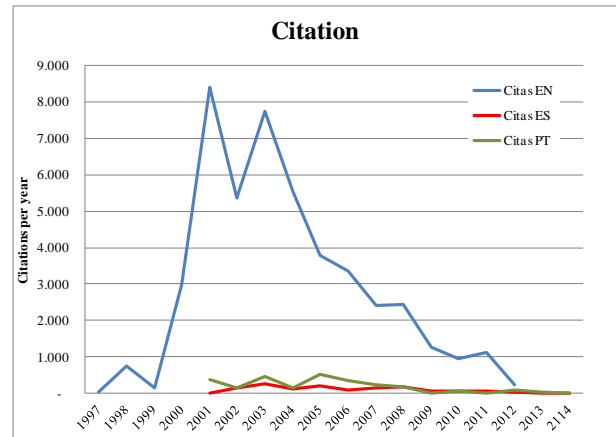


Illustration 3: Citation of documents in the domain.

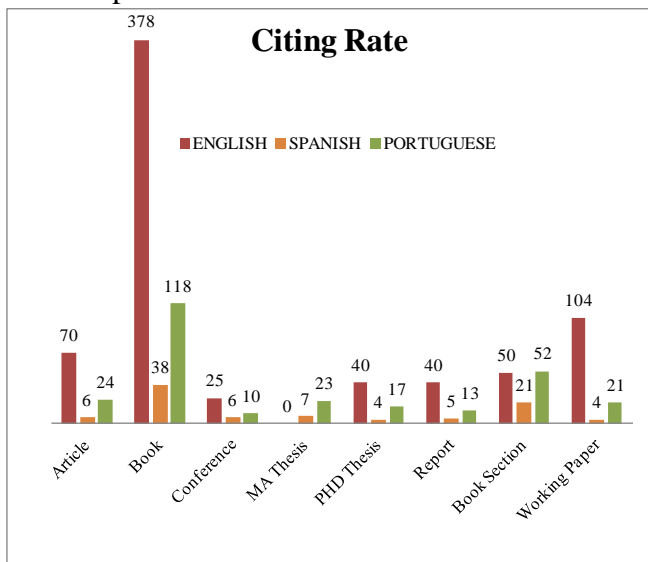
## DIFFUSION MIDIA

Although the big stake of citation is produced by articles, books are the most effective way to be cited. We searched for production and citation of Articles, Books, Conferences, Thesis (both magister and PHD), Reports, Book Section and Working Papers. Articles and books were the most cited and produced as seen in table 2. Thesis and Conferences gained weight in the Portuguese (PT) community and the Spanish speaking community (ES). But in all of these communities, the efficiency of books was superior to articles (more cites with less publications) as it can be seen

	Article citing	Article production	Book citing	Book production
ENGLISH	68%	74%	19%	4%
SPANISH	33%	62%	49%	15%
PORTUGUESE	39%	53%	41%	11%

Table 2: Means of publication of the domain.

in the graph for Citing Rate. Less authors gain more visibility with books, and Publishing Houses can keep better control over such works. Free access to this literature is blocked as it will be shown in a further analysis.



**Illustration 4:** Average of cites per publication in each publication format.

We analyzed what journals were the most productive and cited but also, who were the sponsors, publishers and countries that dominated both production and citation. The qualification of journals in Scopus (SCImago), Eigen (Web of Knowledge), Google H5 factor and Qualis (Brazilian journal classificatory) was also reviewed.

The most remarkable findings on this area was the big difference in regard to the publication model from the English speaking (EN) community compared with the Spanish (ES) and Portuguese (PT) speaking communities.

The EN literature is dominated by a handful of corporations that had included the Digital Divide domain under the “for-profit” publication model. On the contrary, the EN and PT communities have most of their literature under the “Open Journal” model. On the other hand, EN publications are better qualified by the “Mainstream” system represented by Scopus and Web of Science. They are also better qualified by the Brazilian publication system Qualis. The worst qualified in regard to the Mainstream and Qualis are ES publications. Being accepted as a rated publication into any of these systems provides Symbolic Capital and visibility. Few Conferences provide some production but they are not significant in citation. The main journal of the domain is First Monday, an English Open Journal, but most of all literature is controlled by for-profit journals. In an area like this, that is supposed to be of public interest and social benefit, this seems to be a contradiction. Open Journals cannot balance the massive citation and production of the corporate publishers.

Such distribution is more concentrated when we analyze the Sponsors (entities that have founded publication or editors that had collected materials for publishing) and Publishers of the domain. In the English-speaking universe, Multinational Corporate Publisher act as both Sponsors and Publishers so, the literature of the domain is concentrated and controlled in various points: who support the publication, who publishes the documents, the publishing media (journals) and the publishing format (in this case books and journals). Such control makes it difficult to collect information about the Digital Divide if you do not have access to paid services. The government of the USA had some sites that were good sources of material like ERIC (Education Resources Information Center), but many of the open access archives in those databases had been silently dismantled during the term of this research. Same situation happened with the digital repository of Tilburg University, Netherland.

On the other hand, a curious phenomenon tends to balance the above situation. A significant

number of authors, universities and institutes place their articles, book sections and conference papers with free access, in institutional repositories, data bases, personal websites and academic social networks. These links are unstable as they are repetitively blocked by Private Publishers but, they still are an important source of documents. In conclusion, the free access that can be obtained to the documents of the domain is high for the ES and PT communities (69% of citing and 89% of production for Spanish; 63% of citing and 90% of production for Portuguese) and restricted for English (42% of citing and 46% of production).

Mídia and events that spread the literature of the domain	Format	Prod.	Citss	SCImago Quartil 2013	WebQualis Brazil 2014	Google Scholar H5 2014	Eigen Factor 2013
First Monday (open access)	Journal	16	2.504	1	B3	31	
New Media & Society (SAGE)	Journal	13	1.893	1	A2	38	Included
The Information Society (Taylor & Francis)	Journal	12	1.755	1	A2	21	Included
IT & Society (fechou publicação)	Journal	13	1.222				
Telecommunications Policy (Elsevier)	Journal	9	702	1	B4	30	Included
Journal of Computer-Mediated Communication (Wiley)	Journal	4	1.020	1		35	Included
Government Information Quarterly (Elsevier)	Journal	8	643	1	A1	36	Included
Poetics (Elsevier)	Journal	4	703	1	A2	20	Included
Science (sciencemag.org)	Journal	1	710	1	A1	297	Included
Social Science Computer Review (SAGE)	Journal	8	551	1	A1	25	Included
HICSS Annual Hawaii International Conference on System Sciences	Conference	6	172				
<b>EN: Proportion of total production and Citation</b>		<b>15%</b>	<b>26%</b>	<b>9</b>	<b>8</b>	<b>9</b>	<b>8</b>
Pez de Plata: Revista de Opinión para el Desarrollo de las Bibliotecas Públicas	Journal	4	25				
Revista de Universidad y Sociedad del Conocimiento	Journal	2	38		B3		
Conferencia Internacional sobre Revistas de Ciencias Sociales y Humanidades	Conference	2	27				
II Coloquio Internacional E-DOCPA	Conference	1	25				
Revista Ibero-americana de Educação	Journal	2	20		B1	3	
Boletín de Política Informática	Journal	1	22				
Telos : Cuadernos de Comunicación , Tecnología y Sociedad	Journal	2	19		B1	10	
Comunicar: Revista científica iberoamericana de comunicación y educación	Journal	2	13	3	A1	19	Included
Empiria. Revista de metodología de Ciencias Sociales	Journal	1	15			6	
Revista Apertura	Journal	1	13			3	
<b>ES: Proportion of total production and Citation</b>		<b>16%</b>	<b>16%</b>	<b>1</b>	<b>4</b>	<b>5</b>	<b>1</b>
Revista Ciência da Informação	Journal	2	124	4	B1	8	
Revista Conjuntura Econômica	Journal	1	115		B1		
Revista Inclusão Social	Journal	6	110		B3		
Transinformação	Journal	4	77	4	A1	5	Included
Novos estudos CEBRAP	Journal	1	72	3	A2	13	
Revista Espaço Acadêmico	Journal	1	60		B2	5	
Revista Eptic	Journal	2	49		B1	4	
Revista Sete Pontos	Journal	1	49				
ENANPAD, Encontro da ANPAD	Conference	4	48				
Revista RAE Revista de administração de empresa	Journal	1	43	3	A2	17	
<b>PT: Proportion of total production and Citation</b>		<b>28%</b>	<b>29%</b>	<b>4</b>	<b>8</b>	<b>6</b>	<b>1</b>

\*Top qualification for SCImago is 1, bottom 4; Top qualification for Qualis is A1, bottom is C.

**Table 3: Principal publication media of the domain (Journals and Conferences)**

Publisher origin	Cites	Prod.	Language
USA	26.761	285	EN
UK	14.441	198	EN
Brasil	2.550	77	PT
Netherlands	2.264	33	EN
São Paulo	1.301	22	PT
International	732	21	EN/ES/PT
España	701	52	ES/EN
Canada	498	15	EN
Germany	413	15	EN
Brasília DF	410	12	PT
Rio de Janeiro	356	11	PT
México	273	16	ES

**Table 4: Most important publishing countries in the domain.**

If we analyze the distribution of these publications between countries, we find some surprises. The openness in the literature of the ES and PT communities is negatively balanced with lesser production and citation, compared with EN. If compared between countries, Brazil, Spain and Mexico would be able to have a relevant production and visibility (in the case of Brazil it would be able to have a third or fourth place in the whole world; by itself, São Paulo State it would be fifth). Unfortunately, language barriers make these figures not



significant in global discursive terms, so the voice of non English-speaking communities, although being Open Access, remains silenced. Please compare the size of what is controlled by the Corporate Multinational Publishers in the EN community and what PT and ES communities have, which is in an important stake of free access.

<b>Publisher EN</b>	<b>Produção</b>	<b>Citações</b>
Taylor & Francis - Routledge	68	4.440
SAGE Publications	61	4.791
Elsevier	51	4.440
Springer Verlag	30	1.055
Wiley-Blackwell	26	3.087
Emerald Group Publishing Limited	25	1.128
<b>TOTAL</b>	<b>261</b>	<b>18.941</b>
Total documents and citations in the sample	614	46.539
<b>Proportion of total production and Citation</b>	<b>43%</b>	<b>41%</b>
<b>Publisher ES</b>	<b>Produção</b>	<b>Citações</b>
Pez Plata Editores	4	25
Revista Inclusão Social	3	8
CEPAL	2	110
Revista de Universidad y Sociedad del Conocimiento	2	38
Anales de documentación de la Conferencia internacional sobre revistas de ci	2	27
Editorial Sistema	2	26
Centro Universitario de Investigaciones Bibliotecológicas CUIB	2	25
Revista Ibero-americana de Educação	2	20
Telos : Cuadernos de Comunicación , Tecnología y Sociedad	2	19
Comunicar: Revista científica iberoamericana de comunicación y educación	2	13
Facultad de Ciencias Políticas y Sociales FCP	2	11
ConCiencia Tecnológica	2	7
Subdirección General de Evaluación de Instrumentos de Política Comercial	2	7
Departamento de Educación	2	6
<b>TOTAL</b>	<b>31</b>	<b>342</b>
Total documents and citations in the sample	115	1.337
<b>Proportion of total production and Citation</b>	<b>27%</b>	<b>26%</b>
<b>Publisher PT</b>	<b>Produção</b>	<b>Citações</b>
Universidade de Brasília	8	234
Faculdade de Biblioteconomia	4	77
ENANPAD, Encontro da ANPAD	4	48
Pós-Graduação em Direito, Engenharia e Gestão do Conhecimento UFSC	3	31
Observatório de Economia e Comunicação (OBSCOM)	2	49
Centro Interdisciplinar de Novas Tecnologias na Educação CINTED	2	31
Instituto de Ciência da Informação	2	25
Fundação Getulio Vargas FGV	2	23
Comissão Especial de Informática na Educação	2	17
Faculdade de Economia, Administração e Contabilidade	2	13
Fundação Perseu Abramo	1	389
Senac	1	228
Conrad Livros	1	150
Centro de Gestão e Estudos Estratégicos	1	131
<b>TOTAL</b>	<b>35</b>	<b>1.446</b>
Total documents and citations in the sample	81	2.609
<b>Proportion of total production and Citation</b>	<b>43%</b>	<b>55%</b>

**Table 5: Production and citation controlled by main publishers in all three communities**

## THE AUTHORITIES ABOUT THE DIGITAL DIVIDE

Citation is less concentrated in the English community than in the Spanish and Portuguese communities. Also, the correlation between citation and production grows as we go from the level of the authors to the level of the institutions and the countries. This means that at the level of author, having a significant production would not necessarily lead to a high citation.

No.	Name of author EN	Cites	Prod.	Name of author ES	Cites	Prod.	Name of author PT	Cites	Prod.		
1	Pippa Norris	4.124	2	Cecilia Castaño Collado	136	4	Sérgio Amadeu da Silveira	681	4		
2	Mark Warschauer	3.325	8	Arturo Serrano Santoyo	159	2	Mark Warschauer	228	1		
3	Eszter Hargittai	2.393	5	Evelio Martínez Martínez	159	2	Marcelo Cortes Neri	138	3		
4	Jan van Dijk	1.354	4	Fernando Ballester	124	1	Othon Jambeiro	107	1		
5	Donna Hoffman	1.181	4	Julio Cabero Almenara	89	2	Helena Silva	107	1		
6	Thomas P Novak	1.181	4	Alisson Silva	106	1	Marcelo El Khouri Buzato	106	2		
7	Kenneth L Hacker	936	4	Pablo Villatoro	106	1	Bernardo Sorj	72	1		
8	Neil Selwyn	890	5	Ada Myriam Felicié Soto	42	1	Luís Eduardo Guedes	72	1		
9	Paul DiMaggio	798	2	Edgar Tello Leal	32	1	Renato Cruz	67	1		
10	Caroline J Tolbert	721	2	Kemly Camacho	30	1	Edilson Cazeloto	66	2		
11	Karen Mossberger	721	2	Daniel Pimienta	25	1	André Lemos	65	2		
12	Robert W Fairlie	702	3	Adriana Gil-Juárez	20	3	Maria Elizabeth Bianconcini de Almeida	64	1		
13	Robert LaRose	701	1	Anna Vitores González	20	3	Antonio Mendes da Silva Filho	60	1		
14	Matthew S Eastin	701	1	Joel Feliu	20	3	Elisa Tomoe Moriya Schlünzen	56	1		
15	Mary Stansbury	699	1	Adolfo Rodríguez Gallardo	23	1	Nize Maria Campos Pellanda	56	1		
16	Lisa J Servon	618	3	Álvaro Cuadra Rojas	23	1	Klaus Schlünzen Junior	56	1		
17	Benjamin M Compaine	616	2	Miguel Zapata Ros	22	1	Lucila Maria Costi Santarosa	53	2		
18	Ellen Helsper	603	2	Natalia Volkow	22	1	Elizabeth Rondelli	49	1		
19	Sonia Livingstone	603	2	José Manuel Robles	17	2	Liliana Maria Passerino	48	2		
20	Amanda Lenhart	566	2	Oscar Molina	17	2	Pedro Demo	47	1		
<b>Concentration →</b>		<b>27%</b>	<b>5%</b>	<b>Concentration →</b>		<b>58%</b>	<b>16%</b>	<b>Concentration →</b>		<b>67%</b>	<b>27%</b>

Table 6: Authorities of the domain.

To identify the authorities of the domain we followed a mixed criteria inspired in Ericsson's et. al. definition of "expert" (Ericsson, Prietula, & Cokely, 2007). Expertise does not correlate only to those most cited authors, but also to those more productive as they have devoted more time to the topic. Authors and Institutions were qualified as result of the average of their position in (A)

the number of documents produced and (B) number of cites received. Combining the performance in these two areas, Table 6 shows the twenty authorities from each of the three language communities. Although differences in productivity and citation are notorious, please note that Sérgio Amadeu da Silveira from Brazil has a significant citation and that Mark Warschauer from the USA has an important position in the Portuguese speaking community. In the EN we have Pippa Norris working in the area of Political Science (Harvard), Mark Warschauer researching education (U.California), Eszter Hargittai working in Sociology (Northwestern University) and Jan van Dijk, who is the only non-resident in the USA, working at the University of Twente, Netherlands, in Sociology. At the bottom of the table, it can be seen the level of concentration in production and citation that these authorities have in each community.

## INSTITUTIONS, FACULTIES AND COUNTRIES RESEARCHING

Same exercise was applied to the institutions where these researchers work. In this measurement, we revised the number of publishing authors working in each of the institutions as a measure of (A) their investment in the Domain and, (B) their success in having cited authors. We also checked the number of years of each institution working into the topic, counting from the date of their first publication up to the last one. This data is included just as indicative information.

	Nome da Instituição EN	Cites	Autors	Years	Nome da Instituição ES	Cites	Autors	Years	Nome da Instituição PT	Cites	Autors	Years
1	University of California	6.174	38	10	CEPAL	216	3	10	Universidade Federal da Bahia UFBA	389	12	9
2	Michigan State University	3.136	25	5	Fundación TELEDDES	159	2	1	Brasil Governo Federal	239	7	10
3	Harvard University	5.426	14	6	UABC Universidad Autónoma de Baja California	159	2	6	Faculdade Cásper Líbero	600	4	8
4	Pew Internet and American Life Project	3.181	11	3	Universidad Complutense	157	5	5	Fundação Getúlio Vargas FGV	169	6	10
5	University of Illinois	1.418	16	7	Fundación AUNA	124	1	1	Universidade Federal do Rio Grande do Sul UFRGS	152	7	6
6	University of Maryland	1.255	25	7	Universidad de Sevilla	91	3	1	Universidade de Brasília	157	5	6
7	University of Wisconsin	1.316	15	6	Universidad Complutense de Madrid	56	11	1	University of California	228	1	1
8	Princeton University	2.361	12	5	Universidad Peruana Cayetano Heredia	50	5	9	Universidade Estadual de Campinas UNICAMP	121	5	7
9	Vanderbilt University	2.757	10	3	Universidad de Puerto Rico	48	2	1	Universidade Federal do Rio de Janeiro UFRJ	145	4	4
10	Northwestern University	2.379	7	5	Universidad Autónoma de Tamaulipas	45	2	9	Universidade Estadual Paulista UNESP	113	3	6
11	London School of Economics	1.177	13	7	Pontificia Universidad Católica de Valparaíso	38	2	5	Pontificia Universidad Católica de São Paulo	88	3	5
12	World Bank	1.165	13	5	Universidad Santiago de Cali	35	5	6	Centro Universitário Feevale	61	4	1
13	University of Texas	880	20	8	Universidad Nacional Autónoma de México	34	3	6	Universidade Federal Fluminense UFF	61	4	7
14	University of Twente	1.500	5	3	Sulá Batsú	30	1	3	Instituto Ethos de Empresas e Responsabilidade Social	76	2	3
15	University of Toronto	1.141	11	7	Universidad de la Sierra Sur	28	8	2	Instituto Superior de Enseñanza Radiofónica ISER	72	1	1
16	Pennsylvania State University	867	16	6	Universitat Autònoma de Barcelona	28	4	2	Escola Nacional de Saúde Pública Sergio Arouca	54	3	1
17	University of Minnesota	950	9	4	Funredes Fundacion Redes y Desarrollo	25	1	6	Universidade Estadual de Maringá UEM	60	1	1
18	Temple University	855	13	4	Universidad Autónoma del Estado de México	24	4	8	UNESCO	48	3	1
19	New Mexico State University	1.125	7	2	Universitat Oberta de Catalunya	24	4	1	Universidade de Santa Cruz do Sul UNISC	56	1	1
20	Henry J Kaiser Family Foundation	1.254	3	1	Universitat de Barcelona	24	2	6	Pontificia Universidad Católica de Campinas	48	2	10
	<b>Concentration →</b>	<b>46%</b>	<b>23%</b>		<b>Concentration →</b>	<b>68%</b>	<b>34%</b>		<b>Concentration →</b>	<b>90%</b>	<b>70%</b>	

**Table 7: Main institutions researching in the domain (citing and publishing authors).**

The sample included 474 institutions in total. The concentration in citation and production increased in comparison to what was seen in the level of authors. Leading institutions EN are University of California (38 documents), Michigan State University (25 documents) and University of Maryland (25 documents) in production. University of California also leads citation followed by Harvard University, highly cited in the area of Political Science due to Pippa Norris. Seventy percent of the EN institutions contribute just with one or two works of scarce citation. In the PT community, Brazil, the position obtain by the Federal Government is notorious although, a small faculty (Faculdade Cásper Líbero) is mostly cited due to Sérgio Amadeu da Silveira. In the Spanish community, most of the works and visibility are concentrated in Spain and Mexico, although, citation and production are scarce.

The main areas of research are Education, Administration, Development Communication, Telcom and IT, Medical Sciences, Information Science and Economy. Although rural populations are said to be an extensive population suffering the Digital Divide, Agricultural Sciences are researched only by the Virginia Polytechnic Institute and they are scarcely cited. Political Science is worth of mention due to its high citation, achieved by Harvard and the State University of New York. Medical Sciences have significant production at Stanford University. Out from the USA, Tilburg University from Netherlands is notorious in Economics and the University of Cape Town in South Africa for research in Computer Science/Telcom.

Country EN	Citing	%	Autors	%	Country ES	Citing	%	Autors	%	Country or State PT	Citing	%	Autors	%
USA	61.978	71%	711	59%	España	783	38%	83	40%	São Paulo	1.112	34%	27	24%
UK	5.956	7%	109	9%	México	536	26%	38	18%	Rio de Janeiro	469	14%	23	21%
Canada	2.899	3%	40	3%	Colombia	62	3%	19	9%	Brasília DF	442	13%	16	14%
Australia	1.312	1%	38	3%	Chile	131	6%	13	6%	Rio Grande do Sul	324	10%	15	14%
Netherlands	2.619	3%	29	2%	Costa Rica	59	3%	8	4%	Bahia	389	12%	12	11%
Germany	1.102	1%	26	2%	Cuba	30	1%	8	4%	Santa Catarina	86	3%	4	4%
International Institution	1.592	2%	24	2%	Perú	64	3%	7	3%	Internacional	48	1%	3	3%
South Africa	557	1%	23	2%	Internacional	226	11%	6	3%	EUA	235	7%	2	2%
China	676	1%	21	2%	Venezuela	19	1%	6	3%	Minas Gerais	24	1%	2	2%
Spain	727	1%	16	1%	Uruguay	23	1%	5	2%	Rio Grande do Norte	18	1%	2	2%
Italy	972	1%	14	1%	Argentina	17	1%	3	1%	Argentina	72	2%	1	1%
Norway	708	1%	12	1%	Puerto Rico	48	2%	2	1%	Portugal	19	1%	1	1%
Singapore	500	1%	11	1%	República Dominicana	25	1%	1	0%	UK	19	1%	1	1%
India	320	0%	10	1%	EUA	6	0%	1	0%	Paraná	18	1%	1	1%
Sweden	287	0%	10	1%	Canadá	4	0%	1	0%	Alagoas	3	0%	1	1%
New Zealand	526	1%	8	1%	Santo Domingo	4	0%	1	0%	<b>Grand Total</b>	<b>3.278</b>	<b>100%</b>	<b>111</b>	<b>100%</b>
Taiwan	229	0%	8	1%	Brasil	3	0%	1	0%					
Austria	502	1%	7	1%	Marruecos	3	0%	1	0%	<b>Brasil</b>	<b>2.885</b>	<b>3%</b>	<b>103</b>	<b>9%</b>
Finland	426	0%	7	1%	Sur Africa	3	0%	1	0%	Percentage based on the figuras from the EN community				
Turkey	363	0%	6	0%	Alemania	2	0%	1	0%					
First twenty countries → 96%				94%	Bolivia	2	0%	1	0%					
<b>Grand Total</b>	<b>87.628</b>		<b>1208</b>		<b>Grand Total</b>	<b>2.050</b>	<b>100%</b>	<b>207</b>	<b>100%</b>					

**Table 8: Main countries researching in the domain (citing and publishing authors).**

A final measurement was made at country level to identify what nations had a leading position in the domain. As expected, the USA raised as the main actor in number of publishing authors and citing but unlike the situation of the other levels (author and institution) here concentrations are even stronger. The USA has 59% of all publishing authors and receives 71 % of the quotation. The interest in the Digital Divide from the perspective of the Political Science is a product of the USA, same as the most of the work regarding Medical Science applications. A surprising case is Netherland, as it has ample visibility being a non-native English speaking country. The USA has authorships not only in English but also in Spanish and Portuguese. The Spanish documents have low citing, but, in Portuguese, the translated work of Mark Warschauer from California

University, USA, is the second most cited document in Brazil.

The Portuguese speaking community was analyzed assimilating Brazil's states as countries. The states of São Paulo, Rio de Janeiro and Brasília (Capital District) concentrate two thirds of the citation in PT. Brazil altogether adds up to be third place in citation and authorships, surpassing Netherland and matching Canada. Unfortunately, this visibility is local due to language barriers so Brazil's voice in the global context of the Digital Divide has no protagonism.

## COLLABORATION TRENDS IN THE DOMAIN

Level	English	Collaboration	International	Spanish	Collaboration	International	Portuguese	Collaboration	International
No. Documents	614	333	51	115	51	4	81	19	5
%	100%	54%	8%	100%	44%	3%	100%	23%	6%
Collaborating Authors	1003	777	128	176	119	13	97	30	14
%	100%	77%	13%	100%	68%	7%	100%	31%	14%
Collaborations		906	141		143	13		49	14
%		100%	16%		100%	1%		100%	29%
Collaborating Institutions	474	355	100	103	60	9	44	22	10
%	100%	75%	21%	100%	58%	9%	100%	50%	23%
Collaborating research areas	25	25	18	20	17	4	18	13	7
%	100%	100%	72%	100%	85%	20%	100%	72%	39%
Collaborating Countries	51	42	35	21	12	7	15	9	5
%	100%	82%	69%	100%	57%	33%	100%	60%	33%

Table 9: Collaboration in different levels of the domain.

Academic collaboration was measured based on its simplest definition which is coauthoring. We looked specifically for inter-institutional collaboration and international collaboration. As it can be seen in table 9, collaboration was stronger in the EN community. But when it comes to international collaboration, all levels and communities have poor results. Portuguese figures measure collaboration between countries and states from Brazil. The only real international collaboration from Brazil was with Argentina in one single document. In the USA, although collaboration is high, the tendency is to make endogamic associations. Table 9 shows the actual number of documents produced in collaboration and the number of collaborating authors.

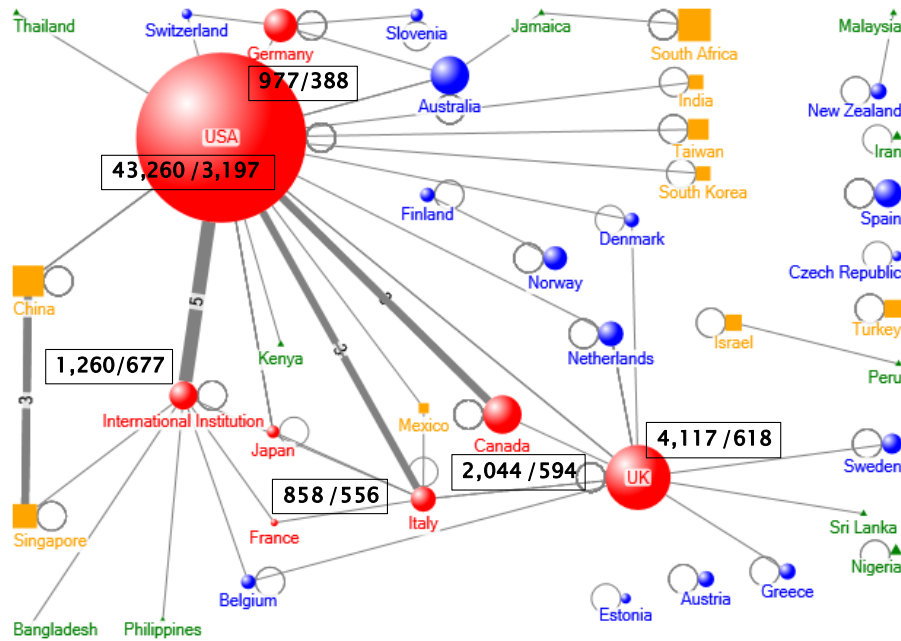
Development levels	Countries with collaboration	Countries with International Collaboration	Authors collaborating	Authors in International collaborations	%	Citing of the collaboration		%
						Citing of the collaboration	Citing of the international collaboration	
ENGLISH								
1. G8	8	8	705	96	14%	52.659	6.173	12%
2. Developed	15	11	110	21	18%	6.027	1.864	31%
3. Emergent	9	8	78	16	22%	2.825	922	33%
4. "Periphery"	10	8	13	8	62%	660	518	78%
SPANISH								
1. G8	1	-	4	-	0%	216	-	0%
2. Developed	1	1	60	4	2%	316	12	4%
3. Emergent	2	1	26	1	4%	407	3	1%
4. "Periphery"	8	5	53	8	9%	284	48	17%
PORTUGUESE								
1. G8 - Very High	2	-	5	-	0%	134	-	0%
2. Emergent - High	2	2	9	5	56%	217	205	94%
3. High - Medium	3	3	24	9	38%	440	225	51%
4. Medium - Low	2	-	11	-	0%	357	-	0%

Table 10: Citation and authoring in collaborations.

Taking this analysis one step forward, all the countries were classified as per their development level and their collaboration networks rechecked. Again, the endogamic tendency was visible in all groups but with special emphasis in G8, that dominates the entire domain. The "Periphery" of the English speaking community has a particularity: their collaborations are more cited if international than when local. Seems their Symbolic Capital depends on their international partners.

G8 in the ES and PT communities is represented by the International Organizations (UN, CEPAL, ITU,

World Bank, Development Banks and the like). The table shows that they also have an endogamic position in these communities. In the ES community,



**Illustration 5: Graphic representation of collaborations networks in the EN community.** red are G8 (“Center”), blue are Developed Countries (“Center”), yellow are Emergent Countries (“Periphery”), green are “Peripheral” countries (“Periphery”). The number in each box is (right) Citation from collaborations, (left) citation from International collaborations.

developed countries are represented by Spain and the Emergent by Mexico. Again, we saw an endogamic behavior. Here, the “Periphery” is composed by all the ex-Spaniard colonies. These countries are also not interested in collaborating.

As said, the Portuguese speaking community, which is Brazil, was divided here into its constituent states in table 10. G8 was represented by International Agencies; “Very High” are all the different government agencies that promote the “Digital Exclusion”

narrative at Brasilia. Again no collaboration. “High” is São Paulo state and “Medium” is Rio de Janeiro state. They have high citing in the inter-state collaboration between the developed regions of the country, but they do not collaborate with less developed states. Finally, “Low” development is the state of Bahia that has the highest citing with few works and total endogamy. In Brazil, the least developed territories has significant visibility working on their own while in the EN community, it is the opposite.

## WHO CITES WHO IN THE DOMAIN

As part of the bibliometric study, this research made a citation analysis within the 90 most cited works of the domain, taking 30 from each of the communities (illustration 6). The results showed that the three communities have very few points of articulation and, citing direction flows from the USA to Spain and Brazil mainly. The central node is Ezter Hargittai, into a cluster configured with DiMaggio, and Warschauer and less associated, with Norris, Hoffman and van Dijk (this last author is the only non USA-based).

The Spanish speaking authors, mainly Spaniards, cite the English speaking authors who in return do not cite them. Their citing relation with the English speaking academy is even stronger than the relation to their Spanish speaking colleagues. No strong links were found between the ES community and the PT community but one quote made by Marcelo Cortes Neri about Juan Alberto Almenara, from University of Sevilla (Spain), and Rodrigo Diaz from IdN Inteligencia



de Negocios (Chile). The only Spaniard citing a Brazilian is Fernando Balletero from Fundación AUNA (Spain).

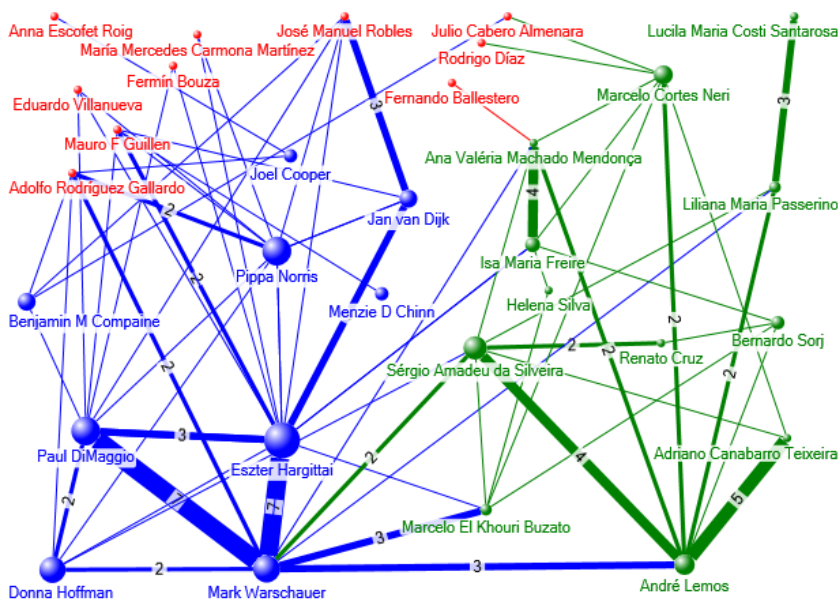


Illustration 6: Citing networks in the domain.

American authors do not interact with Brazilians and vice-versa. Few Spaniards are cited by the Portuguese speaking. Both the PT and ES communities cite English speaking authors but are not cited in return. The density of the citation networks is also another difference: EN authors were cited 146 time, Brazilians 49 and ES 11. English authors quoted 93 times their colleagues and 4 times Brazilians. Spanish authors quoted 41 times English authors and just 9 times their colleagues. Brazilians tend also tend to cite more their colleagues (43) and then, the English speakers (12).

Between the Portuguese speaking community and the EN community, there are few more links, most of them flown from the English to the Brazilian authors. As seen in illustration 6, Hargittai and Warschauer are the connecting nodes and this last author, the only English speaking authority citing two Brazilians: Sérgio Amadeu de Silveira and Marcelo El Khouri Buzato.

In conclusion, from the citing point of view, we see here three separate systems that almost do not interact. Latin

Community	No of cites made			
	EN	ES	PT	Total
EN	93	-	4	97
ES	41	9	2	52
PT	12	2	43	57
<b>Total</b>	<b>146</b>	<b>11</b>	<b>49</b>	<b>206</b>

Table 11: Citation network values.

## TOPICS ON THE DIGITAL DIVIDE

What are the territories studied in the domain? What were the most common subjects and topics? What is the attitude of the studies in regard to ICT? These were the questions that guided the Content Study of this research, that used a classificatory approach. An additional analysis classified the documents regarding their type of methodology, to find whether the production of less conjectural discussions and more empirical studies, had something to do with the declining in the production of documents about the Digital Divide.

Regarding the attitude of the documents we applied a classification inspired in the work of Richard Duque (Duque, 2007) in Chile, that stated three kind of attitudes in front of ICT: idealization, rejection and critical. In this research we add up a fourth category which was the “denial attitude”.

In the English community and the entire domain, the most referred country is the USA with 38% citing and 31% production. Other common “territory” referred into the literatures was “Comparative studies between various countries” with 11% of the quotes and 6% production. The UK has 2% citing and 3% production and Netherland has 2% citing and 1% production. In the Spanish speaking community, the center of attention is Spain with 16% citation and 13% production. In Portuguese, the documents mention Brazil in 51% of the works and these documents have 33% of the citation in the community.

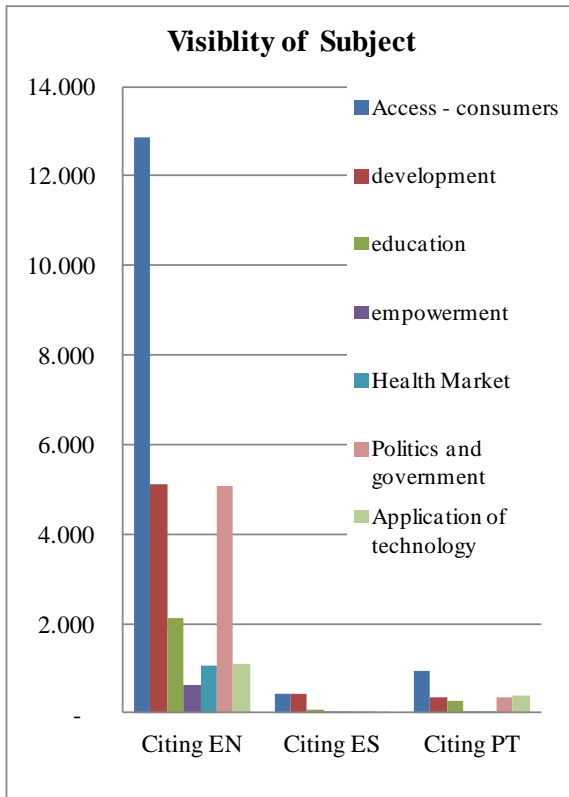
By regions, North America is present in 33% of the documents and collects 39% of the citing, Europe get referred in 9% of the works that get 8% of the citing. Spain may add up to Europe a 3% of documents written in Spanish, with a citation that does not reach 1%. This shows that process of integration of Spain into the European Community, has moved the attention of this country away from its Latin America ex-colonies. Africa is cited (in English) 3% in 5% of the documents while Asia gets (also in English) 3% citation with 7% of the documents. Latin America just reach 2% of citation (Adding up Spanish and Portuguese) with a number of documents that would be 14% if accounted against the English speaking community.

The topics or subjects studied in the papers were classified into categories that were refined from Semantic Units collected from all abstracts and summaries. In the end and after refining several times these categories, we ended with the following:

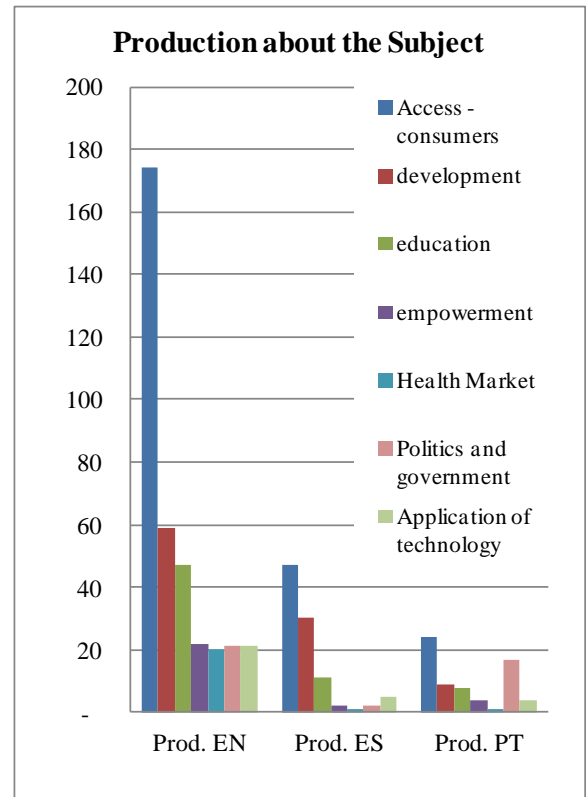
1. Access – consumers (how to provide access to supply services to a certain population)
2. Development (named as a desired state of wealth that was not clarified)
3. Education (formation of competences and integration of ICT into education)
4. Empowerment (ICT as source of community self organization)
5. Health Market (same as access but specific for health and medical services)
6. Not specified
7. Politics and government (application of ICT to e-government or political participation)
8. Application of technology (new technologies that might solve access problems).

As it can be seen in illustrations 7 and 8, the main preoccupation of the domain has been Access and Development, although the concept of Digital Divide was heavily criticized due to the reductionism involved in the narrative called as the “Haves vs. HaveNots” (the division between those who have access and those who not). If we analyze the development of these narratives through time using the English Speaking community as an example, it will be clear that these two narratives never left the literature of the domain although they got worn out in the process to the point of almost disappearing before year 2011(illustration 9).

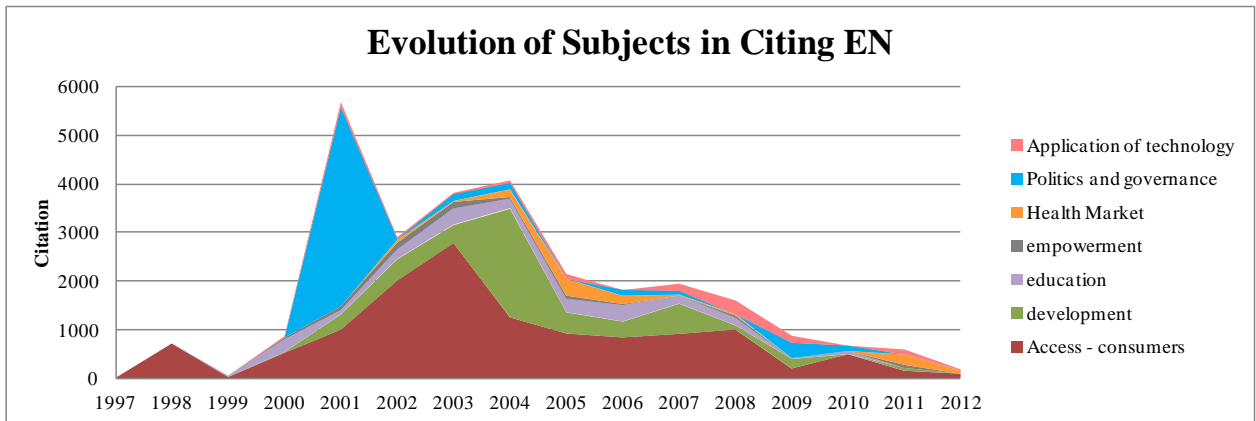




**Illustration 7: Citation of each subject.**



**Illustration 8: Production of each subject.**



**Illustration 9: The evolution of the subjects in the domain between years 1997 and 2011.**

Regarding the attitude of the works made in the domain and their methodological nature, what can be seen is that the domain had some idealistic attitudes in the beginning but, they were decreasing as time passed. Critical attitudes had peaks of citation that might have affected the idealistic position and integrated it into the factual perspective.

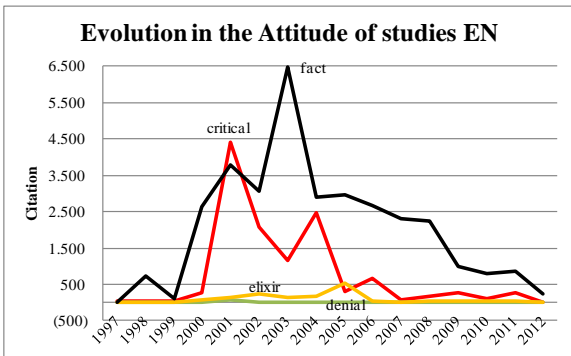


Illustration 11: Evolutions of attitudes EN (Citation).

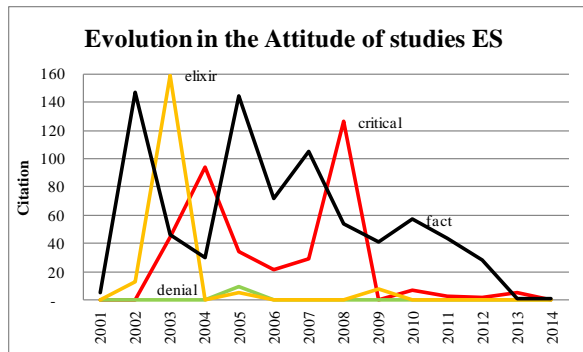


Illustration 10: Evolutions of attitudes EN (Citation).

Here is important to note that when speaking about “Critical” or “Factual” attitudes in the domain, we are referring to views that were in or out of the paradigm that would consider the Digital Divide as a phenomenon of unquestionable existence. We observed several works based on the “Fact” paradigm that began to question some concepts inserted into it like, i.e., the “divide analogy” or the techno-determinism involved associated to it. It is possible that between years 2001, 2006 and 2008, which were the peaks of citing of the “Critical” perspective (illustrations 10, 11 and 12 ), this vision began to merge with the “Factual” perspective so the flaws of the paradigm began to be evident and the analogy of divide, gap or exclusion began to be less and less interesting for academics.

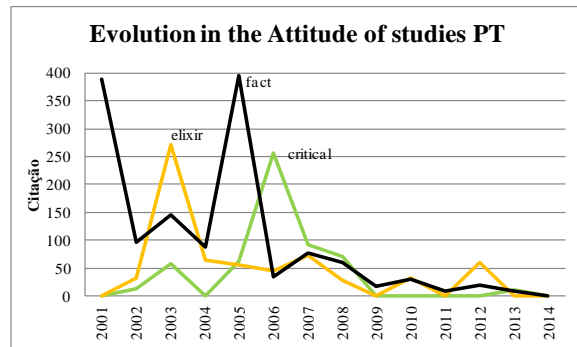


Illustration 12: Evolutions of attitudes EN (Citation).

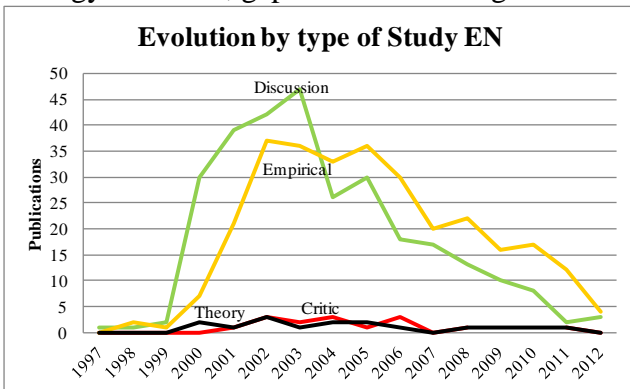


Illustration 13: English publications per type of study.

Regarding the methodological nature of studies, what can be seen is that since year 2004, the EN community had tendency to increase the production of empirical studies and then, the number of “discussion documents” began to lose terrain steadily. Seems that empirical research began to control speculative writing into the domain. That evolution in the PT community between 2007 and 2010 but it is no clear in the ES community.

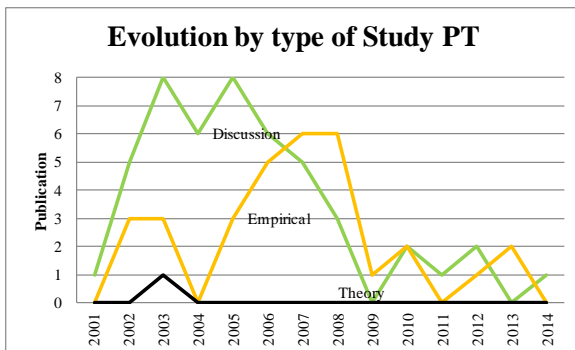


Illustration 15: Portuguese publications per type of study.

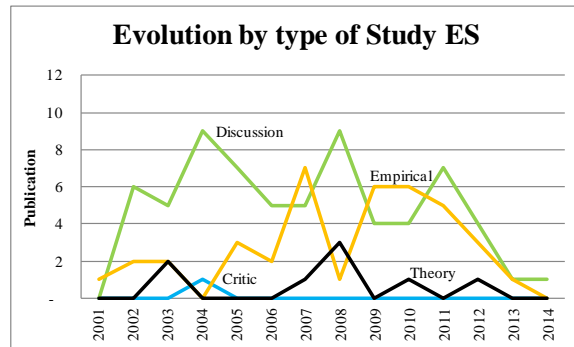


Illustration 14: Spanish publications per type of study.

Two more tendencies are visible: there was no theoretical production and that the number of works carried with Critical Methodologies were also very limited.

A last search was made using word counter (Textalyser V 1,05) and the results were aligned with the results of the bibliometric study: (A) most frequent words were related to access (“access to”, “internet access”, 3<sup>rd</sup> and 4<sup>th</sup> place in frequency); (B) the reference to “development” i.e. “developing countries” were regular (10<sup>th</sup> place in frequency) but their preeminence (importance or salience within the text) was low (20/100). In contrast, (C) references the word USA and to its telecommunication authorities, i.e., “of the Unites States”, “in the US”, “of the US”, “NTIA”, had regular frequency (17<sup>th</sup> place in frequency) but high preeminence (an average of 80/100)

## A BRIEF COMMENT ON THE HISTORY OF THE DIGITAL DIVIDE

We will not extend here on the historical revision of the term as it is an extensive question that cannot be summarized easily, and we have referred to it in two previous works (Cristian Berrío-Zapata, Jorente, & Sant'Ana, 2014; Cristian Berrío-Zapata, Valentim, Sant'Ana, & Umaña, 2015). Here we will just try to point out those elements that let us have a better understanding and interpretation of the findings made through this research.

1. The Information Society is a project born in Western Society with a history of more than 500 years<sup>3</sup>, and specifically in the USA, as it was shown by the works of Mattelart and Breton (P. Breton, 1991; Philippe Breton & Proulx, 1996; Armand Mattelart, 1998; A. Mattelart, 2002; Armand Mattelart, 2005a, 2005b). Such project involves more than a simple technological change; it is the birth of a new form of globalism, post-Fordims and neocapitalism, a Distributed Capitalism and the Digital Panopticon in the words of Zuboff (Zuboff, 1988, 2013). This system mixes economical, political, military, cultural and technological ways of action that tend to perpetuate a state of dependency between few powerful groups (the so called “Center”) and vast populations and territories (the so called “Periphery”), as describe by different models and theories like the Electronic Colonialism

<sup>3</sup> In our historical revision we go back to the first calculating and tabulating machines produced by Pascal, Leibnitz, Babbage (Europe) and Hollerith (USA) around XVII century, and the historical path produced by the mechanization of printing with Gutenberg’s press.

(McPhail, 1981), Center-Periphery Theory (Amin, 1977; Di Filippo, 1998; Dos Santos, 1998; Prebisch, 1986, 2008), Soft Power (Nye, 1990, 2004) and Cultural Imperialism (Said, 2011).

2. Such system produced two castes of citizens: those associated with the exploitation of knowledge and technology and those who were estranged to such capacities or motivations due to characteristics of education, attitude, culture, language, competence, localization and many other. These two groups have a conflictive relation of power and domination in different levels, different areas and under different names, i.e. “Knowledge Workers vs. Service Workers” (Drucker, 1994; P.F. Drucker, 1999; Peter F Drucker, 1999), Digital Natives vs. Digital Immigrants (Prensky, 2001) or information “Hot vs. Cold” societies (McLuhan, 1964; McLuhan & Fiore, 1968).
3. The narrative of the Information Society masked all these conflicts and soft domination systems under Myths (Barthes, 2001), ideologically connoted metaphors that through Grand Narratives (Lyotard, 2004) about Global Integration, Humanity Oneness and Development based on Science, Education, ICT<sup>4</sup> and Connectivity (WSIS, 2005), had come to naturalize what we will name the “Digital Order”.
4. During the upheaving of the Internet era in the decade of 2000, anything out of such order was considered unfortunate. The developed and powerful launched a discursive campaign about rescuing the excluded from their faith, a state that was called Digital Divide. Such concept was taken by the mass media and politicians as a neutral paradigm, a useful alibi to renew the hopes about a new state of development for the undeveloped, excluded or limited, who are most of the population of the world. Under such Grand Narrative, the Digital Divide has been reproducing all the characteristics described above in item one and the conflicts listed in item two.

This brief context let us now conclude about the meaning of the findings made by this research. Is it possible to perceive this situation in the characteristics of the academic literature of the Digital Divide?

## CONCLUSIONS

The importance of a critical discourse analysis lies in the fact that concepts like the Digital Divide mobilize policies and investments. Private interest and socioeconomic orders get naturalized associated with technical narratives built up on the mythic status of science and technology, transforming them into “*necessary and unavoidable*”. This does not deny the benefits of information technology but warns about disguised costs and collateral damages that currently are not being considered, mainly by the governments of developing countries and their citizens. It is necessary to unveil these dynamics, giving the host community the chance of understanding the equation of costs and benefits.

The results showed that this Knowledge Domain, as many others, is monopolized by the USA from almost every point of view. Being the main erector of the computer age and the inheritor of

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the European industrial order, this outcome is not a surprise. Europe follows the USA in the distance, led by the UK and act as satellite in the reproduction of the discourse. The G8 (not including Russia as it has minimum visibility in English) was the international sponsor of the Digital Divide when in the year 2000, in Osaka, they took the Clinton-Gore narrative from 1996 (Clinton & Gore, 1996) and change it from a local vision of the USA government to a global agenda. In this research was shown that countries that are distant to the USA-G8 core whether in geopolitics, language or culture, even if developed or big literature producers and highly cited as Russia or Brazil, will have low collaboration and visibility (illustration 16). The dissemination of the narrative of the Digital Divide correspond more to a “Big-Bang” structure that now is under involution (illustration 18).

		Year												Production Level				
		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008		2009	2010	2011	2012
ENGLISH	1. G8	1	3	3	36	56	68	72	55	64	46	34	29	23	20	13	4	45 - 100
	2. Developed	-	-	-	1	4	10	10	7	2	4	1	8	3	6	3	3	15 - 44
	3. Emergent	-	-	-	1	1	4	3	1	1	2	1	-	1	-	-	-	5 - 14
	4. "Periphery"	-	-	-	1	1	3	1	1	2	-	1	-	-	-	-	-	1 - 4
SPANISH	1. G8 representative	-	-	-	-	-	2	2	1	2	1	1	-	-	2	-	2	45 - 100
	2. Developed	-	-	-	-	1	2	4	2	4	-	9	9	7	3	6	3	15 - 44
	3. Emergent	-	-	-	-	-	1	3	3	1	5	1	2	1	3	4	-	5 - 14
	4. "Periphery"	-	-	-	-	-	3	-	4	3	1	2	2	2	3	2	3	1 - 4
PORTUGUESE	1. G8 representative	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	45 - 100
	1. Very High	-	-	-	-	-	-	-	-	5	3	1	3	-	-	-	-	15 - 44
	2. Developed	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	5 - 14
	2. High	-	-	-	-	1	3	2	3	2	3	3	2	-	1	-	2	1 - 4
	3. Emergent	-	-	-	-	-	2	3	1	1	2	1	2	1	-	-	-	
3. High - medium	-	-	-	-	-	3	6	1	1	3	4	-	-	1	-	1		
4. Medium - low	-	-	-	-	-	-	-	1	2	-	1	1	-	1	1	-		

Illustration 16: Production in the domain related to level of development.

It was shown that the English, Spanish and Portuguese speaking communities have slight differences in their way of naming this concept: Divide, Gap and in Brazil the dominant is not Exclusion but Inclusion. What would be the semiotic consequences of those different analogies is yet to be researched.

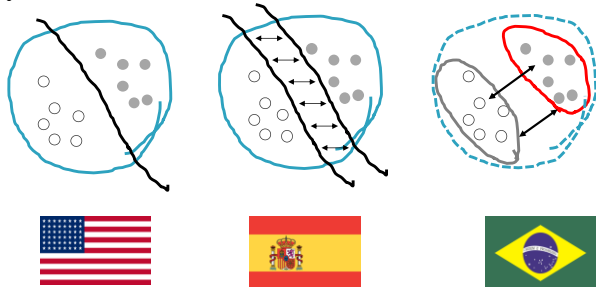


Illustration 17: Different analogies of the Digital Divide.

The domain is decreasing in production and citation, and also as a demanded term in the Internet. Why is this happening?

A first answer might be provided looking at the characteristics of the literature. Although the big stake of production and citation comes from journal articles, books dominate with an efficient relation production-citation. This implies that

fewer authors have the capacity of moving the visibility of the domain. Books are also media that offers the most effective copyright restrictions to access. If the top authors that produced these books like, i.e., Norris, Warschauer or Capaigne lost their interest or migrate to other fields, then the domain suffers a reduction in its dynamic. And the costs and restrictions of copyright applied

to books do not help.

An additional reason seem to be that being the Digital Divide a simplifying concept, as it was criticized by the core authors of the domain, seems that everything that can be said was spoken. The only way to move forward is to get out of the paradigm. A third reason might come from the change in perspective suffered in the USA as consequence of the passage from the Clinton administration to the Bush administration. The latter took the Digital Divide as a solved problem and concentrated in building an “open market” for IT services. All programs and support for the fight against the Digital Divide was taken, and the concept changed to the “Mercedes Benz Divide”: everyone has access but some may pay better access (Bulger, 2007; Rapaport, 2009).

		Year												Citing Level				
Geopolitics		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008		2009	2010	2011	2012
ENGLISH	1. G8	43	758	144	2,903	8,103	4,790	7,110	5,322	3,598	2,631	2,311	1,955	1,155	806	973	144	2,000 - 6,000
	2. Developed	-	-	-	21	227	406	564	182	98	677	16	480	90	144	157	79	500 - 1,999
	3. Emergent	-	-	-	35	17	99	42	13	31	62	53	-	34	-	-	-	150 - 499
	4. "Periphery"	-	-	-	16	46	74	30	17	55	-	28	-	-	-	-	-	1 - 149
SPANISH	1. G8 representative	-	-	-	-	-	11	15	2	136	4	19	-	-	7	-	3	2,000 - 6,000
	2. Developed	-	-	-	-	5	130	34	82	37	-	96	160	35	17	31	21	500 - 1,999
	3. Emergent	-	-	-	-	3	3	201	15	4	86	4	6	4	25	10	-	150 - 499
	4. "Periphery"	-	-	-	-	-	16	-	25	16	4	15	14	10	15	6	6	1 - 149
PORTUGUESE	1. G8 representative	-	-	-	-	-	-	11	-	-	-	16	-	-	-	-	-	2,000 - 6,000
	1. Very High	-	-	-	-	-	-	-	-	310	47	25	28	-	-	-	-	500 - 1,999
	2. Developed	-	-	-	-	-	-	-	-	-	-	-	13	-	19	-	-	150 - 499
	2. High	-	-	-	-	389	43	159	133	83	243	111	69	-	10	-	61	1 - 149
	3. Emergent	-	-	-	-	-	30	21	11	9	12	28	41	18	-	-	-	-
	3. High - medium	-	-	-	-	-	70	285	3	56	34	39	-	-	33	-	20	-
	4. Medium - low	-	-	-	-	-	-	-	5	55	-	25	11	-	1	9	-	-

Illustration 18: The “Big-Bang” of citing in the domain related to level of development.

The literature in the English speaking world has been absorbed by the for-profit publishing model so now it is part of the business, and part of the exclusion system that it tries to attack. The “bypass” phenomenon produced by authors and institutions giving free-unapproved access to their work is worth of study. It is a self-organized dynamic of liberation that tries to balance the model imposed by publishing corporations. In the ES and PT communities, the openness of sources is significant, but they have an important number of works not digitalized and the level of production and quality is lesser.

The authorities of the domain are well defined: Norris, Warschauer, Hargittai, van Dijk, Hoffman and Novak, all from the USA except van Dijk. The Brazilian Sergio Amadeu da Oliveira is the only non English speaking author that might be at the level of production and citation of a “second tier” author from the EN community (authors with cites between 550 and 1,000). The Spanish speaking authors are far from these numbers and most concentrated in Spain and Mexico. In the level of institutions the concentration in production and citation increase: University of California is the leader. At the level of countries, we found maximum concentration, so the domain turns into an internal monologue of the USA and not a global conversation.

Such centralization of Symbolic and Economic Capital has consequences in collaboration and

visibility. USA authors tend to work with and cite their colleagues; developed countries do the same. The Digital Divide was supposed to rescue those excluded from the benefits IT, but almost no one want to write with authors from those groups or cite them. Developed countries research their own problems and collaborate between them. The international Institutions like UN and the World Bank, only collaborate with G8 countries. The collaboration between Developed and Developing countries is rare, even in the Spanish speaking community, where Spain does not cite or work with its ex-colonies. The case of English speaking “Peripheral” countries is illustrative: they get wide more citing for the few works made in collaboration with other countries than from those “home-made”.

The special case of Marc Warschauer must be mentioned, as one of the researchers with a true cosmopolite view of the problem, not only because his numerous works out of the USA but, for his intention of including global perspectives into his work, and recognize the ideas of non-English speaking authors by citing them.

Although the authorities of the domain agreed about the reductionist nature of the Digital Divide concept (the dichotomy between access and no access, the question about “inclusion for what” which criticizes the ideal of “development”), it was found was that the subjects that still prevail in the domain are Access and Development.

Access has a connoted second face: creating consumers. Every newly included citizen on the name of fighting the Digital Divide is a new client for computers, telecommunication infrastructure, wide-band connection, software, browsers, and social networks. The poor and the isolated are included not for their own right, but as part of a giant emergent market that may move demand in a saturated economy. The poor are the market of the future (Pralhad, 2010), even if they do not have money, as they will push their governments to invest fortunes in infrastructure and services on the name of progress and inclusion. Such perspective of inclusion does not ask about social justice, the construction of self-determination and autonomy. This new kind of patronage is becoming extended, common and widely accepted at high political level in developing countries, like the case of Facebook’s Internet.org project, where free Internet services are provided associated with practices like “Zero-Rating” and limiting access to a free Internet. This program has been accepted, after a conversation between Marc Zuckerberg and the president of Brazil, to supply free Wi-Fi to the biggest *favela* in São Paulo. The discourse of Development and Access is reluctant to die although the domain may be declining.

The analysis of the attitude in the studies showed that we passed from a high level of certainty about the existence of the Digital Divide and some idealizations about technology, during the first years of the year 2000 decade, to a more critical and cautious perspective. Critical documents balanced the high peaks of citation that the “Fact” view had between years 2000 and 2005. In the English speaking community it was very clear that in year 2003, Empirical works came to compensate high production of Discussion literature and some of the idealistic speculations coming from there. That process was not so clear in the ES and PT communities, where empirical research is not strong. The domain characterizes for an almost inexistent theoretical development, another symptom that may indicate that the analogies of the Digital Divide were so simplistic that no strong theorization was possible.

If we should answer to the question whether the academic domain of the Digital Divide responds to a “Center-Periphery” structure, we would say yes. It is not a singularity of this domain, as knowledge in general is concentrated in developed countries and specifically in the USA. But this narrative was part of the creation of a new global social order, and turned into an instrument for securing the ideological expansion of Distributed Capitalism and the construction of a Post-Fordist infrastructure of de-centered Industrialism and consumerist market, under a Soft Power structure.

Should we abandon any research about this domain? No, but we should look for critical perspectives that would lead us to epistemological, theoretical and ideological options that look beyond the capitalistic focus on richness concentration and consumerism. This seems to be a difficult task for academic communities, as they live a moment of disinvestment in science and education.

New challenges are coming, i.e. Transparency, Open Access, Net Neutrality, Privacy, all of them concepts that are extremely important but that can also suffer connotation processes and turn into myths that may help hiding ideological flaws. To avoid that, Critical Research is extremely important and Domain Analysis a strong tool for work.

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NOTE: All images and tables from this text have been extracted from the Phd thesis “Exclusão Digital na perspectiva da Teoria Centro-Periferia, Tecnologia da Informação, Informática, Discurso e Poder: Análise de Domínio”, from Cristian Berrío-Zapata. To be defended on July 2015.

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