

The digital birth of an African city.
The case of Douala

A dissertation presented by
Marta Pucciarelli

Supervised by
Prof. Lorenzo Cantoni

Submitted to the
Faculty of Communication Sciences
Università della Svizzera italiana

for the degree of
Ph.D. in Communication Sciences

2019

Marta Pucciarelli, The Digital Birth of an Africa City. The case of Douala. Doctoral dissertation. Università della Svizzera italiana, USI, Lugano, Switzerland, 2019



A ma chère Ginette...

Pour m'avoir amenée à Douala pour la première fois.

Pour me l'avoir faite découvrir, aimer, parfois haïr.

Mais surtout pour avoir été à mes côtés, en me sollicitant à regarder cette ville dans toute sa complexité, avec empathie et avec un grand esprit de curiosité et d'ouverture.

Abstract

This dissertation focuses on the online communication and representation of a digital city in Africa: Douala, the largest city of the Republic of Cameroon. In particular, it explores the evolution of the web-based reproduction (Couclelis, 2004) of Douala, the largest city of the Republic of Cameroon, from a chronological, spatial and representational perspective, with the purpose of understanding how its representation is produced and its relations with the physical city. This is paramount for scholars, practitioners and the civil society as the gaps between available online information and the physical world shape our knowledge and expertise of the world, and invisible places in the virtual representation may remain unknown to many people (Graham, 2013).

The study of the digital Douala is led by three research questions, which contribute to fill the empirical, methodological and theoretical gaps concerning digital cities in Africa. Each question constitutes a different phase of the research and it uses a mixed method approach for data collection and analysis.

The first phase is led by the question: *What does access to information and knowledge mean in Douala?* It is a contextual study framing the challenges and tendencies in the production and distribution of oral, printed and digital information within the city of Douala and about the city itself. Data has been collected online and during a first exploratory fieldwork in Douala through ethnographic observation, interviews, and questionnaires. Warschauer's model of ICT access (2002) has been used to present the results, and content and descriptive analyses of data have been performed. Outcomes reveal that in Douala access to information and knowledge is marked by a predominantly oral tradition and that the production and distribution of written (printed and digital) information are challenged by a frail technological infrastructure, poor content, and few human and social resources. However, the growing diffusion of mobile devices, the existence of national strategies and private investments focused on ICTs and Internet adoption, show a clear leap from oral to digital communication that does not linger on the printed media step.

In light of these considerations, the second phase of the research is led by the question: *How is the digital Douala produced?* This phase focuses on the coming online of the digital city of Douala, by presenting those socio-economic activities who are contributing to shape the online landscape, where they are based, the visible and invisible areas of the city emerging in the online space, and their evolution over time, since the diffusion of the internet and in three selected periods (2007, 2010 and 2013). Data was collected through document analysis and online research, while descriptive and map analyses have been used to present the results quantitatively. Outcomes show a conceptual difference when adopting a synchronic versus a

diachronic view in the data analysis. The synchronic view mirrors a clear parallelism between digital and social inclusion/exclusion (Graham 2014, Unwin 2015). This perspective depicts the online Douala as an economic and commercial hub, one third of whose activities are performed by international companies, and which is mostly visible in its coastal and better served areas. The diachronic view adds a time layer, as well as the relative presence of socio-economic activities within their own business categories and neighborhoods (online saturation). It demonstrates that the areas where little business activity is formally registered have a greater effort and motivation to communicate their online presence. This ensures indirect visibility to the neighborhood they belong to, and it is highlighted by three salient aspects: 1) the online visibility of the most diffused categories of socio-economic activities within the city of Douala does not result in higher online saturation; 2) the categories that show a significant online growth in the years 2007, 2010 and 2013 are the ones with less physical presence in the city, and whose headquarters are just in Douala, with few or no branches spread in the city; 3) the higher the number of formal activities in a given area, the lower is the online saturation rate of the area.

The third phase is led by the question: *How is the digital representation of Douala (mis)aligned with the physical one?* This phase provides a reflection on “hybrid cities” in Africa (Graham, 2008), i.e. the influence of the digital city over the physical one, through the analysis of local residents' city representations (mostly created through an offline experience with the city) compared with the representations by foreigners (mostly created through an online experience with the city). Data was collected in two different moments: during a second ethnographic study in Douala through interviews, one focus group, 22 neighborhoods visited and ethnographic notes; and through the analysis of 130 User Generated Content on TripAdvisor performed in October 2016. Social Representation Theory (Moscovici, 1988) has been used to collect data in Douala and to perform the content and comparative analyses. The thematic and geographic comparisons of locals and foreigners' social representations show that the hybrid Douala is still at an early stage of existence, and it addresses (and influences) mostly an international public that travels to Douala, rather than locals. At the same time, it is worth noting that the cultural industry in Douala generates a new space of interactions between online and offline representations of the city, showing overlaps in the international and local public's narratives and practices around cultural places.

To conclude, this study contributes to researches at the intersection of ICT4D, Internet studies and Urban studies by presenting an overview of the digital Douala, an African digital city, since its birth, not limited to its snapshot in a given period, but observing its movement, its growth and its continuous evolution, as well as its own way to influence the digitalization of local practices as well as visitors' experience of the city.

Acknowledgements

This thesis could never have been possible without the support of many people, proving each one to be an invaluable help during this seven years long journey. I would like to express my sincere gratitude to all those who believed in me, who supported me professionally, who encouraged me to bring this research to the end, and who helped me to find the time to dedicate to writing, especially by looking after and entertaining my children. First of all, my supervisor and professor Lorenzo Cantoni, for his competence, patience, and esteem that he has been able to instill in me and in my research; Jean-Pierre Candeloro, my director at the Laboratory of Visual Culture (SUPSI) since 2014, for encouraging me to finish and to pursue new research directions; Iolanda Pensa, responsible for the area “culture and territory” at LCV, for inspiring me to start this PhD journey, and for being a constant professional reference and human support since the beginning of this work. An infinite thanks goes to all SUPSI and USI's working groups, and in particular to my ex-colleagues at the New Mine Lab who until the very last moment have been close to me (even from four continents and two airports), taking the time to reread what I wrote, advising me, and pushing me to seek the excellence, always: Isabella Rega, Sara Vannini, Anna Schwendener, Amalia Sabiescu, Simone Sala, David Salomao, and — impossible to leave out — Paolo Brunello; all people I met in Douala in the frame of the project Mobile Access to Knowledge Culture and Safety in Africa: Marilyn Douala Bell and Didier Schaub, souls of doual'art, Caroline Ngoungni, the only and best research assistant I have ever had (to her goes my gratitude for teaching me how to succeed in Douala, with all the necessary precautions, and to overcome the fear of circulating by moto-taxi), Yves Makongo, Gilles Ngateu, Koko Komegné, Lionel Manga, and all the staff of doual'art, including tourist guides. My roommates and fellow adventurers, Giovanna first and Bathilde later, to Arnaud and to all the staff of the Mission Baptiste who make me feel safer in Douala.

E infine ci sono dei grazie che è bene che scriva in italiano, affinché vengano compresi.

A te, Davide. Ci siamo sposati all'inizio di questo viaggio, e mi hai accompagnato in questo percorso in ogni singolo istante (raggiungendomi persino a Douala!), hai ascoltato e sopportato rispettosamente ogni mio dubbio e paura, trovando sempre un motivo valido per farmi arrivare fino in fondo, sebbene la stesura della tesi negli ultimi anni, sia coincisa con la nascita di Leonardo ed Elettra. Un enorme grazie va ai miei suoceri, Graziella e Daniele, per la loro ineguagliabile disponibilità e per tutto l'amore che hanno saputo trasmettere a me e ai miei figli, aiutandomi quotidianamente sia nella loro cura, che concedendomi periodi di lavoro no stop portando in vacanza i bambini. A Simona, che è entrata nella mia vita in punta di piedi ed ha dato ritmo alle mie giornate e quelle dei miei figli, diventando risorsa preziosa e insostituibile per ognuno di noi, una tata “praticamente perfetta in ogni suo aspetto”. Alle mie sorelle, Luisa e Maria, a mio fratello Francesco, a mia cognata

Giada e a tutti gli amici e le amiche che in questi anni hanno contribuito a sollevarmi le fatiche e lo spirito con tutto il divertimento necessario. E infine, non c'è grazie che potrebbe esprimere abbastanza quanto devo a mia madre per aver sempre creduto in me, perchè è a lei più di tutte che devo la mia determinazione nell'affrontare le sfide e ad accettarne le conseguenze con responsabilità, mantenendo sempre viva la voglia di crescere e migliorarmi.

Table of Content

ABSTRACT	I
ACKNOWLEDGEMENTS.....	IV
TABLE OF CONTENT	VI
LIST OF FIGURES	IX
LIST OF TABLES	XI
INTRODUCTION	XII
1. LITERATURE REVIEW	1
1.1 INTRODUCTION	1
1.2 THE RELATION BETWEEN ICTS, SOCIETY AND CITIES	4
1.2.1 <i>The context of the informational and knowledge society.....</i>	5
1.2.2 <i>Theoretical approaches to ICT and digital cities</i>	9
1.3 TOWARD A DEFINITION OF THE DIGITAL CITY	14
1.3.1 <i>Urban and digital development studies.....</i>	14
1.3.2 <i>Digital city or smart city?.....</i>	22
1.3.3 <i>Digital city in Africa.....</i>	25
1.3.4 <i>Positioning this thesis within the digital city research.....</i>	27
1.4 ICT AND UNEVEN DEVELOPMENT.....	33
1.4.1 <i>The digital divide.....</i>	34
1.4.2 <i>Digital divide and information inequalities.....</i>	36
1.4.3 <i>Models of access to ICTs in developing countries</i>	38
1.4.4 <i>Uneven development and geography of information.....</i>	42
1.4.5 <i>The geographies of the internet</i>	45
1.4.6 <i>Mapping the geographies of information.....</i>	48
2. RESEARCH DESIGN	59
2.1 RESEARCH GAPS	59

2.2	RESEARCH QUESTIONS.....	60
2.3	METHODOLOGY	60
2.3.1	<i>Phase 1 – Contextual study</i>	60
2.3.2	<i>Phase two – The digital Douala</i>	61
2.3.3	<i>Phase 3 – The hybrid Douala</i>	61
2.4	ROAD MAP	62
3.	OUTCOMES	65
3.1	WHAT DO WE KNOW ABOUT DOUALA? ACCESS TO INFORMATION IN AND ABOUT THE LARGEST CAMEROONIAN CITY	65
3.1.1	<i>Introduction</i>	65
3.1.2	<i>Related work</i>	66
3.1.3	<i>The case of Douala</i>	69
3.1.4	<i>Methodology</i>	70
3.1.5	<i>Results</i>	71
3.1.6	<i>Discussion</i>	84
3.1.7	<i>Conclusion</i>	86
3.2	MAPPING THE DIGITAL DOUALA: LIGHTS AND SHADOWS OF AN AFRICAN CITY.	88
3.2.1	<i>Introduction</i>	88
3.2.2	<i>Related works</i>	89
3.2.3	<i>The case study: Douala</i>	92
3.2.4	<i>Methodology</i>	92
3.2.5	<i>Outcomes</i>	95
3.2.6	<i>Conclusion</i>	102
3.3	THE DIGITAL BIRTH OF AN AFRICAN CITY. AN EXPLORATORY STUDY ON THE CITY OF DOUALA (CAMEROUN)	104
3.3.1	<i>Introduction</i>	104
3.3.2	<i>Literature Review</i>	105
3.3.3	<i>Outlining The Douala Case</i>	108
3.3.4	<i>Methodology</i>	109

3.3.5	<i>Results</i>	111
3.3.6	<i>Conclusion</i>	120
3.4	DOUALA AS A “HYBRID SPACE”: COMPARING ONLINE AND OFFLINE REPRESENTATIONS OF A SUB-SAHARAN CITY	122
3.4.1	<i>Introduction</i>	123
3.4.2	<i>Literature Review</i>	125
3.4.3	<i>Methodology</i>	127
3.4.4	<i>Outcomes</i>	131
3.4.5	<i>Discussion</i>	148
3.4.6	<i>Conclusion</i>	153
4.	CONCLUSION	156
4.1	WHAT DOES ACCESS TO INFORMATION AND KNOWLEDGE MEAN IN DOUALA?	157
4.2	HOW IS THE DIGITAL DOUALA PRODUCED?.....	159
4.2.1	<i>Synchronic view of the digital Douala</i>	159
4.2.2	<i>Diachronic view of the digital Douala</i>	160
4.3	HOW IS THE DIGITAL REPRESENTATION OF DOUALA (MIS)ALIGNED WITH THE PHYSICAL ONE?.....	163
4.4	PRACTICAL IMPLICATIONS.....	165
4.5	LIMITS OF THE RESEARCH	166
4.6	FUTURE DEVELOPMENTS	166
	BIBLIOGRAPHY	168
	ANNEXES	181
	DOUALA FLOW	181
	A JOURNEY THROUGH PUBLIC ART IN DOUALA: FRAMING THE IDENTITY OF NEW BELL NEIGHBORHOOD	183
	LIST OF INTERVIEWS	200
	QUESTIONNAIRE.....	203

List of figures

FIGURE 1 REPRESENTATION OF THE THREE FIELDS OF STUDIES AND THE RELATED THEMES SELECTED WITHIN THE NARRATIVE LITERATURE REVIEW	1
FIGURE 2 GROWTH RATES OF URBAN AGGLOMERATIONS BY SIZE CLASS. SOURCE: UN 2018	5
FIGURE 3 TIMELINE SHOWING THE DIGITAL CHARACTERISATION OF THE CITY ACCORDING TO STEPHEN GRAHAM AND MARVIN (1996, PG. 9) AND KATHARINE S. WILLIS AND ALESSANDRO AURIGI (2017, PG.	16
FIGURE 4 TYPOLOGY ANALYSIS: RESEARCH METHODS OF PAPERS (COCCHIA, 2014, PG. 34)	23
FIGURE 5 THEORETICAL VERSUS CASE STUDY PAPERS (COCCHIA, 2014, PG. 34).....	24
FIGURE 6 GEOGRAPHY ANALYSIS: SMART/DIGITAL CITIES GEO-LOCATION IN THE WORLD ON THE BASIS OF 162 CASE STUDIES ANALYZED (COCCHIA, 2004, PG. 38)	24
FIGURE 7 THE DIGITAL CITY AT THE INTERSECTION OF THREE DOMAINS (COUNCEILS, 2004, PG.7)	28
FIGURE 8 AN INTEGRAL, SYSTEMIC VIEW OF INFORMATION AND COMMUNICATION TECHNOLOGY. (HEEKS, 2002, PG. 12)	39
FIGURE 9 THE INFORMATION CHAIN 9	40
FIGURE 10 A CUMULATIVE AND RECURSIVE MODEL OF SUCCESSIVE KINDS OF ACCESS TO DIGITAL TECHNOLOGIES (VAN DIJK, 2005, PG. 22).	40
FIGURE 11 MODEL OF EFFECTIVE USE OF ICTs (WARSCHAUER, 2002, PG. N.D.)	42
FIGURE 12 INTERNET POPULATION AND PENETRATION 2008 (GRAHAM ET AL. 2011)	50
FIGURE 13 INTERNET POPULATION AND PENETRATION 2011 (GRAHAM & DE SABBATA, 2013).	51
FIGURE 14 BROADBAND AFFORDABILITY (GRAHAM & DE SABBATA, 2014).....	52
FIGURE 15 GEOGRAPHY OF TOP-LEVEL DOMAIN NAMES. (GRAHAM & S. DE SABBATA,2013)	53
FIGURE 16 GEO-REFERENCED ARTICLES ON WIKIPEDIA (GRAHAM ET AL., 2015).	55
FIGURE 17 AFRICA ON WIKIPEDIA (GRAHAM ET AL. 2012).	56
FIGURE 18 GEOGRAPHIC REPRESENTATION OF THE WORLD ON WIKIYOVAE.....	57
FIGURE 19 CENTRE DE DOCUMENTATION ET INFORMATION (ARCHIVE) OFFICE 211 AT THE MUNICIPALITY OF DOUALA (COMMUNAUTÉ URBAINE DE DOUALA)	74
FIGURE 20 THE ORIGINS OF THE ONLINE PRESENCE OF BUSINESSES IN DOUALA	98
FIGURE 21 MAP OF VISIBLE AND INVISIBLE ONLINE NEIGHBORHOODS OF DOUALA	100
FIGURE 22 REPRESENTATION OF ONLINE SOCIO-ECONOMIC ACTIVITIES IN DOUALA FROM 1989 TO 2013	113
FIGURE 23 MAP OF VISIBLE AND INVISIBLE ONLINE NEIGHBOURHOODS IN DOUALA	117
FIGURE 24 TOURIST GUIDE MAP OF DOUALA, REALIZED BY DOUAL'ART (2009)	128

FIGURE 25 LA NOUVELLE LIBERTÉ BY JOSEPH FRANCIS SUMEGNÉ. CC-BY-SA CHRISTIAN HANOUSSEK	142
FIGURE 26 MAP OF TOURISTIC LANDMARKS OF DOUALA ACCORDING TO LOCALS.....	150
FIGURE 27 MAP OF TOURISTIC LANDMARKS OF DOUALA ACCORDING TO FOREIGNERS	151
FIGURE 28 CARTHOGRAPHIC REPRESENTATION OF THE ONLINE SATUTURATION OF NEIGHBOUDHOODS (THE PERCENTAGE OF ACTIVITIES THAT ARE ONLINE WITHIN A GIVEN AREA)	162

List of tables

TABLE 1 COMPARISON OF DIGITAL CITIES (ISHIDA 1999, P.16)	19
TABLE 2 ONLINE REPRESENTATION AND ORIGIN OF SOCIO-ECONOMICAL ACTIVITIES OF DOUALA ORGANIZED IN MICRO-COMMUNITY.....	96
TABLE 3 SECTIONS OF DATA COLLECTED RELATED TO THEIR PRIMARY SOURCE	110
TABLE 4 TABLE WITH OVERALL SATURATION FOR CATEGORY IN 2007, 2010 AND 2013	114
TABLE 5 TABLE GROUPING NEIGHBOURHOODS FOR THEIR ONLINE VISIBILITY	117

Introduction

This PhD thesis embraces three fields of research – Information and Communication Technology for Development (ICT4D) studies, Internet studies and Urban studies – focused on the use of Internet and Information and Communication Technologies (ICTs) to communicate the city within a developing country. The subject of this study is the online communication and representation of the largest city of the Republic of Cameroun, the city of Douala. The questions of this thesis sprang from the analysis of the literature review and are based on two ethnographic fieldworks conducted in Douala in 2012 and 2013.

The literature review shed lights on the importance of looking at digital spaces as a reflection of physical spaces produced by the spontaneous use of internet by a community as a privileged mean to communicate (Couclelis, 2004; Schuler, 2001; Willis & Aurigi, 2017). At the same time, the representation of digital spaces on a world map highlights uneven geographies of access, of participation and of representation (Graham, De Sabbata, & Zook, 2015) showing a dualism between rich connected countries and low unconnected poor countries. In a perspective of socio-economic development, the digital era contributed to increase (instead of reducing) the existing inequalities between the Global North and South (Hilbert, 2014; Unwin, 2009, 2015). The same happens with neighborhoods within cities, where the way ICTs influence urban changes seems to mirror historical patterns of investment and resource distribution (Odendaal, 2011a). Although many studies have looked at the digital divide at urban scales (Blank, Graham, & Calvino, 2018; Castells, 1991; Graham, 2013; Graham, 2002), till now none of them has focused on the specific digital evolution of a city in developing countries, despite in Africa both urban and digital growth have evolved dramatically in the last thirty years. In addition, the gap and the incongruences between available online information and the real world shape our knowledge and expertise of the world. According to Graham

(2013, pg. 5) “the ways that cities are represented have important repercussions on how we perceive, interact with, augment, move through, and enact our urban environments” and invisible places in the virtual representation are often unknown by people.

This research focuses on the development of the digital city of Douala in the last thirty years with the purpose to understand how the online representation of a developing city is produced and what are the relations with the physical city.

The challenges in the accessing ICTs and the Internet in Douala should not be underestimated: very expensive internet charges, limited access to computers and technological devices (often obsolete), lack of human resources with ICTs skills and the absence of a social infrastructure which is able to support a system for the production and distribution of digital contents. The bravery of being online in Douala by far overtakes the same effort made in Europe, where all the premises, knowledge and a structure which supports and facilitates the digital communication do already exist.

Studying the development of a digital city from a communication perspective allows to disclose new dynamics of information and knowledge production and distribution, and to unveil who are its producers and where do they come from, which image of the city they are representing (based on the practices and territories they represent), and how this representation is aligned or not with real-world local social practices and social representations of the city.

More specifically, this research intends to contribute to the domain of ICT4D, internet study and urban study at three different levels:

First, it offers an empirical, in-depth study, about a city in Africa, which has not been extensively studied so far.

Second, it aims to document the production process of an African digital city, through a spatial, temporary and representative analysis of the online presence of Douala's socio-economic activities.

Third, it aims to contribute to the discourse about the hybrid city by comparing the online representation of the digital Douala with the social representations emerging orally by locals.

This dissertation owes its own existence to the project “Mobile Access to Knowledge. Culture and safety in Africa” (Mobile A2K, 2012-2014) assessing the impact of public art on urban safety and security in three African cities (Douala, Johannesburg and Luanda). This project has only partially funded my PhD journey, and this study has been conducted in parallel with Mobile A2K activities, which had different objective and purposes. However, thanks to this project I had the opportunity to travel to Douala two times, to deeply experience the physical city, and to meet more than 80 people whom I interviewed during the research, who contributed to shape the qualitative part of this study.

This dissertation is a “cumulative” one, and includes three papers and an article as part of its outcomes chapter (Chapter 3).

The first chapter introduces the research in the broader literature of internet studies, urban studies and ICT4D. It is divided in three main parts: the first one is a general overview presenting the relation between ICTs, societies and cities and it positions this research with the socio-constructivist theories. The second part addresses the topic of the digital city, which is largely missing in the literature presented in the articles of this research. If from one side the exploration of internet and urban studies literature is useful to frame a proper definition of a digital city according to this research, at the same time it unveils a huge research gaps in the analyses of digital cities within developing countries. The third part of the literature review focuses on ICTs and uneven development throughout the lens of ICT4D studies across different models of access to ICTs and the geographies of the information. Finally, it is important to mention that the literature explored in this first chapter does not include the studies about the hybrid city and the urban social representation which has been reviewed in the related outcomes papers (see paragraphs 3.4.2.1 and 3.4.2.2).

Chapter 2 specifies the research gaps, the research questions, and it includes a road map of this research, which summarizes the methodology used to conduct the work.

Chapter 3 presents the outcomes already published in three peer reviewed conference proceedings (see paragraph 3.1 - 3.2 - 3.3) and a journal (see paragraph 3.4).

The first paper “What do we know about Douala. Access to information in and about the largest Cameroonian city” (Pucciarelli, Sabiescu & Cantoni, 2013) introduces the context of the city of Douala and underlies challenges and tendencies in the production and distribution of oral, printed and digital information within the city and about the city itself. The results of this study have been fundamental in addressing the whole research toward the digital city and its relation with the physical oral representation of the city.

The second and third papers “Mapping the digital Douala: lights and shadows of an African City” (Pucciarelli, Vannini & Cantoni, 2014) and “The Digital Birth of an African City. An Exploratory Study on the city of Douala (Cameroun)” (Pucciarelli, Cantoni & Kalbaska, 2016) represent the core part of this thesis. They shed light on the online representation of the digital Douala according to the online presence of socio-economic activities operating in the city and their evolution over time and space.

The fourth article “Douala as a “hybrid space”: Comparing online and offline representations of a sub-Saharan city” (Pucciarelli & Vannini, 2018) conducts an analysis on the social representation local people (offline) and foreigners (online) have of the city of Douala, and it compares the related themes and touristic landmarks with the online representation of the city emerging from the online presence of socio-economic activities operating in the city.

Chapter 4 draws the conclusions of this work, considering practical implications, limits and suggesting further lines of research to be undertaken.

Finally, this thesis also presents as annexes two different works – an artwork and a book

chapter – which are closely related to this research:

- *Douala Flow* by Roberto Paci Dalò, a video sound installation inspired by the quantitative data and outcomes collected within this research.
- *A journey through public art in Douala: Framing the identity of New Bell neighbourhood* (Pucciarelli & Cantoni, 2017), an in-depth qualitative study exploring the relationship between the presence of murals in informal neighborhoods and tourism.

1. Literature review

1.1 Introduction

The following literature is an unsystematic narrative review (Green et al., 2006) about the processes of development of an African digital city across three main fields of studies: ICT4D, Internet studies and Urban studies (Figure 1). A thumbnail of Figure 1 is proposed at the beginning of each paragraph of the literature highlighting the research domain it refers. A communication perspective is always adopted while presenting and discussing the qualitative analysis of the literature.

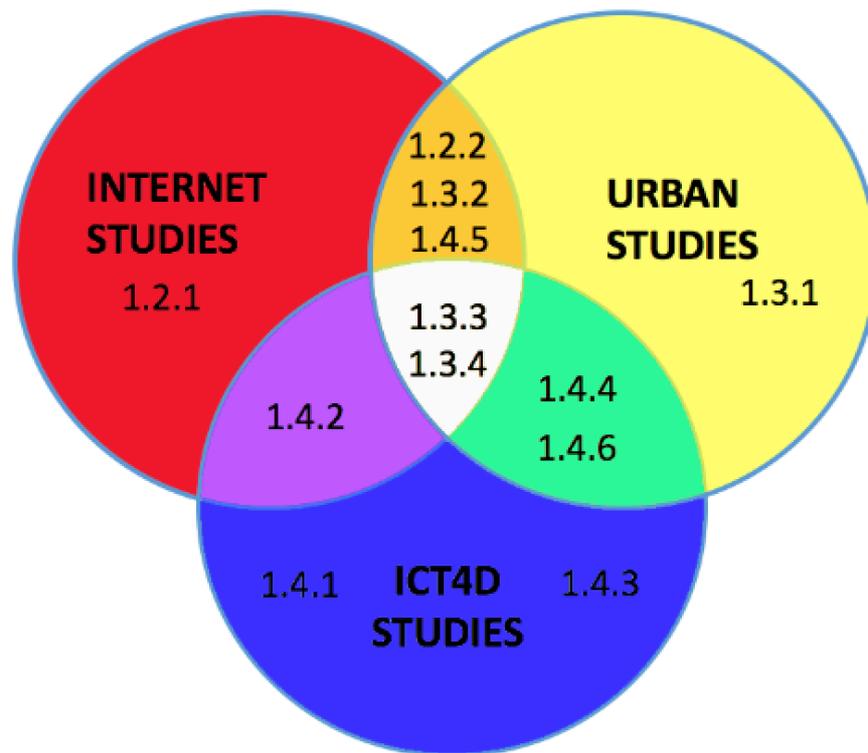


Figure 1 Representation of the three fields of studies and the related themes selected within the narrative literature review

The following narrative literature review is divided into three main subchapters. The first paragraph “The relation between ICTs, society and cities” presents the context of the information and knowledge society and it frames the research about digital cities within the literature of internet and urban studies. It sets for itself a twofold objective: 1) to contextualize the period, the social and theoretical background where the digital city develops, and 2) to position this research within the studies about the socially constructed digital city rooted in socio-constructivist theories. A first introduction frames the context of the informational society as conceived by Manuel Castells (1996), presenting its potentialities, challenges and the consequent development of the concept “knowledge society “ by UNESCO. Even if nowadays the terms information and knowledge society are often used as synonymous, framing their evolution is here useful to describe the two major theoretical perspectives – technological determinism and social constructivism – which divide most of the studies related to the digital city in two categories: techno-centric city and socially constructed digital city.

The second paragraph “Toward a definition of the digital city” specifically addresses the topic of the digital city. It aims at: 1) framing the research about digital cities within the literature of Internet and Urban studies and 2) positioning this thesis within the wide range of definitions formulated from 1990s, which barely consider the study of African cities. In particular, the evolution of the concept of the digital city is explored, as well as the different aspects and meaning which have concerned its definition, deepening its relation and difference from the concept of smart city. Based on the analysis of the Anglophone literature, this paragraph presents the few studies concerning the digital city in Africa which underline the need of new researches on this topic.

The third paragraph “ICT and uneven development” focuses on the peculiar developing context, highlighting the digital divide between the Global North and South throughout the lens of ICT4D studies. The digital divide coming from the informational society is analyzed from two points of view: the problem of accessing ICTs and the internet across different theoretical models presented by the ICT4D literature (Heeks, 2002; van Dijk,

2005; Warschauer, 2002) and the spatial representation of the geography of the information which allows to show this uneven development on a global scale (Castells, 2001; Graham et al., 2014; Zook, 2006). Both perspectives point out that this divide does not depend only on a limited access to infrastructures (which is decreasing day by day) but on the intersection of social, political, motivational and human factors.

1.2 The relation between ICTs, society and cities

Internet and new technologies allow to study the city development under a new perspective. Starting from 1990s, the cities and their communities began to communicate online their existence and to define their territory on the digital scene. The fast digitalisation process of the cities provided to the fields of communication, geography and sociology new sources of analysis of the urban life where new information, knowledge, infrastructures and networks develop and relate to each other. New and several neologisms emerged to define this complex relationship between ICTs and the cities (from digital city to more specific definitions such as knowledge city, ubiquitous city, smart city, etc). They often depend on the different type of expected development (economic, social, environmental, scientific, technological). Scholars also provided useful theoretical frameworks categorizing the whole literature and definitions about digital cities within different fundamental dimensions (technology, human, institutional) and perspectives (social and spatial, infrastructure, technological) (Nam & Pardo, 2011; Willis & Aurigi, 2017).

In any case, all of them agree on a fundamental premise linked to human development about why new studies on the cities should go on: by 2050, 68% of the world population will live in urban areas (UN, 2018). Cities must therefore be ready to define and develop new urban models that could cope with this change. Today in Africa, which is still the most rural continent, the demographic growing rate from 1990 to 2018 is impressive (Figure 2) and 43% of its population lives in urban areas.

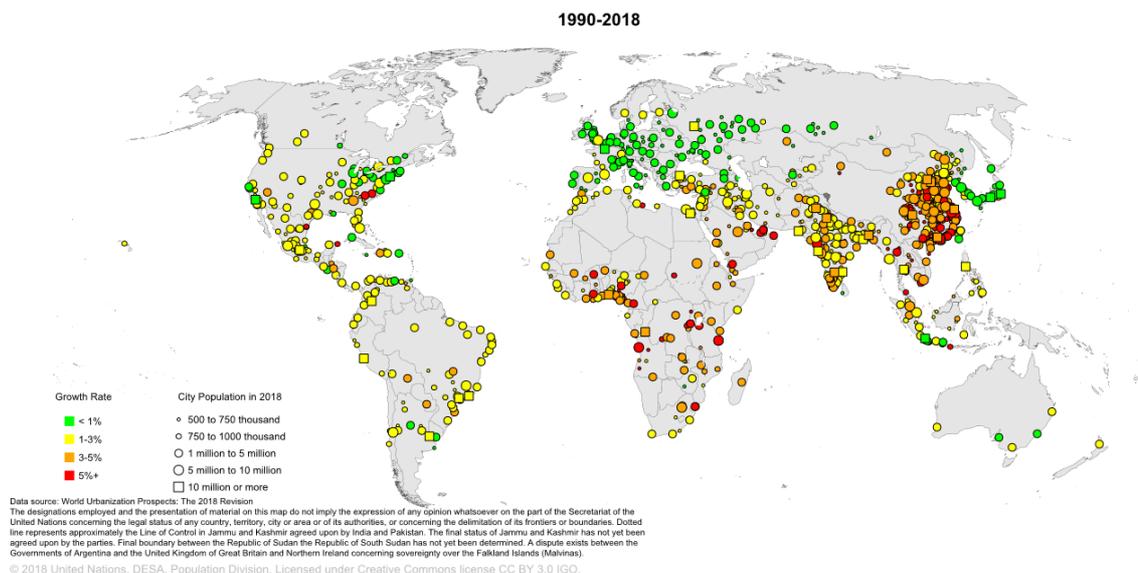
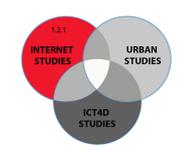


Figure 2 Growth rates of urban agglomerations by size class. Source: UN 2018

1.2.1 The context of the informational and knowledge society

Studies concerning the digital city have developed during a period characterised by the massive diffusion of internet and the ICTs. The speed by which internet allows communication paved the way to a new “information highway/superhighway”, as claimed by the US vice-president Al Gore at the beginning of 1990s with reference to this technological revolution. The new ways of communication made possible by internet and ICTs bring governments, cities and their communities to invest in the development and acquisition of technological infrastructures in order to improve their connectivity and competitiveness. This technology-centered approach also reflects a new change in society and human activities, linked to new dynamics of production and distribution of data, information and knowledge.



The expressions *information* and *knowledge society* are often used together and in an interchangeable way and the same happens to *information* and *knowledge city* (Yigitcanlar, 2010). In spite of this, there is a difference between the two meanings, which can be found in the work of Manuel Castells on the “informational” society, who emphasizes the role of internet and information as sources of value and power determining *innovation* (Burch, 2006).

1.2.1.1 The informational society

Manuel Castells’ work (1989, 1996, 2001) is essential to understand both the information society and the study of digital cities, which will be considered later. Its premises about the role of technology in nowadays society reflects the author’s position on the technological revolution started in the 1990s.

Castells (1996) states that the real technological revolution in the age of information does not only consist in data, information and knowledge production and distribution through

technological devices because this process takes place every time a new communication technology – also defined as *technology of the word* by Ong (2002) – has been introduced and adopted (from Gutenberg to the invention of the telegraph, of the telephone, etc.). He suggests instead the concept of *informational society*, which only refers to the role of the information in the social context:

“the term ‘informational’ indicates the attribute of a specific form of social organization in which information generation, processing, and transmission are transformed into the fundamental sources of productivity and power, due to the new technological conditions that arise during this historic period” (Castells 1996: 21).

In addition, he argues that:

“My use of the terms ‘informational society’ and ‘informational economy’ attempts a more precise characterization of current transformations beyond the common-sense observation that information and knowledge are important to our societies” (Castells 1996: 21).

The power of technology is not only based on its instrumental properties but also on the infinite processes of application and creation of new knowledge, which generates creativity and innovation, made possible by the society’s active contribution:

“The new information technologies are not merely tools to be applied, but rather processes to be developed. (...) For the first time in history, the human mind is a direct productive force, not only a decisive element of the production system” (Castells, 2001, pg. 31).

1.2.1.2 The challenges of the information(al) society

At the same time, the informational society presents bonds and risks. Manuel Castells’ book *Internet Galaxy* (Castells, 2001) concludes with three important challenges, which need to be faced:

1. **Freedom.** If, on one hand, internet is considered as a “technology of freedom” which allows a free communication at a global level challenging any bonds of space and time, on the other hand “it can free the powerful to oppress the uninformed, it may lead to the exclusion of the devalued by the conquerors of value” (Castells 2001: 275).
2. **Exclusion from networks.** The lack of technological infrastructures, institutional or economic obstacles to access the networks together with a scarce education and culture creates a global divide, which distinguishes connected inhabitants – who contribute to produce value- from those who are not.
3. **The ability to manage information and the generation of the individual knowledge.** Here the challenge is to build the ability to learn how to collect information and how to select and elaborate it in order to produce any kind of knowledge.

1.2.1.3 From the informational to the knowledge society

On the basis of these premises linked to the informational society, UNESCO published the text “From information society to knowledge society” (WSIS, 2003), promoting and supporting the developing of a new kind of society – the knowledge society.

“UNESCO believes that, in addition to technological, infrastructural and economic forms of information, dimensions of knowledge rooted in community, culture and social identity must equally be addressed. For UNESCO, the use of information and communication technologies (ICT) must be linked to the recognition that knowledge is the principal force of the social, political, cultural and institutional dimensions of development, founded on human rights” (WSIS, 2003, pg. 2).

This new idea behind the knowledge society follows the human-centered approach suggested by Castells, focusing on the human capacity of translating information into knowledge to build innovation, but it adds a new fundamental component: the global impact generated from this process and, therefore, the wish to bridge inequalities.

Promoting a knowledge society means understanding and facing the challenges inherited from the informational society which concentrates flows of information, power and economy only on few areas of the world with no attempt of regulation and avoiding any process of innovation outside of them (Souter, 2010, 2014).

For this reason, UNESCO promotes the idea of building “inclusive knowledge societies”, which allow to the whole global society to take advantages from the ICTs power and to transform both society and economy, committing itself to operate on four levels – knowledge creation, knowledge preservation, knowledge dissemination. and knowledge utilization – and by respecting four fundamental pillars linked to human rights – freedom of expression, quality education for everybody, universal access to information and knowledge, respect for cultural and linguistic diversity

1.2.1.4 The knowledge society

The concept of “knowledge society” links together the idea of technological innovation and development determined by the informational society’s ability to generate a social, cultural, economic, political and institutional transformation (Burch, 2006). It is a model of economic development which focuses primarily on the capability and possibility to elaborate raw data (produced and distributed inside the information society) in order to promote global wealth.

Two basic ideas contribute to shape the concept of knowledge society: knowledge economy and learning society. The knowledge-based economy is characterised by “an acceleration and increasing of the information and knowledge production, usage and diffusion throughout the use of technology by the society” (Carrillo, 2006, pg. 17). Bringing the Canadian example of the city of Monreal, Michaud and Tcheremenska (2003) perfectly explains how it is no more an economy based on products or services (service-dominant logic) but, even if it runs together with the traditional one, it founds its value on knowledge (Michaud & Tcheremenska, 2003). For this reason, social-produced knowledge took on an economic value. In the same view, Alain Lapointe (2003) considers

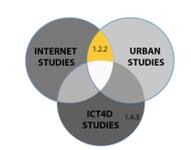
education as the key of the economic development of a nation focusing on learning processes which could be both formal or informal, decentralised and deregulated, made possible by the developing of information technologies.

Knowledge society focuses on social wealth not only in terms of economic and productive development but it also focuses on learning from a social, ethical and political perspective (Bindé and Matsuura, 2005; GESCI, 2012).

In particular, this thesis is linked with the concept of knowledge society through the questions which emerged after the WSIS (2005), “The Question for Civil Society” asking who generates and owns information and knowledge, how it is evaluated, how knowledge is distributed and spreads out, who are the custodians of that knowledge, what limitates and facilitates people’s use of technology in order to reach their goals and who takes the major (or the minor) advantages from this knowledge.

1.2.2 Theoretical approaches to ICT and digital cities

The difference between information society and knowledge society is useful to understand the two main theories about the developing of internet and ICTs: technological determinism and social constructivism.



The following paragraphs describe both theories in comparison with the studies concerning the digital city, defined as “technocentric-city” and “socially constructed digital city”.

This thesis, based on the socio constructivist theory, observes the emerging of the digital city as a social product, which is strongly influenced by the context where it develops and which is composed by local people practices, the territory they represent and by the meaning given by its inhabitants or visitors.

1.2.2.1 Technological determinism and the techno-centric city

Technological determinism considers the role of technology and information (i.e. data, transmission channels and storage space) as the society's engine of development (Graham & Marvin, 1996; Mitchell, 1996).

In this perspective, the telecommunication industry takes on a fundamental role and strongly influences social development. Therefore, the idea of information society belongs to this approach, emphasizing the amount of accessible information and the related technological innovation potential.

This theory, related to the studies about the digital city, underlies what Willis e Aurigi (2017) define *techno-centric cities*. Techno-centric cities, based on the urban functioning system called Urban System Thinking, consider technology a powerful ally to solve several problems linked to urban development (transport, energy, pollution, waste disposal, etc.). This kind of approach looks at cities as «insane, complicated and ungovernable» entities, which need to be managed and domesticated (Kitchin, 2014).

In such a context, big data, together with the development of specific algorithm, become fundamental in order to formulate strategies aimed to map and influence developing processes on a urban scale (Ratti, 2009; Kitchin, 2014).

In the techno-centric city, technologies allow to structure the main urban functioning systems (such as city services, business, transport, communication, water and energy) and to create a “system of systems” (Dirks & Keeling, 2009).

In order to transform and operate on these systems it is necessary to follow different structured steps, from data generation to new knowledge production (largely supported and financed by the titans of the computer industry such as IBM) which include (Dirks & Keeling, 2009):

1. Exploitation or digitalisation of the city system. It means the production of structured data, which could be quantified and visualized in a complex system as data points;
2. Interconnection of systems. Having structured and accessible data facilitate their interrogation and transformation into information. From a visual point of view, the connection between data points generates lines, which link different systems, according to the researcher's requests and algorithmic settings;
3. Intelligence. It refers to the ability to read and use the created information, to observe behavioral models and to transform such information into real knowledge, which allows to start concrete actions.

Even though this deterministic vision of technology seems to be an efficient system to solve urban problems, at least from a theoretical point of view, Willis and Aurigi (2017) highlight some big gaps belonging to the literature that supports this perspective.

First of all, the existence of *fragmented perspectives*, which are ascribed to different fields of expertise emphasizing “specific – and often relatively isolated – avenues of investigation and intervention” (Willis & Aurigi, 2017, pg. 43), force to operate a selection in order to contain the problem and to propose solutions.

The paradoxical consequence is that “most ‘solutions’ end up reinforcing the status quo rather than proposing genuinely new and challenging visions” (ibid.).

As we will see in the following paragraphs of this thesis, Aurigi's criticism is linked and based on different fields of study. First of all, it is one of the main consequences of the informational society mentioned by Castells and secondly, his view is largely supported by the criticisms of ICT4D (Unwin, 2017; Walsham, 2013; Zheng, Hatakka, Sahay, & Andersson, 2018) which claim the need to focus more on the development impact of ICTs, rather than on the integration of technology. This is also supported by geographers of information, who clearly represents through their cartographic visualizations of

information the persistency of the digital divide between the North and the South of the world after almost 30 years of studies in ICT4D.

Willis and Aurigi therefore identify a blind utopianism, which does not allow to have an overall view in order to formulate answers to shared problems, as determinists set out to.

Moreover, “little or no challenge is introduced to issues like zoning, land control, mobility, forms of wealth creation and development of local economies, social cohesion and cooperation” (Willis & Aurigi, 2017, pg. 43). People who live and use the space of the city play just a marginal role: citizens become passive consumers and suppliers of data and information to the central system (this is the concept of “citizen participation”) without influencing the managing of the urban technology system at all (ibid.).

1.2.2.2 Socio-constructivist theories and the socially-constructed digital city

A different point of view, supported by this study, is the socio-constructivist theory: it considers technology as the result of the development of society and human activities. According to digital cities studies and in contrast to the idea of “techno-centric cities”, Will and Aurigi (2017) classify as “socio-constructed digital and smart cities” all the researches that explore the digital city as “a set of activities, practices and organizations in order to open up a more holistic and citizen-centered understanding of how technology shapes urban change through the way it is imagined, used, implemented and developed in a societal context” (Will & Aurigi, 2017, p.48).

The authors believe that the relationship between the city, its citizens and technology is based on a circular system and it is not ruled by a simple cause-effect model (Will & Aurigi, 2017). Citizens interact with the digital city not only through technologies but also modifying and adapting their way of living. In this sense, the digital city is representative of its inhabitants’ routine but, at the same time, it stimulates new habits on the basis of the “digital citizen” ambitions, allowing the elaboration and distribution of new interaction systems and devices (Will & Aurigi, 2017).

Socio-constructed digital and smart cities can be analyzed from two points of view: the first one is linked to the citizens' spontaneous communication through their favorite, suitable and sustainable devices which become part of the city's lifestyle and experience; on the other hand, custom-made urban communication systems and devices are studied specifically to improve citizens' quality of life.

These different analyses (which could be complementary or considered as separate points of views) overlook on the city as a dynamic and complex system, which is made and molded by the continuous interactions between people, places and meanings.

What this approach does is to move beyond much of the rhetoric around what digital and smart technologies 'could be' for cities and acknowledges the slightly more mundane and messy reality of how we live lives where a range of digital and smart technologies pervade our everyday lives (Will e Aurigi 2017, p.50)

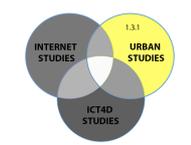
For this reason, the local context where the digital city develops becomes fundamental to analyze and understand how it works and evolves: this could recall the need of empirical studies but it could also be considered as a limit for the research because it does not allow any homogenization and generalization of the results.

Following this approach, this thesis looks at the technological evolution as a spontaneous continuation of human activities, observed within a social context, which is strongly compromised by a lack of ICTs and internet access.

1.3 Toward a definition of the digital city

1.3.1 Urban and digital development studies

Starting from 1990s, a strong interest on the relation between urban and technological development has emerged. Global population growth, increasingly localized around urban centers, has forced the reorganization of cities and metropolis. Internet has spread with the urban context throughout the creation of new physical infrastructures and networks. Data production and transmission have become sources of value, innovation and power, and big cities seem to be a strategic place to generate wealth in the era of information (Castells, 2001). This emergence of new technologies and infrastructural changes, together with the growth of urban agglomerates, make a univocal definition of digital city almost impossible to formulate.



Every city is influenced by technology and its adoption, both because of the central administration's voluntary choice to improve its digitalisation, and for an accidental (Gumpert & Drucker, 2003) or spontaneous (Willis & Aurigi, 2017) development due to the society's lifestyle changing, which reorganizes and molds the digital city through the mediation of digital networks and devices.

Figure 3 provides a picture about the extension of the different terms and labels used to describe and differentiate the relation between technologies and cities since 1964 to 2016. The timeline merges together the chronological lists provided by two leading studies in the field, those conducted by Graham and Marvin in 1996, and the more recent work by Katharine S. Willis and Alessandro Aurigi. These scholars (Graham & Marvin, 1996; Willis & Aurigi, 2017) have provided a description of the features, dimensions, approaches, procedural and technological solutions, which have emerged in the utilization of telecommunication within the urban context. Without going in depth in all these terms, this thesis picks from this list just some of the few definitions (informational city, digital city and smart city) which allows to understand the meaning of the digital city used in this study.

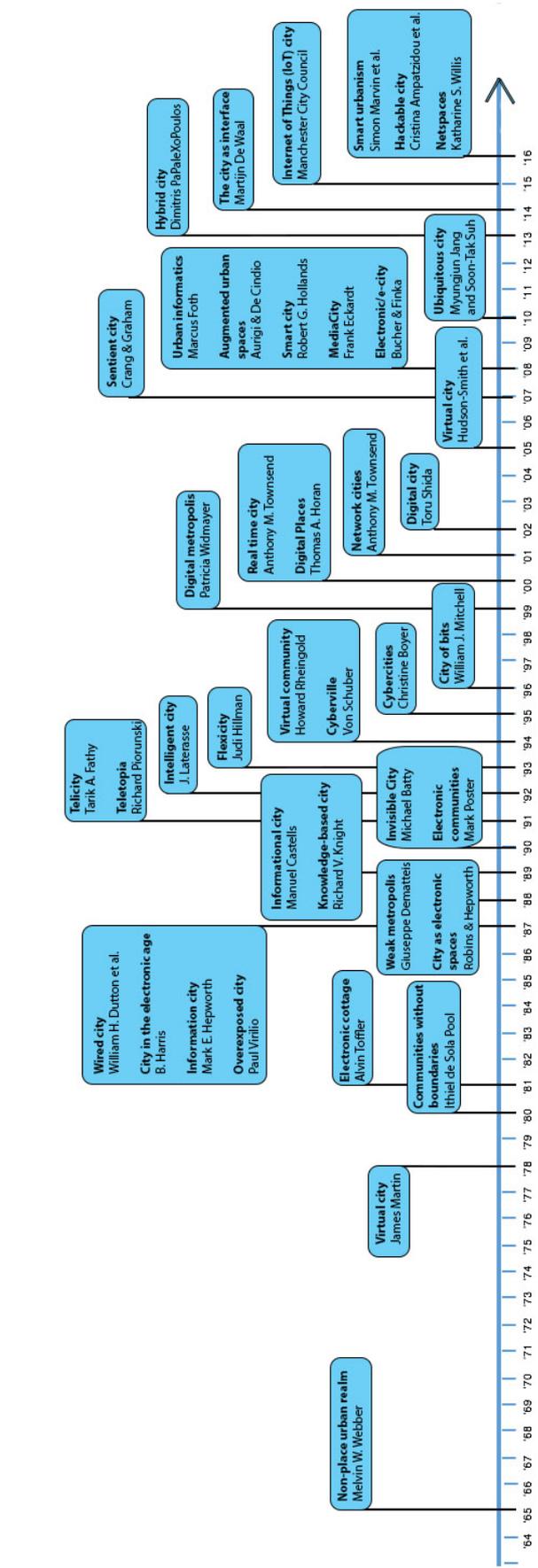


Figure 3 Timeline showing the digital characterization of the city according to Stephen Graham and Marvin (1996, pg. 9) and Katharine S. Willis and Alessandro Aurigi (2017, pg.

1.3.1.1 The influence of Manuel Castells

Manuel Castells' work on the informational city anticipates and creates the premises to understand the following studies – and the different perspectives (Graham & Marvin, 1996; Mitchell, 1996) – specifically related to the digital city, which have developed both in the internet field and in urban studies. His point of view is fundamental also for the studies linked to ICT4D, digital divide, uneven development and information geography (see paragraph 1.4.1).

Castells (1989) analyses the informational city's communication networks from a global and a local perspective. He shows how the spatial representation of internet and ICTs reveals a new urban dualism, characterised by the difference between spaces of fluxes and spaces of places and the related reasons of inclusion or exclusion in the network society.

The space of fluxes looks at the cities from a global perspective. It represents the worldwide connection between cities, puts together distant places on the basis of their market value, social selection and infrastructural superiority (or in other words their flows of money, power and information production/distribution) showing the inclusion or exclusion of the different world's areas in the informational society. The dimension and degree of "informativeness" of a city has been later conceptualized (Mainka, Khveshchanka, & Stock, 2011; Stock, 2011) through the identification of creative clusters and indicators (such as employability, corporate structure, facilities for culture, recreational activities, and consumption, political willness, e-governance activities, etc.).

The space of places refers to people's experiences and activities in the real world just in the moment they happen. This kind of representation highlights the social isolation within suburban neighborhoods as a consequence of economic barriers, which restrict the access to better areas. Moreover, the lack of an adequate and equally distributed connection compromises the access to globality, defining digital inclusion or exclusion as well.

Castells argues that the lack of social mobilization and policies based on public interest, which aim to avoid internet and networks' fragmentation, would give a contribution to the global digital divide. At the same time, this study considers important to underline how Manuel Castells believes in cultural industry (mass media in all their forms: entertainment, art, fashion, publishing industry, museum and cultural industries in general) as a key business for the production of value and knowledge within the cities. He explicitly reports: "Cities are faced with a challenge... It follows that public space and monumentality (museums, cultural centers, public art, architectural icons) will play a key role in marking space, and facilitating meaningful interaction" (Castells, 2001, pg. 237).

1.3.1.2 Two perspectives on ICTs and urban development

Following Castells' works, the first studies about the relationship between the city and ICTs see, on one hand, the researchers' attempts to identify and formulate definitions, processes and implications concerning the digital development of the cities and, on the other hand, the implementation of new programs for policy makers to improve cities' digitalisation.

In 1996 two works underlined the need of further researches in this sense (Graham & Marvin, 1996; Mitchell, 1996)

In their book "Telecommunication and the City", Stephen Graham and Simon Marvin examine literature from 1964 to 1994, suggesting a first, invaluable list of definitions which characterize the relationship between ICTs and cities (part of which has been included in figure 3). They provide evidence of the global tendency to build telecommunication infrastructures in few, specific areas of the world, which generate and consume the main part of the internet traffic. Such a tendency is deepened some years later in the book "Splintering Urbanism" (Graham & Marvin, 2002) where the authors define as "global hubs" those areas where the main part of technological infrastructures is concentrated and digital information is produced.

In parallel, the work “City of Bits: space, place, and the infobahn” by William Mitchell (1996) describes a new model of city, an almost invisible – but increasingly important – system of virtual spaces interconnected by the emerging information highways. Contrary to Stephen Graham and Simon Marvin’s analysis, which focuses primarily on the infrastructural character of the digital city, William Mitchell (1996) stresses the social aspect of technology that needs to be considered before starting the creation of networks, infrastructures and contents in order to avoid polarization and social exclusion linked to an uneven development of new technologies (Castells, 1996). He promotes the idea of creating electronically-mediated spaces, which should be able to satisfy everyday needs and to improve the quality of life in the real society (Mitchell, 1996).

In the wake of Castells’ work (1996), his study evolves further in the idea of E-topia (Mitchell, 1999, 2005), which recognizes the need of a physical public space and the possible divide caused by the possibility (or not) to access information (Odendaal, 2011b). According to Mitchell (1999), the possibility of an interconnection between existing infrastructures influences the city development. High-speed digital communications’ infrastructure runs city by city creating the need to adapt and connect between each other; this necessity implies a process of fragmentation, recombination and rebuilding of new forms of arrangement within the city, which must consider long lasting forms of sustainability and social equity in order to create a greater social inclusion (Mitchell 2005).

1.3.1.3 International examples of digital cities

The 1990s are a key period for the experimentation and development of digital cities: Europe, USA and Japan developed measures in order to start not only a digitalisation of the whole national apparatus but also the creation of real digital cities.

America Online (1986), Amsterdam Digital City (1996), Helsinki Digital City (1996) and Kyoto Digital city (1998) represent the very first experiments of digital cities, characterised by a range of different aims, including business, communication, interaction,

and prototype services, on which data collection procedures, implemented technologies and supporting organization depend (Ishida, 2002).

Toru Ishida (1999) develops a comparative analysis of these digital cities demonstrating how different goals bring to different services and different architectural and organizational systems (Table 1).

Table 1 Comparison of Digital Cities (Ishida 1999, p.16)

	AOL	AMSTERDAM	HELSINKI	KYOTO
Goal	Vertical market	Public communication space	Next generation metropolitan network	Social Information infrastructure for everyday life
Architecture	Accumulating urban information	Loosely coupled with the physical city Platform for community networks	High speed network Tightly coupled with the physical city	Tightly coupled with the physical city Multi layer architecture: information layer, interface layer, and interaction layer
Technology	WEB Chat	City metaphor for public participation	3D virtual city Network technology	3D virtual city Information integration Social agent
Organization	Profit organization	Non profit organization	Digital city consortium initiated by Helsinki telephone company	Digital city forum (Universities, companies and local governments)

Ishida's analysis (1999) is useful to understand how the development of the digital city is not a static process, which ends with the conclusion of the task of uploading online content and data, but it is a continuous process led by instrumental and technological improvement. None of the analyzed cities succeeded. At that time, the digital city was intended as a unique platform (run by the district, the communication industry or private sector) which collected local websites and allowed to put together different fields such as tourism, commerce, transportation, urban planning, social welfare, education, disaster protection, politics, and so on.

With reference to the spread of digital cities in the USA, Helen Conceiles writes: “These digital cities are best described as ‘electronic brochures’, in terms of both their content and the conventional hypertext organization of their material into thematic ‘pages’” (Couclelis, 2004, pg. 7).

The first experiments of digital cities seems still unable to exploit internet features and potential to facilitate citizens’ everyday life (Ishida, 2002), the mobilization of the resources (van den Besselaar, Melis & Beckers, 2000) and the creation of collaborative, communicative and inclusive virtual environments (Aurigi, 2000).

Citizens do not play a main role during this first phase of the digital city’s development where the user is considered as a consumer characterised by a limited and mostly passive participation. In spite of this, their fundamental role is highlighted in Ishida’s (1999) comparative analysis because digital cities “provide an opportunity to people to create a new information space for their everyday life” (Ishida, 1999).

Van den Besselaar et al. (2000, pg. 19), while inquiring the way the contents of these platforms influence the users, classifies digital cities according to five interpretations:

1. as a local social information infrastructure, providing information over the ‘real’ city to locals and, of course, the real city’s visitors.
2. as a communication medium, influencing the personal networks of a digital neighborhood’s inhabitants;
3. as a tool to improve local democracy and participation;
4. as a free space to experience and experiment with cyberspace;
5. as a practical resource for the organization of everyday life.

According to the authors, the real potential of digital cities is that they allow citizens to take part in the activities by “mobilizing the available local resources, using existing and emerging social networks” (van den Besselaar et al., 2000, pg. 19).

Aurigi (2000), instead, strongly criticizes these first experiments because of the authorities' incapability to build more efficient systems for urban communication, by taking advantages of the Web's ability to create collaborative, communicative and inclusive virtual environments.

“Many of the civic websites developed in the late ‘90s were, in effect, rather standardized, and unexciting, place marketing exercises designed exclusively to demonstrate the host cities’ alleged innovativeness and competitiveness (Aurigi, 2005, pg. n.d.)”.

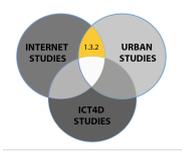
In spite of his severe criticism, he suggests possible solutions: “To build more effective urban information systems we need to involve a plurality of actors in the design of virtual cities, and link digital developments to more traditional activities and initiatives that aim at enhancing public participation” (Aurigi, 2000, pg. 33).

Five years later, Aurigi (2005) promotes the importance of recognizing the emergence of an hybrid city, which recombines physical and virtual spaces in a brand new way. For this reason, this hybrid space needs a stronger interaction between physical and virtual space, going beyond the traditional dualism and adopting a holistic and open idea of the space. The concept of hybrid city is going to be mentioned many times in this and the following literature paragraphs but it will only be explored and addressed in the paragraph 3.4, focused on the “hybridity” level of the African city chose as case study.

Finally, Serra (2000) by recalling the consequences related to Castells’ informational city (Castells, 1989) and Mitchell’s position on the existing and improving global technological divide caused by the network society (Mitchell, 1996), suggests to focus on the “next generation community networking” as a possible solution. In his opinion, digital cities and community networks should work together towards this new social platform of the digital era (Serra, 2000).

1.3.2 Digital city or smart city?

As a consequence of these studies, experiments concerning the digital city have evolved significantly in the last fifteen years, together with the massive diffusion of technology in everyday life. The idea of digital city has been widely deepened and discussed, so much that today it seems to have been surpassed (or embedded) by the concept of smart city (Cocchia, 2014). This paragraph allows to highlight the main differences between the two concepts, in order to clarify the meaning of the term “digital city” within this study.



Annalisa Cocchia (2014) reviews the history and use of the expression “digital city” and “smart city” from 1993 to the end of 2012, looking at their chronological evolution, terminology use (smart vs digital), most popular definitions, type of studies realized (theoretical vs empirical, top-down vs bottom up approach) and their geographical distribution.

Despite the impossibility to find a univocal definition both for digital city and smart city (Cocchia 2014), here below we list some of their main differences, which allow to clarify the aim of this research, which is focused on the digital city.

From the temporal analysis, it emerges that researches concerning the digital/smart city represents a consequence of the technological development as well as the result of a global interest on environmental sustainability. The more and more pervasive role of the internet starting from 2000 favored the studies linked to the digital city, while the spread of global environmental policies, such as Kyoto protocol and EU 2020 Strategy supporting smart and sustainable goals, strongly influenced researches on the topic and the use of the term “smart city”, which sharply increased starting from 2009. From 2010, the definition of digital city has often been embedded in the idea of smart city due to the constant- but not exclusive- use of ICTs in the related studies. Anyway, there are substantial differences between the two terms, which are reported below.

Contents of research: in the digital city they refer to the use of ICTs and internet while in smart cities they are focused on the environmental quality within the urban area.

Their nature and relationship with the government: the idea of digital city is based on citizens' everyday, spontaneous use of internet and ICTs, whose diffusion and increasing demand of linked services pushes local governments to digitalize their offer (bottom-up approach). On the other hand, the smart city is an internationally-shared political strategy, which finances and promotes public initiatives aimed to improve the city's environmental quality (top-down approach).

Their relationship with people and citizens: differently to the studies concerning smart cities, which focus on the citizens' active role in enhancing their quality of life, during the processes of digitalisation people do not have a main role.

Cocchia's review (2014) sheds light on two wide gaps in the studies concerning the digital and smart cities. First of all, the predominance of theoretical studies (64%) instead of empirical case-studies (Figure 4 -Figure 5) and, secondly, the fact that these works are not equally distributed from a geographical point of view because they are mainly concentrated in Europe, South Asia and United States.

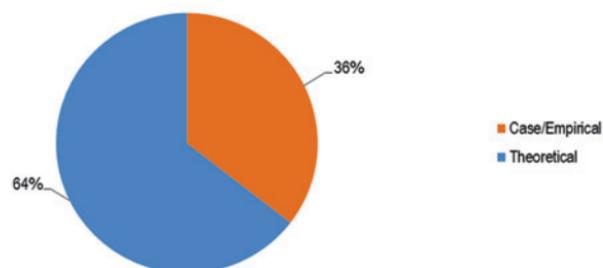


Figure 4 Typology analysis: research methods of papers (Cocchia, 2014, pg. 34)

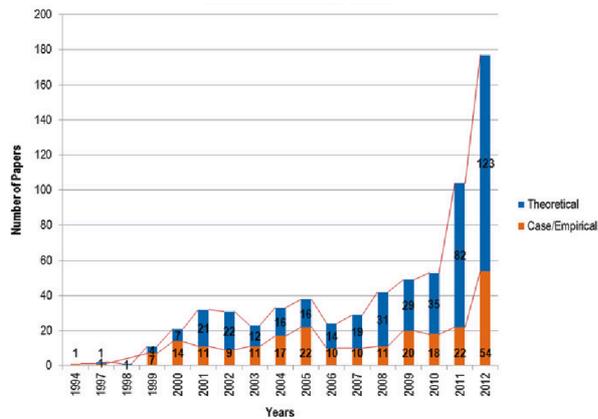


Figure 5 Theoretical versus case study papers (Cocchia, 2014, pg. 34)

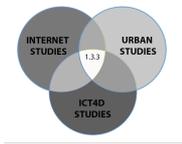
From the geography analysis it emerges, instead, an important lack concerning the studies linked to the digital city in developing countries (Figure 6). On 162 empirical case study papers analyzed by Cocchia in 2012, only 2% of them presents researches conducted in the African continent, which focus only on South Africa, in Durban and Cape Town, and they are conducted by the same scholar, Nancy Odendaal.



Figure 6 Geography analysis: smart/digital cities geo-location in the world on the basis of 162 case studies analyzed (Cocchia, 2004, pg. 38)

1.3.3 Digital city in Africa

As shown by Cocchia's map, very few studies focus on the digital city in Africa and they mainly focus on eGovernment policies, which are dedicated to online connection and to adapt its apparatus to an always improving digital development. The aim of these efforts lies in the fact that internet and ICTs allow to reduce administrative problems and promote development (Heeks, 2002; Schuppan, 2009). As underlined by Richard Heeks (2002), all these attempts represent a failure in the South of the world.



The main cause is the so-called 'design – reality gaps', due to the fact that eGovernment concepts and designs have their origins in countries, which are significantly different from African realities (Heeks 2002). A context-oriented approach seems to be a more promising route to the successful implementation of eGovernment and the different initial institutional, cultural, and wider administrative contexts should be taken into consideration (Schuppan, 2009). In Cameroon, for example, attempts to use e-government to improve transparency and efficiency were undermined by the refusal of government employees to use the system (Heeks, 2005).

Starting from South African eGovernment policies, Nancy Odendaal (2011a) develops her research on the way ICTs influence urban changes, by analyzing national and urban administrative policies, the improvement of websites realized by eight local associations and the informal society's use of ICTs and mobile phones. It emerges that:

1. the distribution of ICT access in Durban was found to follow a spatial trajectory resembling historical patterns of investment and resource distribution;
2. the network spaces that emerge from actor relations do not correspond to the physical spaces usually considered in policy.

Moreover, Odendaal (Odendaal, 2011a) identifies a fundamental condition, deeply linked to the South African social and cultural context and determining technologies'

appropriation processes, that is the main role played by translation, which allows to establish network relations between informal traders and strategic agenda. If this step does not exist, technology appropriation and the resulting success and innovation will not be possible.

In her studies, Odendaal (2011a) continues to demonstrate the countless theoretical and methodological gaps which emerge from the digital studies on African cities by criticizing a deterministic approach, which overestimates the progressive qualities of technological innovation, particularly within an African urban context strongly characterised by a social polarization and by informal relationships and processes.

Together with Marcus Foth and Gregory Hearn, Odendaal (Foth, Odendaal, & Hearn, 2007) invites to reflect about a new epistemology, 'the view from everywhere', "which takes into account and values transitory, informal, soft, implicit, contextual and tacit forms of knowledge, and its sources and utility outside the hard sciences" (Foth et al., 2007, pg. n.d.) ; secondly, she promotes the use of Geographical Information Systems "to raises awareness of spatial issues that impact on defined municipal areas" (Odendaal, 2003, pg. 585); finally, she pushes to explore all the 'spaces between' and 'blind spots' in policy making and city governance, not well served by ICTs and other infrastructure, where cell phones access provides the only opportunity for digital connection (Odendaal, 2011b).

Therefore, if on one hand Odendaal proves South African institutions' efforts towards the implementation of ICTs as an instrument for the economic local development (and as a response to international policies), on the other hand she invites to focus more on social divide problems and on the aspects linked to the community, in order to reach also qualitative benefits given by ICTs, which are not limited to the economic and entrepreneurial development but represent "a source for communication, education, networking, and learning for the majority" (Odendaal, 2006, pg. 42).

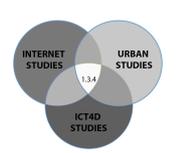
According to Odendaal, and in line with the perspective of this research, “the challenge of any ICT City initiative would be to understand how the digital city can make the invisible visible” (Odendaal, 2006, pg. 42).

This thesis can be positioned ideally on Odendaal’s proposed trajectory: it shows similar results but it first focus on an urban context which is completely different and unexplored, the city of Douala in Cameroon, using a different methodology which does not only observe ICTs integration from a spatial point of view, but also from a chronological and sector-based perspective.

This study takes into consideration the government’s public policies aimed to facilitate the access to the digital city but does not focus on them. Instead, it focuses on the spontaneous initiatives taken by the local community to communicate their existence in the digital landscape, even in the in-between spaces, where access to the internet is often challenged poor resources and a frail technological infrastructure.

1.3.4 Positioning this thesis within the digital city research

If Cocchia (2014) suggests that the idea of digital city, because of its connotative use of ICTs, could be embedded in the wider and more recent definition of smart city, the author of this research prefers to maintain the terminological distinction, due to the fact that the analysis that follows distances itself from initiatives linked to smart cities for its difficult application within the African context, where avant-garde infrastructures are nowadays very limited.



This thesis intends the digital city development as a spontaneous process of content production made by a defined urban community who runs a formally registered activity and uses internet to communicate its own existence in the digital landscape to a non-expert public. This definition evokes Helen Couclelis and the meaning of digital city as “a comprehensive, *web-based representation*, or reproduction, of several aspects or functions

of a specific real city, open to non-experts” (Couclelis, 2004, pg. 5). From this point of view, the digital city embeds social, cultural, political, and ideological dimensions.

The idea of digital city given by Couclelis (2004) is based on two concepts. First of all, digital cities are ‘place based’ and so refer to an actual city; secondly, they are meant to be accessible by the public in the broad sense rather than to a particular group of experts, professionals, people with special interests or urban managers. Couclelis (2004) provides a framework to analyze the digital city interweaving three different domains: the physical urban area, the community of people associated with that area and the possibilities and constraints (technological, but also socioeconomic and ideological ones) of the evolving information society (Figure 7).

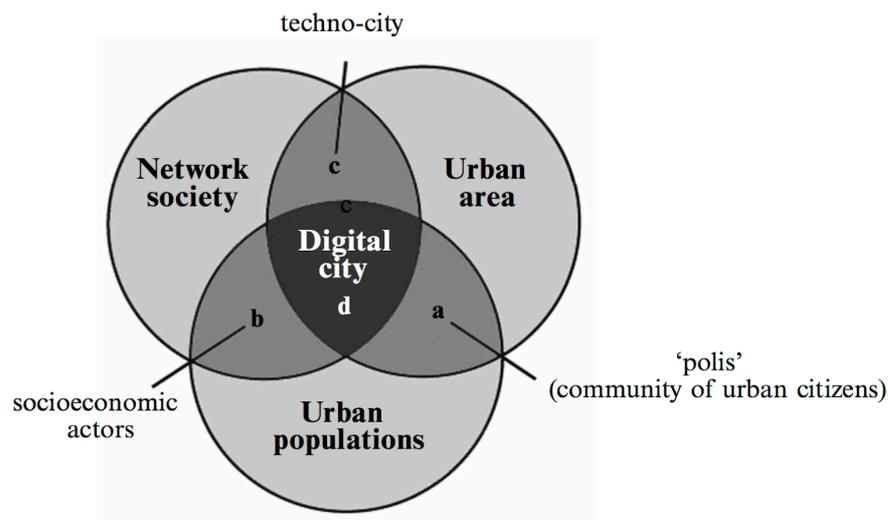


Figure 7 The digital city at the intersection of three domains (Couclelis, 2004, pg.7)

Helen Couclelis was the first, in 2004, to ask herself the following questions: how do urban ideologies, urban structures and functions and digital urban representation intersect? What might the digital city mean to people? And on the basis of what choices might the digital city be constructed?

By refusing the diffused idea of the “death of distance” brought by the internet, she explored and encouraged new theories about the hybrid spaces, which combine physical and electronic elements, in order to add to the historical definition of the place, a new one reframing the concept of ‘near’ and ‘far’ (Couclelis, 1996a; Zook, 2006).

The idea of hybrid space has been explored within this research, in order to understand how to use this definition in Africa and who are the hybrid city’s addressees.

Examining the digital city as a web-based representation of the physical city is one of the main aspects to be considered also according to Doug Schuler (Schuler, 2001). In his opinion, there are two kinds of definitions concerning the digital city:

- (1) a city that is being transformed or re-oriented through digital technology;
- (2) a digital representation or reflection of some aspects of an actual or imagined city, or virtual reconstruction of a city.

The first meaning primarily focuses on the infrastructural changes affecting the city (new infrastructures, optical fiber), which are necessary to pursue the digital transformation goals, while the second definition is the one Schuler (2001) and this thesis do support.

Schuler only focuses on people’s role within the digital city, studying “the possible and actual roles of *people* in these virtual venues, particularly in their role of citizens, citizens of *virtual* cities as well as *actual* cities” (Schuler, 2001, pg. 72).

At the same time, this thesis analyses the process of digitalisation of the city from the enterprises’ point of view, which in turn are made by people. The digital representation of the city due to the online presence of local socio-economic activities is relevant because it offers a specific picture in terms of business, geography and meaning. Schuler suggests an interesting distinction between the definitions to be used and the digital city’s categories. Here below it is specified what they refer to and how they are interpreted within this study:

1. the term “actual city” is used by Schuler (2001) to define the real, physical city whose urban space is lived, while this study prefers to use the term “physical city”;
2. the term “virtual city”, instead, refers to the digital representation of the city made by people and citizens. This study conveys the same idea by using the more generic definition of “digital city”.

Within the same digital city Schuler differentiates four categories, which he labels as commercial, governmental, community network, and representational (Schuler 2001, pg. 72-74).

This thesis focuses on the categories of commercial and representational city proposed by Schuler, even if there are some differences from the author’s interpretation.

According to Schuler, the commercial city is focused on the diffusion of commercial information and its main purpose is to improve the online-communicated activities income. This system works like a sort of yellow pages, where all the information about local businesses (restaurants, enterprises, shops, etc.) can be found. In this sense, “local digital cities developed along these lines are not ‘locally owned and operated’” (Schuler 2001, pg. 73).

On this point this thesis distances itself from Schuler’s categorization, because it considers the digital city as the result of local socio-economic activities’ online presence but, at the same time, it does not focus on “platform business”. According to this study, it is fundamental to consider and give value to the civil society’s effort to be online and to give an active contribution to the creation of the digital city in a very challenging context, where being online implies a series of difficulties not only in terms of access to infrastructures but also linked to human and social resources and to content.

This research aims to analyze how enterprises are represented within a specific area by observing the digital twin of an urban reality made by the online presence of its socio-economic activities.

Therefore, Schuler's "representational" model of digital city seems to be more suitable because "some physical aspects of the geographical city are emulated in ways that preserve or carry over information more directly" (Schuler 2001, pg. 73). One role of the representative cities should be to help people in making decisions about an existing and suggested structure (such as the construction of a new museum or shopping center, as well as the demolition of a highway, for example). This use could focus on considering different options through an open common decision helped by digital representation.

A very interesting study related to this topic is Tori Ishida's work concerning the city of Kyoto, which generated one of the most famous definitions of the digital city: "an arena in which people can interact and share knowledge, experiences, and mutual interests" (Ishida, 2002, pg. 76).

This definition, fundamental for the development of the term "digital city", focuses on the internet capability to join different aspects of urban life (data, information, services) which could influence, fasten and facilitate people's decision making. In this sense, the author focuses on public institutions' role while choosing eGovernment policies aimed to facilitate the process of digitalisation of the city and the related services.

Differently from Irisha (2002), who analyses the digital city of Kyoto from the point of view of the eGovernance and the presence of online public services, this thesis highlights the lack of involvement of the public sector both in providing digital contents and services and in terms of actual city.

Finally, Stephen Graham and Alessandro Aurigi (1997) tackle the theme of the digital city and its inner social polarization putting their conclusions near the studies on the digital divide concerning ICT4D in Africa, which will be widely deepened in the next paragraph. According to the researchers, digital cities do not represent a solution for the cities' social polarization because they are dominated by a technological élite, which does not offer any kind of interaction. Space in terms of territory, created and represented by the digital city, could be characterized by one-way consumption systems which can be used only by those

who can access them and which are strongly linked to local government and/or to privately held companies' promotion and advertising.

The growth of digital cities and the private spaces within them contributes to create a technology-integrated world enhancing the value of real places, communities and lives.

On one hand, the authors hope that, in the long run, the urban planning of the cyberspace could help in building important "paddocks" within the space Castells called the global "space of fluxes" by supporting electric infrastructures which are also democratic, inclusive and discourse-based (Graham & Aurigi, 1997). On the other hand, they state that only transnational élites could really take advantage from these infrastructures and that social needs, the characteristics of the place, freedom of expression and the variety of local culture tend to be crushed by globalization's business and commercial logics and the whole media will not fill all the essential educational, civil and cultural necessities of real cities and places (Graham & Aurigi, 1997, pg. 24).

1.4 ICT and uneven development

Researches about the digital city mainly focus on developed countries. This paragraph explores the issues of information inequalities and the uneven representation of the world from the perspectives of ICT4D studies.

As underlined by Tim Unwin (2009), the studies within this discipline are aimed to introduce technology in developing contexts in order to reduce the digital/knowledge gap and support the economic, social and political growth. Although this thesis is not an action-research, this work aims to give a contribution to ICT4D studies by analyzing the development of an African digital city and observing how the related digital representation reflects the existing social polarization. Even if this is not a piece news and many researchers support the fact that technologies contributed to reinforce the digital divide (Graham et al., 2014; Graham, 2002; Lorini, Van Zyl, & Chigona, 2014; Odendaal, 2011a; Unwin, 2009, 2015; Van Zyl, 2013), this thesis considers important to adopt an holistic approach in order to highlights which local activities, despite a limited access to ICTs, lavish themselves to represent a better local reality.

In particular, the definitions of digital divide and information inequalities are presented, and it is observed how the lack of information about Global South countries generates an uneven representation of the world. In this context, the importance of focusing on the processes of information's production and distribution is underlined.

These processes are fundamental for the purposes of this research, which focuses on the online communication of an African city, and looks at the availability of technological infrastructure as only one of the resources enabling the communication of information and messages about the city.

The main objective is to represent – according to the research limits – what exists online up to now. Learning more about the virtual representation of the city (who is online and

where exactly) may allow practitioners to improve their decision making and, so, to contribute to the development of knowledge and innovation.

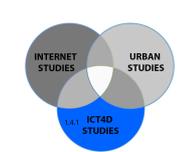
This uneven representation of the world and information inequalities are observed according to two perspectives, the theme of access and of information geographies.

On one hand, the study focuses primarily on the theme of access, both at a global and urban level, which allows to offer a more balanced representation of the world and the cities. In order to harmonize such an information inequality, ICT4D researchers theorized different models of access, which encourage to consider also cultural and social practices, decisive for a concrete adoption and integration of ICTs within the local context. The mere availability of infrastructures, which allow to access the internet, is not enough to guarantee their utilization and the related production and distribution of information.

On the other hand, from the point of view of information geographies, it is underlined how the spatial representation of the information is extremely useful to show the visible and the invisible, and how the invisible “really matters” (Graham 2013, pg. 5). The geography of information (or internet geography) is that branch of geography, which studies the spatial distribution of internet. Strongly influenced by Manuel Castells’ work, it considers the dynamics of internet development through the positioning of infrastructures and services (servers, websites, data, etc.). Mapping the information and the related cartography becomes fundamental for the political, social, economic and technological analysis of internet’s organization (Green, 2013; Warf, 2012; Zook & Graham, 2007a) and are nowadays an instrument which is strictly connected with the comprehension and representation of the digital divide (Graham et al., 2015).

1.4.1 The digital divide

At the beginning of 1990s, with the spread of internet through the computer-integrated World Wide Web and the point-and-click graphical interface, technology reached mass diffusion.



As reported in the previous paragraph, this represented – in particular in the US – a “technological revolution”, the birth of an “informational society”, the developing of a “new economy” led by the idea of a neoliberal globalization, whose main goal was to accelerate the creation of a global, self-regulated and open market.

At the same time, it has been evident since the beginning that this techno-economic system would have provoked an irregular development and increasing economic, social and productive polarizations.

In 1995, the U.S. Department of Commerce, National Telecommunications and Information Administration (NTIA) presented a study where the term “digital divide”, defined as a “gap between those who do and those who do not have access to computers and the internet” appears for the first time (McConnaughey et al., 1995).

As underlined by Castells (2001) such digital divide was characterised by three, deep social divides: the *ethnic divide* (black population, due to a lower income, could not afford a computer or could not access out of the domestic area); the *technological divide* (the differentiated access to better, more up-to-date and faster services) and the *cognitive divide* (the development of competences and the education system’s inadequacy to keep itself updated on the technological growth).

For this reason, a reflection about the representation of the digital divide on a global scale begins (Castells 1996, 2001), and what emerges is the distance between people who can access information technologies (mostly living in the Global North) and those who cannot (mostly living in the Global South), where poor people stand at the basis of the pyramid and are not involved in the technological progress because they are confined in remote, unreachable areas, where information arrives late in comparison with a globalized, connected and advanced world.

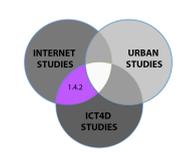
In line with Castells’ work, a binary division between those who have access or not to ICTs has been highly criticized by scholars (Castells, 2003; Cislér, 2000; van Dijk, 2005;

Warschauer, 2002) who highlighted different levels of access, focusing on topics linked to social inclusion and exclusion.

Moreover, different authors demonstrated that “the political role of the Internet reflects and thereby reinforces, rather than transforms, the structural features of each country’s political system” (Norris, 2003, pg. nd) and that in a perspective of a socio-economic development, the digital era contributed to increase (instead of reducing) the existing inequalities between the Global North and South (Hilbert, 2014; Unwin, 2009, 2015).

1.4.2 Digital divide and information inequalities

The definition of digital divide has not been very useful for different reasons: it emphasized the role of technology and distracted the attention from other divides and inequalities which obstacle the development (Heeks, 2002).



According to Jan Van Dijk (2005), problems linked to the physical access and to infrastructures have always existed and internet has only contributed to make the consequences linked to this divide worse (van Dijk, 2005).

The digital divide, or better the “deepening divide”, does not only refers to problems linked to access to technologies or connectivity, as reported by the 11 action lines promoted by WSIS (2013), it also involves political, sociocultural (van Dijk & Hacker, 2000; van Dijk, 2005), economic and institutional aspects (Heeks, 2002).

Technology provides the world with new opportunities and new potentialities. The ways in which those opportunities are harnessed, though, and the actual impacts that arise are more systematically determined by contextual factors: political, economic, sociocultural, and institutional (Heeks, 2002).

The definition of digital divide starts to be analyzed in terms of digital inequalities not just with reference to the differences concerning the access, but also to inequality *among*

people with formal access to the Internet (DiMaggio & Hargittai, 2001). Van Dijk (2005) wisely chooses the term *information inequalities* to go beyond the bipartite image of digital divide and considers also the vast majority of the population who, since the beginning, has used internet and ICTs services even if they did not have personal devices or an internet connection at home (Van Dijk, 2005). Van Dijk claims that “the digital divide is deepening where it has stopped widening” (Van Dijk, 2005, pg. 2) and that “all kinds of access are continually moving” (ibid, pg. 4). Therefore, he suggests to re-frame the notion of the digital divide as information inequalities of the network society.

As suggested by Yu (2006, 2011) the term “information inequalities” is not new. Studies linked to this topic come from the field of study connected to libraries and archives. Even if in those disciplines have different common points, in particular with respect to the social implication caused by the digital divide and information inequalities, they have adopted two different approaches and methods. Yu’s work reveals the existing literature concerning digital divide and information inequalities, underlining how the last has a bigger theoretical baggage based on socio-constructivist theories.

The relevance on information in framing the digital divide is also presented by the work by Richard Heeks, focused on the central role of information rather than electronic devices (2002). According to Heeks (2002), the role of information for development is determined according to:

2. the *processes* of elaboration of raw data into information and the communication of these information to the receiver, which imply a transposition conveying a specific meaning;
2. the *outcomes* of these processes in terms of learning which is the metamorphosis of information into knowledge and support to decision making processes.

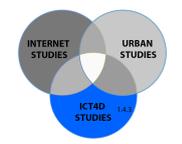
The management of these processes through ICTs and the support they provide to learning and decision making outcomes constitute, according to Heeks, the core contribute of technology to development (Heeks, 2002).

Moreover, in order to support this idea, Schech (2002) focuses her work on knowledge as a key product of information. According to the author, the ICTs-mediated communication should not be only unidirectional in providing information to poor and oppressed people, but it should also concern the transmission of information and knowledge from these groups to a wider public.

Under this perspective, all the initiatives of development should put information first, considering technology as secondary, and framing the message within a wide range of offline and online media (from radio to TV, from mass media to telephone systems, from “oral culture” to social media networks) which best satisfies the local need of information (Vannini, Rega, & Cantoni, 2015; Ben-Collins & Ihejirika 2015).

1.4.3 Models of access to ICTs in developing countries

In response to all the problems linked to the digital divide issue, ICT4D researchers involved in action research projects which foresee the integration of technology within complex contexts, suggest different models to deal with a sound conceptualization and integration of ICTs in developing countries.



Richard Heek (2002) starts from an important theoretical assumption, largely supported also by this thesis: technology itself must also be seen as socially constructed (Klein & Kleinman, 2002); as an artefact of a particular environment, created by particular stakeholders for particular purposes (Pinch & Bijker, 1984).

Heeks (2002) suggests the systemic model of ICTs, characterised by an information-centered approach, with ICTs sitting alongside other information handling technologies, as an integral part of an overall factorial and institutional environment that will significantly shape ICT related impacts.

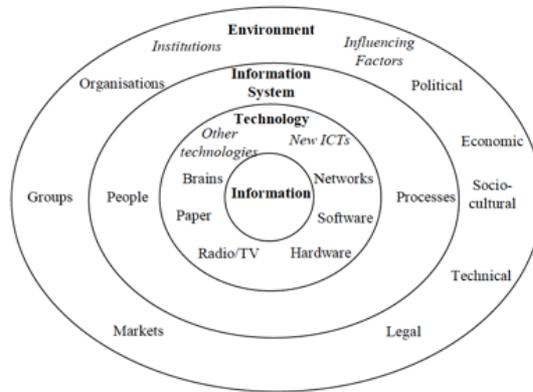


Figure 8 An integral, systemic view of Information and Communication Technology.
(Heeks, 2002, pg. 12)

Heeks' studies identify and highlight all the further resources needed to make a ICT based system effective for the development.

These ideas have been embedded in the definition of chain of information (Heeks 2002). As shown in Figure 9, the chain represents the interconnection between data – its starting point – and the effective action for development – the ending point- together with the interconnection between all the (economic and social) resources needed to make the chain work.

This reminds that underprivileged people keep their status because of divides and inequalities concerning a wide range of provided resources – knowledge, skills, money, power and others – independently from their capability to access data using ICTs. If ever the access to ICTs and data was necessary, they would not be considered as sufficient conditions to allow an effective development.

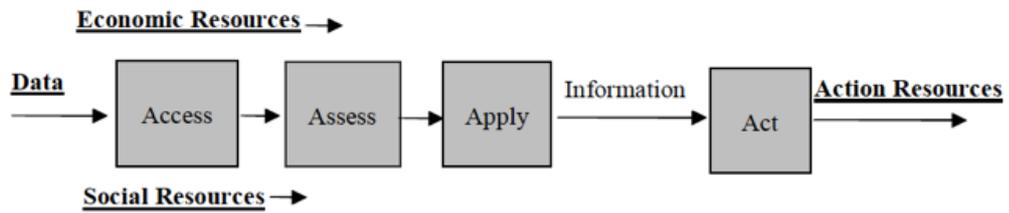


Figure 9 The Information Chain 9

Heeks concludes by supporting the need of an information-centered approach to ICTs which should also be “integral to its environment, integrated with development objectives, intermediated, interconnected, and indigenised. Above all, it must be intelligent” (Heeks, 2002, pg. 21).

Starting from the reflection concerning information inequalities, Jan Van Dijk (2005) focuses on the idea of the access as a multidimensional concept, which is a more complex topic, which must take into consideration social, economic and cultural differences. His model of access adds to the physical access to technologies also skills, usage and users’ motivation in accessing contents.

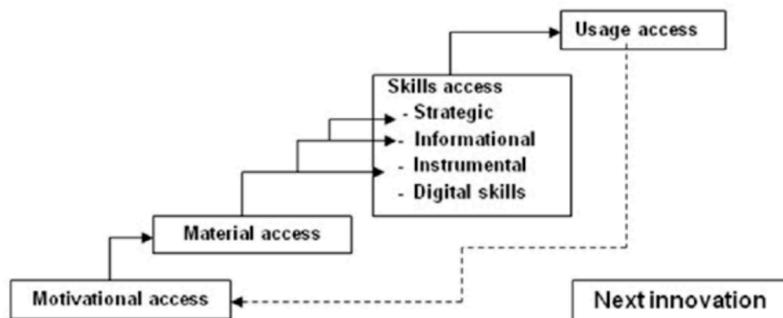


Figure 10 A cumulative and recursive model of successive kinds of access to digital technologies (van Dijk, 2005, pg. 22).

In particular, Van Dijk (2005) suggests that the ICTs usage motivation should not be taken for granted. In fact, if on one hand motivation includes “both uncritical admirers of the digital media and technology pushers who want people to use computers and get connected to the Internet the sooner the better, as if this would automatically solve their problems”, on the other hand, “our societies do not only contain information and technology have-nots but information and technology want-nots. Some people are not intense seekers of information and communication. Others do not like computers and are not attracted to the internet” (Jan A. G. M. van Dijk, 2005, pg. 27).

Finally, Mark Warshawer (2002, 2004) describes a model of access to ICT that takes into account the interplay between ICT and social practices (Figure 11). The model outlines four sets of resources that are needed for the integration of ICTs in social practices: *physical* (technological infrastructure), *digital* (content and materials made available online), *human* (skills, especially literacy), and *social* (the social and institutional infrastructure that supports the usage of ICTs). These four categories of resources are, on one hand, conditions and enablers for an effective ICT use and, on the other hand, the outcomes of the effective use, so that – if handled well – in the long run they can contribute to development and social inclusion (2004: 46-48). Warschauer’s model of access is used in the thesis to compare challenges and tendencies in accessing information through print and digital media in the city of Douala.

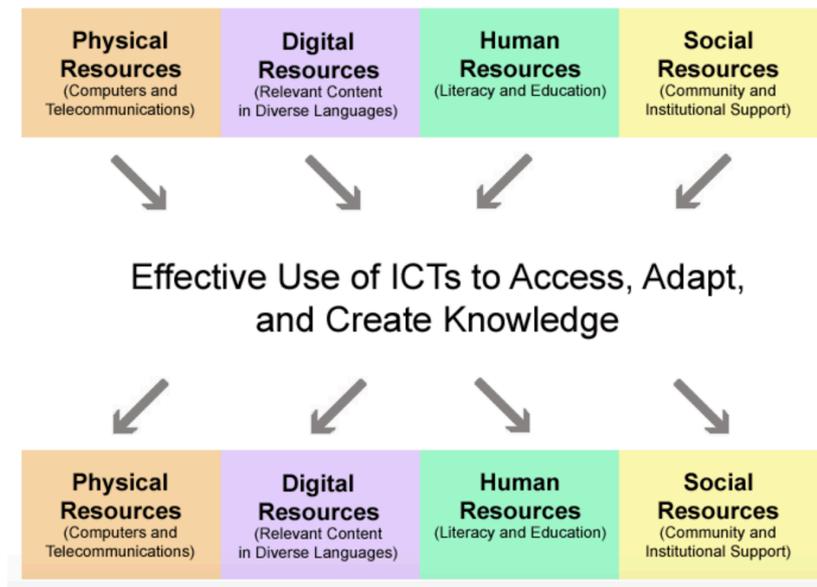
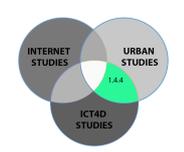


Figure 11 Model of effective use of ICTs (Warschauer, 2002, pg. n.d.)

1.4.4 Uneven development and geography of information

Digital divide, information inequalities and problems linked to the access to information are topics which strongly emerged also in the field of geography which, in spite of all the critical predictions about “the end of geography” due to the arrival of the digital era, evolved consistently in the last 20 years, by giving birth also to that branch we all know as geography of information or internet geography.



Manuel Castells (2001) is one of the first researchers who dedicates in his book *The Internet galaxy: Reflections on the Internet, business, and society* an entire chapter to internet geography, considered summarily in his previous works.

According to the author, internet has its own geography made by networks and hubs, which elaborate the flow of information generated and managed by the places. The resulting “space of flows” is a new kind of space, typical in the era of information, which

is not lacking of places: it connects places through networks and digitalized transportation systems.

“The space of flows is not placeless, although its structural logic is. It is based on an electronic network linked to specific places, with well defined social, cultural, physical and functional characteristic ... both nodes and hubs are hierarchically organized according to their relative weight in the network. But this hierarchy may change depending upon the evolution of activities processed through the network” (Castells, 1996, pg. 413).

The space of flows redefines distances but does not erase geography and new territorial configuration emerge: “Internet use is diffusing fast, but this diffusion follows a spatial pattern that fragments its geography according to wealth, technology, and power: it is the new geography of development” (Castells, 2001, pg. 212).

Castells’s emphasis on the interaction between the globalizing/totalizing tendencies of information spaces (the space of flows) and the differentiating effect of the places (the space of places) is at the heart of most studies of the geographies of the internet (Zook, 2006).

According to Castells (2001), it is possible to observe and analyze internet’s geographical size from three different points of view:

1. Technology. It refers to internet infrastructure, connections between computers and broadband distribution;
2. Users’ geography. Irregular both from the numerical point of view and from the penetration rate concerning the population of each country, it is the new geography of development. Despite internet is spreading fast, its spatial diffusion is related to wealth, technology and countries’ strength;
3. Geography of production. Spatial concentration of big companies together with their suppliers, mostly in the neighborhoods of big cities, linked each other by

telecommunication and air transport. Internet's geography of production is the geography of cultural innovation.

Matthew Zook (2006) explores the multiplicity of ways in which the spatial component of human activity has been extended to the virtual in his book "The geographies of the internet".

As the basis of his study and together with the wise use of the plural *geographies*, Zook (2006) makes a fundamental introduction for this research, that is the always existing relationship between geography and communication which can be summarized in three main ideas:

1. communication media and technologies have created new non-physical spaces for human interaction;
2. the rise of electronic information technologies has created a communication space showing new geographies of interaction and connection between people and places, both near and distant, that blend virtual spaces and physical places;
3. internet provides new geographies of connection and exclusion. Urban infrastructures' networks fragmented urban areas both in developed and developing countries.

Innovations affecting communication technologies are inevitably shaped as much by the places they connect together and the places shaped by innovation themselves. The use of technologies is part of an ongoing social and political struggle embedded in complex power and social networks.

A new technology does not appear suddenly and cannot replace another one: it modifies it and makes it better, that is what the studies linked to internet geography are interested in. For this reason, internet geography focuses on how technology generates complexity and how geography is made better or challenged, instead of being replaced (Couclelis, 1996b).

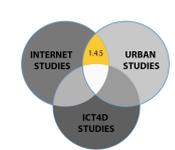
A fast-moving technology such as internet constantly generates differences between places, people and within the virtual spaces produced. Zook (2006) strongly criticizes the technology determinism which considers internet impact as a transcendence of technology over geography. In the wake of Warf (2001), he refuses the simplistic visions concerning the “death of distance”, stating that the “variation over space” has always been a tenet of geography. Geography has always been concerned with questions of how resources, climates, culture and economy differ across the space. He recognizes that internet challenges the historical definition of place but, at the same time, it creates and reflects a spatial structure, which is defined and interlaced (Warf 2001). Similarly, Helen Councilis (1996) suggests to focus on the new hybrid spaces, shaped by the combination of physical and electronic elements, which in turn create new definitions of distances.

Moreover, by quoting and following Massey’s theories, Zook (2006) argues that geographers view places as “articulated moments in networks of social relations and understanding” in contrast with historical notion of physical areas surrounded by boundaries. Finally, he underlines how the “cyberspace coexists with geographic spaces, providing a new layer of virtual sites superimposed over geographic spaces (R. M. Kitchin, 1998, pg. 403). This layering of the internet onto places is filtered through their social, cultural, political and economic compositions.

“The web-based interface to the internet provides the illusion of a realm divorced from socially constructed markets and system of exchange built over decades and centuries ... the characteristic of localities, which Castells refers to as the “space of places” determine the structure of the network and each place’s relation (or irrelevance) to it” (Zook, 2003, pg. 1263).

1.4.5 The geographies of the internet

Using the plural internet *geographies* wisely, Mathew Zook (2006) identifies at least five fields of application:



- Technical geographies of the internet. These studies provide documents about the role of geography in the production of an irregular internet infrastructure, through the analysis of indicators such as the amounts of bandwidth going to a city or country, internet fiber backbone, points of presence, or broadband deployment, which allow to highlight some emerging points. With regards to this, Malecki study becomes relevant. In fact, he argues that “The evolving infrastructure of the internet is reinforcing old patterns of agglomeration” (Malecki, 2002, pg. 419).
- Human geographies of the internet. These studies show how the internet blends with existing human activities embedded in physical places. In the wake of *City of Bits* (Mitchell, 1996), it is observed how internet expands the human interaction over the physical co-presence, giving birth to virtual communities and new communication methods which go beyond the dichotomy between physical and digital spaces
- Political and cultural geographies of the internet. These studies focus on the definition of sovereignty and territoriality, which emerge from the distribution of the internet infrastructure (Wilson, 2001), on the analysis of power relationships (Warf 2001) and on the way internet interacts with the boundary between the real and the virtual (Crang, Crang, & May, 1999).
- Economic geographies of the internet. Information flows coming from the network society play a main role in the commercial exchange between and the organization of local economies. These studies focus, on one hand, on the analysis of urban economic geographies (Sassen, 1991) and, on the other hand, on e-commerce geographies, which define production and consumption areas of enterprises and regions.
- Visualized geographies of the internet. This field of application focuses on internet cartography, which allows to transform complex and interconnected data into readable, summarized and simplified information, represented on the maps. However, maps are not objective: in order to offer a perspective of a mapped

phenomenon, their creators need to select which elements should be included or not in the representation.

This thesis refers to this last point in particular, connecting the field of geography with communication and ICT4D studies. Cartography is considered as a useful instrument to show the development of a city's virtual spaces, in a readable way and through the graphic representation of local activities set on the digital landscape. This technique allows to point out what is visible or invisible in the digital city and to define centers and peripheries informing and facilitating the comprehension of the virtual reality.

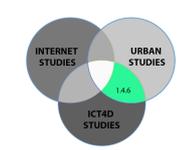
In their impressive work "Atlas of Cartography", Martin Dodge and Rob Kitchin (2001) introduce the benefits of cartography for research purposes:

"maps and spatializations exploit the mind's ability to more readily see complex relationships in images, providing a clear understanding of a phenomenon, reducing search time, and revealing relationships that may otherwise not have been noticed. As a consequence, they form an integral part of how we understand and explain the world" (Dodge & Kitchin, 2001, pg. 2).

As presented in the following paragraph, some researchers have specialized in this branch of geography, for example Peter Fisher and David Unwin (2003). Anyway, within scientific literature, those who combine geography's instruments and techniques with communication are a few. It is more frequent to find geographers interested in ICTs development and spatializations rather than information and communication technology academics who use cartographic instruments and techniques (Zook 2006). Moreover, the use of cartography on an urban scale for the virtual representation of a developing city has not been taken into consideration yet.

1.4.6 Mapping the geographies of information

Between the geographers who used cartography as an instrument to study the digital divide/information inequalities, Mark Graham from the Oxford Internet Institute is among the most well-known ones.



The possibility to visualize information on a cartographic scale is important because it allows to shape our knowledge and expertise of the world. Black areas in the virtual representation are often unknown by people. As Graham et al. (2015, pg. 88) reported:

How places are presented within informational augmentations fundamentally affects how they are used or brought into being (Graham & Zook, 2013). In other words, geographic augmentations are much more than just representations of places: they are part of the place itself; they shape it rather than simply reflect it; and the map again becomes part of the territory (Floridi, 2014; Pickles, 2012).

In order to represent the digital divide between the Global North and South, Graham identifies three categories of geography of information: *geographies of access*, *geographies of participation* and *geographies of representation*.

Maps showing the geographies of access represent the distribution of infrastructure and services, which are essential for the digital communication, for the users' participation and for the object's representation. This category includes the maps concerning world's online population (Figure 12 - Figure 13), broadband affordability (Figure 14) and Top Level Domain representation (Figure 15).

Maps which show the geographies of participation represent the places where information is produced. The studies about user-generated contents and open collaborative projects such as Wikipedia (Figure 16 - Figure 17) are part of this category.

Finally, maps concerning the geographies of representation display about "which parts of the world is content created and not created" (Graham et al., 2015, pg. 91) through data

mapping on platforms and search engines (Google Search, OpenStreetMap, Free-base and Geonames) in order to “better understand the contours of representation within the (im)mutable augmentations of the world” (*ibid.*, pg. 98)

1.4.6.1 Geographies of access

Some of the maps produced by the Oxford Internet Institute, showing the visible and invisible online areas of the Worlds are presented below. These maps are important for this research and allow to understand how the digital divide does not depend only on a limited access to internet and technologies, but also on the huge difference of affordability concerning these technologies, due to a very limited participation to information and knowledge production and distribution within and about the South of the world which, as a consequence, reproduces a biased representation (and perception) of the world.

Figure 12 and Figure 13 both represent the world’s online population calculated according to the number of internet users per nation and the number of internet connections every 100 people (internet penetration rate). The comparison between these images shows a positive growth from 2008 to 2011, due to an increasing number of nations on the map and a more intense coloring.

As far as the number of states on the map is concerned, the author of this thesis does not intend to underestimate the scale in which the data is represented, knowing that sometimes he can give a distorted image of reality. It is therefore important to point out that in reporting the data of 2008 and 2011 the scale of visualization has been expanded by about 6 times in order to convey and strengthen the message of growth. Specifically, all countries with less than 2 million internet users have been removed from the 2008 map. The 2011 map, on the other hand, allows you to view countries with just over 330,000 Internet users, many of whom are in Africa (including Benin, Eritrea, Burkina Faso, Mali, Madagascar). As a result, the number of states reproduced on the map is immediately increased. That said, it is useless to deny the presence of a positive growth demonstrated by data from ITU 2008 and 2011. As far as the intensity of the red color with which the different states are represented is concerned, to indicate different levels of Internet usage among the population (i.e. internet penetration rate), the scale of data classification is not compliant in the two maps: only the lighter color bands (from 0 to 20% and from 21 to 40%) match in

both representations. From the third color band on, the classification index changes, and if in 2008 dark red indicates a penetration index higher than 60%, in 2011 it refers to 80%.

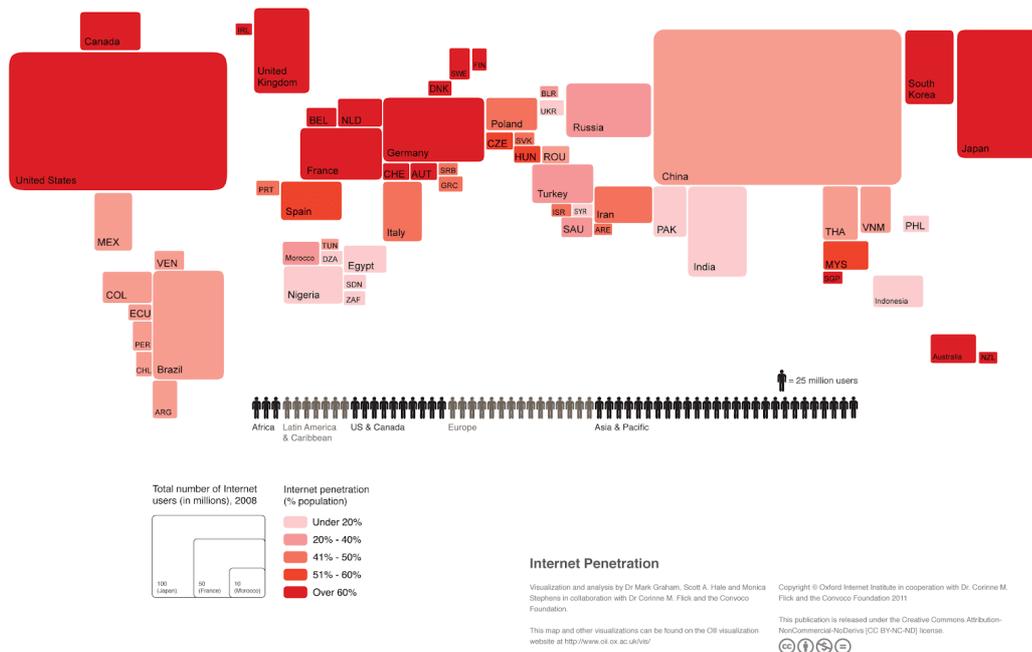


Figure 12 Internet population and penetration 2008 (Graham et al. 2011)

Internet Population and Penetration

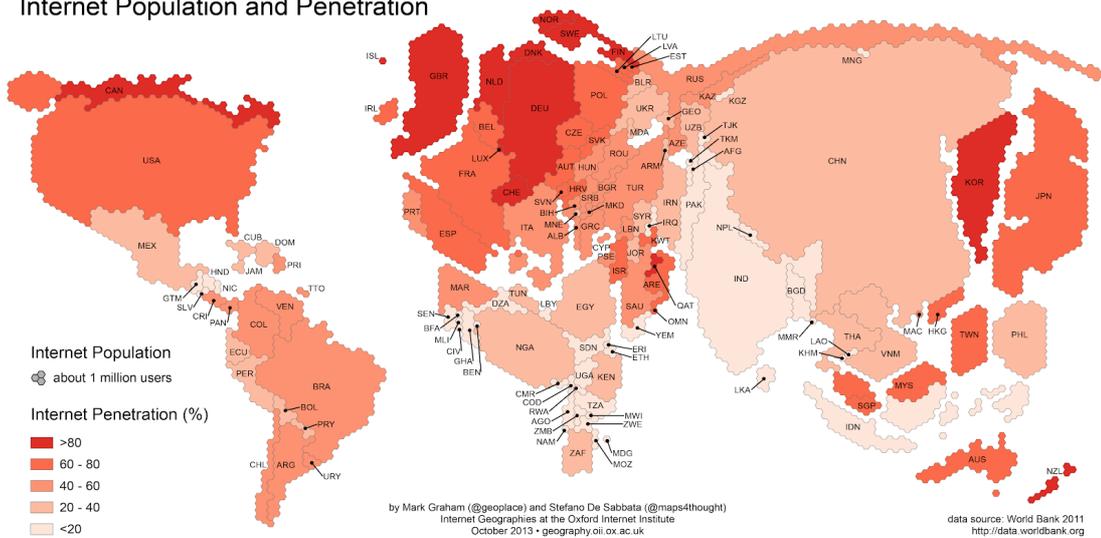


Figure 13 Internet Population and Penetration 2011 (Graham & de Sabbata, 2013).

If we consider Africa, in the 2008 map the whole continent is almost absent: only seven countries (12.96%) out of 54 are represented (in an almost unrecognizable way) with an internet penetration rate under 20% in five cases (Graham, Hale, & Stephens, 2011).

Three years later, thanks also to the scale difference, Africa's image can be recognized, even if it is still incomplete: 29 out of 54 countries now take their own place on the online population map. Nigeria, Kenya and South Africa saw a real growth as far as the internet penetration rate is concerned, while North Africa doubled its online population.

In spite of this, more than half of sub-Saharan Africa countries had a minimal growth in term of online users and an internet penetration rate under 10%. Cameroon, for example, in the years 2008-2011 showed a 1.7% growth in term of users and only from 2015 went beyond the 20% internet penetration rate threshold.

One of the main reasons why African countries show a scarce internet penetration rate is broadband affordability: the relationship between the average yearly income per capita and the cost of a broadband subscription, which is depicted in Figure 14. The map, by reproducing and combining 2011 ITU data about "fixed (wired)-broadband monthly subscription charge, in USD" with World Bank data related to gross national income per capita (Atlas method, current USD), depicts one of the main issues of digital divide: the relative cost of being connected to the Internet.

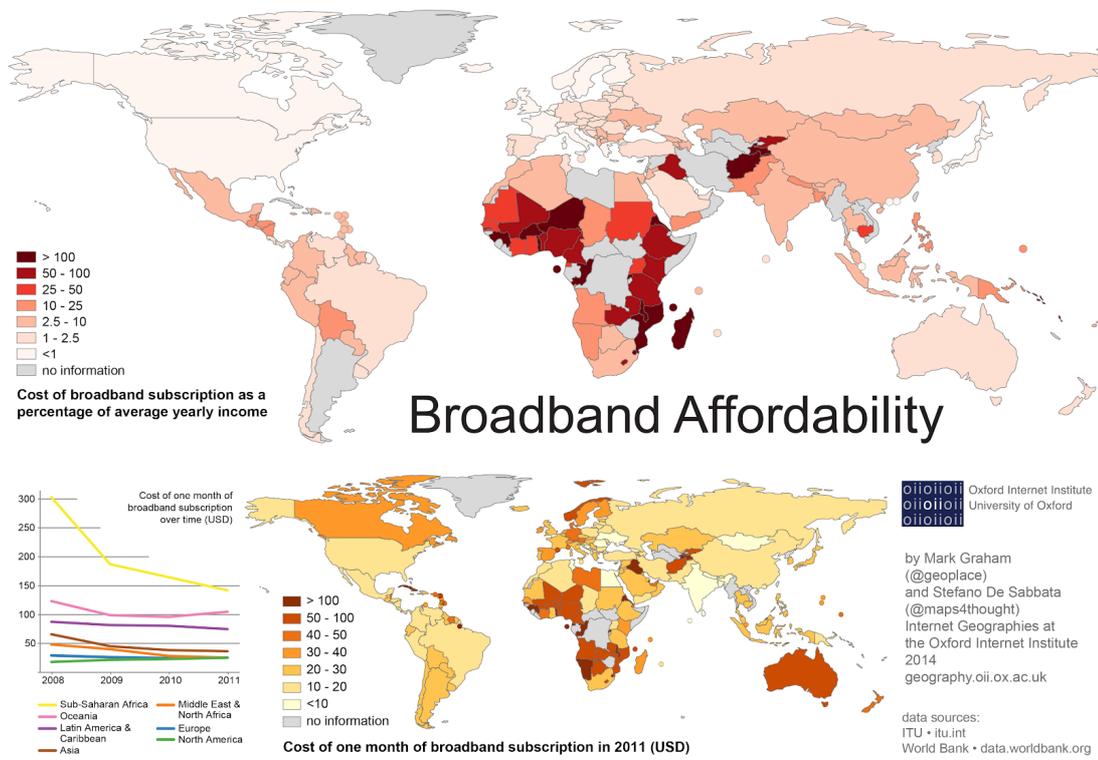


Figure 14 Broadband Affordability (Graham & de Sabbata, 2014).

The emerging result is impressive: in 2011, the cost of an internet connection exceeded widely the inhabitants' annual income in 18 countries. In Eritrea, for example, a one-year subscription is equivalent to the sum of 50 average salaries, in other words 50 working years. Despite the development of technological infrastructure in Africa starting from 2009 made the internet penetration rate increase in many countries thanks to a cost reduction from 1,700 USD to 55 USD, in 2011 Burkina Faso this amount represents 100% of the salary of an average worker (Graham et al., 2015).

Also Cameroon does not rank in a favorable position: it is set in the second higher slot of broadband affordability, which is the one including countries where broadband cost is included between the 50% and the 100% of the population's average annual income. The issue of internet connection costs will be discussed in the chapter "Outcomes" (see paragraph 3.1.5.3), with reference to the particular case of Douala, as one of the main

stumbling blocks concerning internet and ICTs access, as well as the production and distribution of contents within the city and the consequent negative repercussions on the digital representation (Pucciarelli, Sabiescu, & Cantoni, 2013).

For these reasons, internet keep its status of luxury good, limited to people who can afford it. “Without the ability and means to connect, the opportunities, the information, and the communication mediated and afforded by the Internet all remain impossible” (Graham, 2014, pg. n.d.).

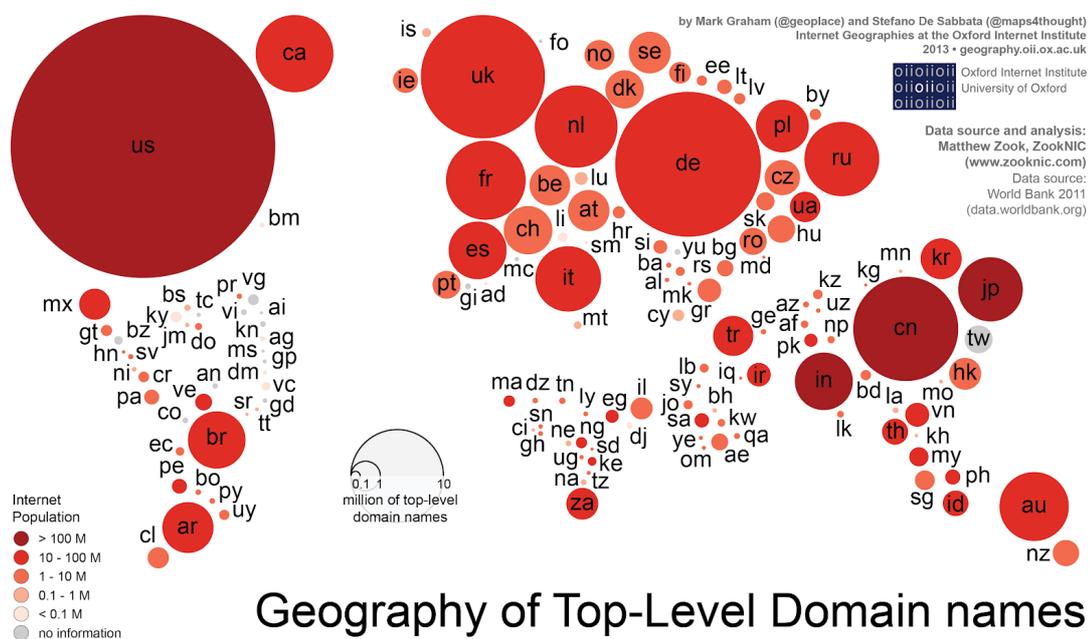


Figure 15 Geography of Top-Level Domain names. (Graham & S. de Sabbata,2013)

1.4.6.2 Geographies of participation

Geographies of participation refer to the production of contents on internet. To discover who are the producers of internet’s contents Mark Graham realizes on a cartographic scale dataset which are very different from each other: on one side the *country specific top-level domain* (i.e. the last segment of a domain name or the part that follows immediately after the "dot" symbol identified with a country code) to recognize a geographical area from

which websites originated (Figure 15) and, on the other side, the quantity of geo-referenced articles on Wikipedia, (Figure 16 - Figure 17), the largest open collaborative project in the world where anyone can give a contribution to increase and improve content about whatever subject.

From the *top level domain* representation, it emerges that the domains registered in Africa and Middle East represent together only 2% of the world's websites while Europe and North America represent together 78%. Moreover, the author states that there is a positive relationship between the country's rank in Gross National Income (GNI) per capita and the number of domain names per Internet user. A country's ranked position by GNI per capita explains about 50% of the variance in its ranking by the number of domain names per Internet user.

With regard to the Wikipedia's user generated content representations Graham and his colleagues report that "User-generated content is far from being a simple mirror of either population density or human activity" (Graham et al., 2011, pg. 26).

Considering georeferenced contents produced on Wikipedia, in 2009 "There are more Wikipedia articles written about Antarctica than all but one of the fifty-three countries in Africa" (Graham, 2009, pg. n.d.). No African country goes beyond 1000 entries, except for Burkina Faso, demonstrating a lack in the production of contents concerning places such as descriptions of municipalities, regions, national parks, monument and cultural heritage, public building, or events that occurred in a specific place (historical and chronicle events, like wars, battles and riots, etc). In Cameroon, for example, the most complete list of national municipalities is indexed in the Italian version of Wikipedia and it includes 360 municipalities of which 58,9% do not have a dedicate article presenting some basic information which would allow them to be classified in some way.

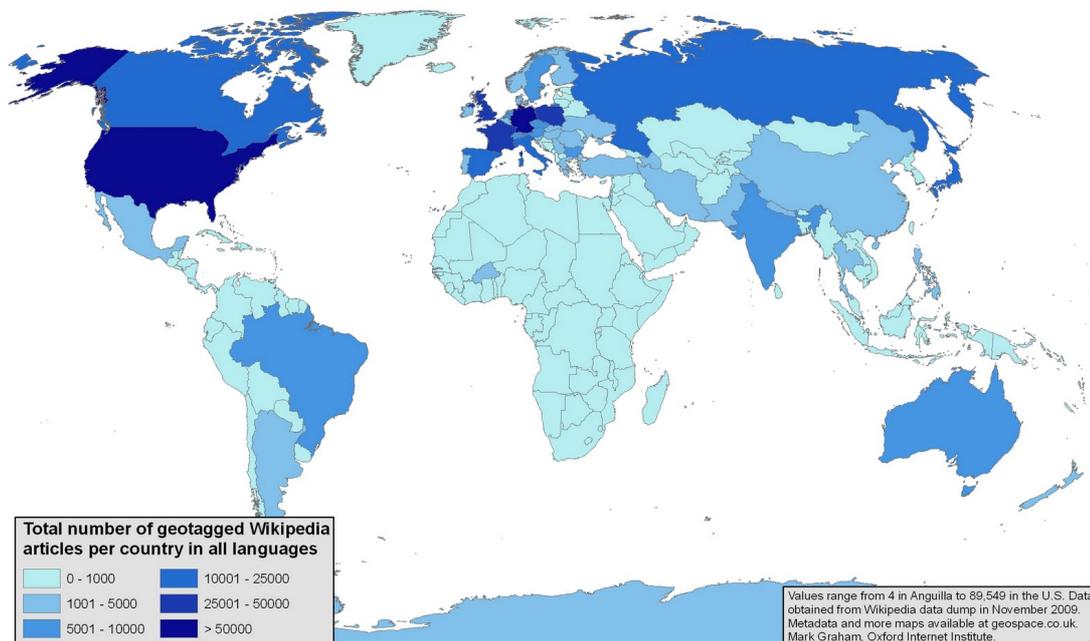


Figure 16 Geo-referenced articles on Wikipedia (Graham et al., 2015).

Some years later (2011-2012), a detailed study demonstrated that the situation has not changed: only 2,6% of Wikipedia's articles are about the African continent. In addition, there is a huge regional imbalance within Africa itself: some countries did not present any data related to the editing of content on Wikipedia during the quarter at the turn of 2011 and 2012 (See Figure 17 the countries colored in grey); many others (including Equatorial Guinea, Swaziland, Republic of the Congo, Djibouti, Rwanda, Guinea Bissau, Lesotho, Burundi and Sierra Leone) present less than 600 related articles, while South Africa and the Northeast African countries (Tunisia, Morocco, Algeria, Egypt) are the best covered ones.

According to the authors, the existence of Wikipedia's contents concerning a country can be analyzed according to three different elements that are the number of its inhabitants, the presence of broadband internet connections and the editing provided by Wikipedia's contributors. Nevertheless, it often happens that articles about those places are written or

integrated by outsiders who – despite having access to trustworthy online or offline sources of information – do not have any local knowledge or overall view.

The lack of user-generated contents and the consequent absence of (digital?) representation could contribute to marginalize those countries from the global knowledge economy.

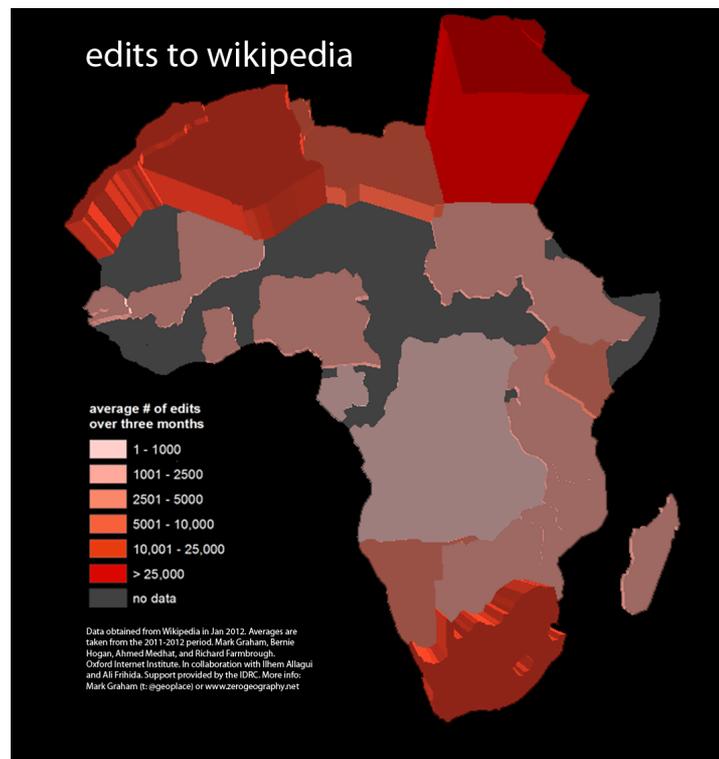


Figure 17 Africa on Wikipedia (Graham et al. 2012).

1.4.6.3 Geographies of representation

Finally, with regard to the geographies of representation, a significant example concerns the geographical contents produced on WikiVoyage, one of the world's most popular crowd-sourced travel guide.

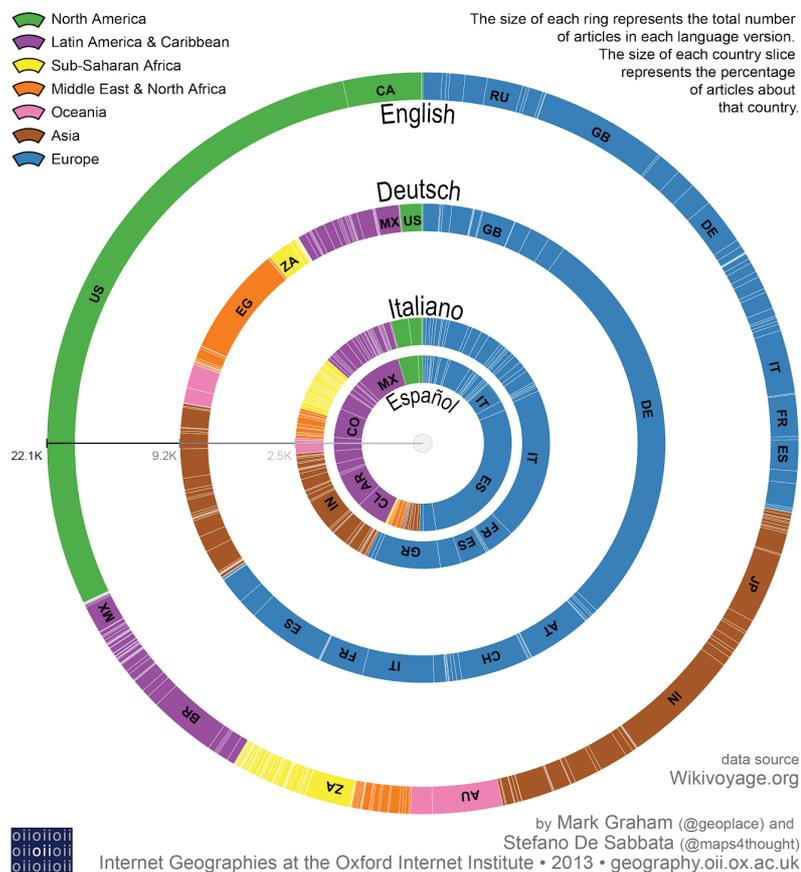


Figure 18 Geographic Representation of the World on Wikivoyage

The diagram above collects all the data concerning four WikiVoyage different linguistic versions (English, German, Italian and Spanish) and shows the amount of the articles produced in each language across the world. It is worth nothing that this representation is a partial one, which not include for example the French WikiVoyage platform, where almost half of content can be read and accessed in Africa. Languages are represented by a ring, whose dimension depends on the number of existing articles written in that language (WikiVoyage English version is richer in terms of contents and, consequently, it is represented by the larger ring, while the Spanish version is smaller and represented in the center). The different colors in each ring refer to the most represented geographical areas (North America, Latin America and Caribbean, Middle East and North Africa, Sub-

Saharan Africa, Oceania, Asia and Europe), while the size of the inner sections indicates the number of articles produced in the single language for each country. Countries whose contents occupy less than three WikiVoyage pages are not considered.

Figure 18 offers a very interesting opportunity for reflection: each linguistic version is representative of countries where that language is spoken.

Publishers write about well-known places where their native language is spoken. For this reason, the world's representation on one of the most common travel guides turns out to be very selective: all the areas occupied by low-income countries (such as Latin America and Caribbean, Middle East and North Africa, Sub-Saharan Africa) represent all together less than 30% of the contents published in the English, German and Italian WikiVoyage versions. The Spanish pages concerning Sub-Saharan Africa are only 0.1%, while Latin America and Caribbean are represented by 40% of the contents.

Taking into consideration that an increasing number of people opts for online travel guides to organize their trips, we are legitimated to wonder about the way such disparities influence tourists' imaginaries (Gravari-Barbas & Graburn, 2012), transfers and the ways they chose a destination. This digital influence on the users' choice allows to expand the definition of digital divide from a dualistic perspective (of those who have or have-not access to ICTs and the Internet) to a more realistic one, which integrates users' communication, knowledge and interaction processes within the digital landscape.

Therefore, we should consider the evolution of the hybrid space, where the digital is playing a direct influence on the physical realm, as disclosed by Mitchell (2005) and Couclelis (2004) in the studies linked to the digital city and restated by Graham (2008).

The hybrid city, that is the influence of the digital city on the physical one (and also vice versa), will be analyzed in the outcomes of this thesis (paragraphs 3.4.5.1 and 3.4.5.2) both from the theoretical and empirical point of view, observing Douala's social representations

on a cartographical scale in order to understand how the digital city influences its inhabitants' everyday life and those who live it the specific context of an African city.

2. Research Design

2.1 Research gaps

Research about the digital city in Africa is largely unexplored. The literature underlines empirical, methodological and theoretical gaps in the study of the topic.

Empirical gap. Research about digital cities in Africa is almost absent: only 2% of empirical researches is conducted on the African continent (Cocchia 2014), and it is in South Africa (Odendaal 2006, 2011). Academic research related to digital city present a scarcity of empirical case-studies (36%) over theoretical ones (Cocchia 2014) and even more recently, scholars (Wills & Aurigi 2017) explicitly call for a fundamental, empirical approach to understand the functioning and evolution of the socially-constructed digital city.

Methodological gap. The temporal and spatial evolution of a digital city is not approached from an historical perspective, going back to the diffusion of the internet in the Nineties. Cartography has been extensively used to communicate and represent the digital divide (Blank et al., 2018; Farrauto & Ciuccarelli, 2010; Graham et al., 2015; Odendaal, 2002), however coupling the use of geographic information system (GIS) technologies with ethnographic data could be further investigated to highlight the relation between digital and social divide as well as the influence of the digital city over the physical one.

Theoretical gap. The few existing studies related to digital and hybrid cities in Africa focus on the theoretical models and reflections proposed by Western scholars. African researchers specifically claim for the need of a new epistemology and theoretical approach, which comes from the African contexts (Foth et al., 2007; Nyamnjoh, 1996), where the system of production and distribution of information are facing different

challenges, not only linked to the physical access to technological resources, but especially to the way digital content is communicated (ex. in the local language) as well as the presence of human skills and a proper social infrastructure supporting the adoption on technology (Friederici, Ojanperä, & Graham, 2017; Heeks, 2009; Odendaal, 2011a; Warschauer, 2004). In this view, Nancy Odendaal invites to focus on the exploration of that space-in-between within developing countries, where mobile technologies are the only way to access the internet and information by local community (Odendaal, 2011b).

2.2 Research questions

This thesis contributes to the research fields with an empirical study in a francophone city of central Africa: the city of Douala, Cameroon. In order to do so, it aims at answering the following questions:

RQ1: What does access to information and knowledge mean in Douala?

RQ2: How is the digital Douala produced?

RQ3: How is the digital representation of Douala (mis)aligned with the physical one?

2.3 Methodology

This study is structured in three different phases, according to the research questions and goals.

2.3.1 Phase 1 – Contextual study

Phase one introduces the context of the city of Douala. It is lead by the RQ1 and it builds on Warschauer's theoretical model of access (Warschauer, 2002) to describe local challenges and tendencies in the production and distribution of oral and written (printed and digital) information about the city. This phase is based on the first explorative fieldwork conducted in Douala (December 2012 – January 2013), which was fundamental to focus the research direction and to develop the following questions. This study employs a mixed method approach for data collection and analysis.

The outcome of this first phase has been published in 2013 in the Proceedings of the International Development Informatics Association held in Bangkok, Thailand with the paper *What do we know about Douala. Access to information in and about the*

largest Cameroonian city, co-authored with Amalia Georgiana Sabiescu and Lorenzo Cantoni (see paragraph 3.1)

2.3.2 Phase two – The digital Douala

Phase two corresponds to the core part of the research, which observes and analyses the digitalization process of the city of Douala from a spatial, temporary and representative perspective. The carried out analysis focuses on the production of the digital Douala in the last thirty years made possible by local communities – all formally registered socio-economic activities operating within the urban landscape – that decided to communicate online their own existence on websites and social media.

The leading question RQ2 is divided in four sub-questions:

- Whose voices are contributing to shape the digital Douala?
- Where do they come from?
- Which parts of the city are represented or hidden online?
- How has the digital Douala evolved during time?

The methodology is quantitative and in this phase data have been collected through document analysis and online research. Descriptive and map analyses have been used to present the results.

The outcomes presented in this phase have been published in two conference papers:

1. “Mapping the digital Douala: lights and shadows of an African City” co-authored with Sara Vannini and Lorenzo Cantoni and published in the Proceedings of CIRN 2014 Community Informatics Conference: Challenges and Solutions. Monash University: Prato. (See paragraph 3.2)
2. “The digital birth of an African City: An exploratory study on the city of Douala (Cameroon)” co-authored with Lorenzo Cantoni and Nadezya Kalbaska and published in the Proceedings of the 9th international conference on theory and practice of electronic governance (pp. 223-229). ACM. (See paragraph 3.3)

2.3.3 Phase 3 – The hybrid Douala

The third phase of the research explores the concept of the hybrid Douala through the analysis of offline social representation locals have on the city compared with the

social representation emerging online by foreigners. It includes also a part of the literature about urban social representation and the hybrid city, which is not well covered by the literature included in chapter 1. The leading question is divided in two sub questions:

1. What are the social representations local people and foreigners have of Douala?
2. How are offline representations (mis)aligned with the representations of the city that are produced online?

Social Representation theory (Moscovici 1988) has been used for the data generation and analysis. Data have been collected in two different moments:

1. In Nov-Dec 2013 during the 2nd ethnographic study in Douala through interviews (n=39), one focus group, and ethnographic field notes emerging from the visit of the 22 most representative of the city;
2. In October 2016, an online research has been conducted on trip advisor and a total of 130 User Generated Content (n=130) has been analyzed.

The methods used for the analysis of data are: content analysis and comparative analysis. The outcomes of this phases have been published in 2018 in the Journal *Semiotica* within the article “Douala as a “hybrid space”: Comparing online and offline representations of a sub-Saharan city” co-authored with Sara Vannini (see paragraph 3.4).

2.4 Road map

The following schema summarizes all the steps of the research.

THE DIGITAL BIRTH OF AN AFRICAN CITY. THE CASE OF DOUALA

PUBLICATION	Pucciarelli, M., Sabiescu, A., Cantoni L. (2013). What do we know about Douala? Access to information in and about the largest Cameroonian city. Proceedings of the 7th IDIA Conference, Ed. Steyn, J., Van der Vyver, A. G. Bangkok, Thailand.	Pucciarelli, M., & Vannini, S., Cantoni, L. (2015). Mapping the digital Douala. Challenges and Solutions. Proceedings of the Community Informatics Conference (CIRN 2014). Monash Centre, Prato, Italy, 13-14 October 2014.	Pucciarelli, M. & Vannini, S. (2018). Douala as a "hybrid space": Comparing online and offline representations of a sub-Saharan city. <i>Semiotica</i> , 2018(223), pp. 219-250.
FIELD OF STUDY	ICT4D & Internet Studies	ICT4D & Internet Studies	ICT4D & Urban Studies
THEORETICAL BACKGROUND	Access to information and knowledge in Africa (Wharshauer 2002)	Digital divide and uneven development (Unwin 2009, Graham 2013) Digital city development	Social representation (Moscovici 1988) Hybrid spaces (Graham 2008)
RESEARCH CONTRIBUTION	Empirical contribution: the city of Douala	Understand the voices behind the digital city and their evolution over space and time Synchronic and diachronic views of the digital city development	Online and offline representations of an African city Reflection on the African hybrid city
RESEARCH QUESTIONS	What does access to information and knowledge mean in Douala?	How is the digital Douala produced?	How is the digital representation of Douala (mis)aligned with the physical one?
Sub questions		Where do they come from?	What are the social representations local people and foreigners have of Douala?
		Whose voices are contributing to shape the digital Douala?	How are offline representations local (mis)aligned with the representations of the city that are produced online?
		What part of the city is represented and hidden online?	
		How has the digital Douala evolved during time?	
METHODOLOGY	Mixed method approach	Quantitative analysis	Qualitative analysis
Data collection	Dec. 2012 – Jan. 2013 Online research; 1 st ethnographic study; Ethnographic observation, interviews (n=40), questionnaires (n=200)	May-July 2014 Document analysis Online research on economic activities	Nov. – Dec. 2013 and October 2016 2 nd ethnographic study; interviews (n=39), visited neighborhoods (n=22), ethnographic observation. Online research on TripAdvisor; User Generated Content (n=130)
Data analysis	Content analysis	Map analysis	Content analysis
OUTCOMES	Discrepancy between the local oral knowledge and written information about the city; Interplay between information production and information distribution Leap from oral to digital The growing role of private institutions	Descriptive analysis Origin of online socio-economic activities: Local (59,1%) International (27,1%) National (13,8%)	Comparative analysis 9 themes emerging from offline and online SR of Douala
		Descriptive analysis 12,2% of socio-economic activities in Douala are online Differences between overall online presence of categories and their online saturation	Thematic comparison between locals and foreigners SR of Douala Geographic comparison between Douala touristic landmarks indicated by local and foreigners



3. Outcomes

3.1 What do we know about Douala? Access to information in and about the largest Cameroonian city

Marta Pucciarelli, Amalia G. Sabiescu, Lorenzo Cantoni

Access to knowledge and information are critical issues in Africa. Previous studies have tackled barriers to accessing information in Africa, and brought to the forefront aspects such as the lack of physical access to communication technologies, low literacy and digital literacy, and the importance of orality in knowledge production. This paper focuses on the specific case of Douala, the largest city of Cameroon, and the challenges of accessing written and digital information within and about the city itself. Drawing on the results of a recent qualitative study, the paper indicates that limited access to information is conditioned by a substantial lack of tools and infrastructures that can facilitate production and distribution of information about the city amongst its dwellers and outside the city walls. This portrayal is marked by a series of salient aspects emerging from the analysis: (1) the discrepancy between the rich knowledge held and transmitted orally by inhabitants and the scarcity of written information about the city; (2) the rise of digital media over print media as prevalent means of information access; and (3) the growing role of private institutions in information production and distribution. These findings indicate important priorities in dealing with the transition to an information society for Douala as an emblematic case of a developing context marked by poverty and predominance of oral means of knowledge production and distribution.

Keywords: Access to knowledge, access to information, Africa, orality, Douala, information poverty

3.1.1 Introduction

Access to knowledge and information are critical issues in Africa. According to Shaver and Rizk (2010) access to knowledge refers to the process of creation and

exchange of human knowledge, including knowledge-embedded goods and tools for the production of knowledge and/or information, such as the Internet and Information and Communication Technology (ICT). An analytical distinction is made between knowledge and information.

According to Christie (2004), knowledge is contextualized, alive, embedded in social practices and produced in performative settings, while information is a set of representations or abstractions of prior episodes of knowledge production. This perspective emphasizes the representational nature of information and its emergence from knowledge production. Yet, information is also paramount to the process of knowledge production. While information deals with how reality is represented thanks to semiotic codes, knowledge happens only when information is accessed and interpreted by an intelligent being (Fonseca, 2010; Lor & Britz, 2010). Previous studies engaged with barriers to accessing knowledge and information in Africa, and brought to the forefront aspects such as the lack of physical access to communication technologies, low literacy and digital literacy, and the importance of orality in knowledge production (Unwin, 2009; Nyamnjoh, 1996; Obijiofor, 1998).

This paper focuses on the specific case of Douala, the largest city of Cameroon, and the challenges of accessing written and digital information within and about the city itself. The paper draws on the results of a qualitative research conducted in Douala in December 2012 and January 2013 for the project Mobile Access to Knowledge: Culture and Safety in Africa. It focuses on the role of communication technologies (print, analogue and digital media) in facilitating information production and distribution, as well as access to knowledge within and about the city of Douala. Mark Warschauer's model of access (Warschauer, 2002, 2004) is adopted to analyze challenges and tendencies in providing access to information through print vs. digital media. The paper concludes that digital means of information production and distribution take precedence over print media, indicating a tendency to transit from oral to digital with almost no intermediary stage of the written as characteristic of the trajectories taken by Western societies towards the information era.

3.1.2 Related work

In the last decade the term access to information/knowledge has been used for different purposes. In a first attribution, it can refer to the way the following elements are distributed in society:

- Human knowledge (education, skills, know-how and human capital);
- Information (including news, data, and information of public concern, such as data about government and its activities);
- Knowledge-embedded goods (such as software);
- Tools for producing knowledge and knowledge-embedded goods (e.g. communication technologies) (Shaver & Rizk, 2010)

Second, it has become a global movement driven by the tenet that providing access to knowledge is a fundamental element for promoting human rights, economic and cultural development, innovation, individual freedom and creativity (Yale Law School, 2008).

To depict the complexity of the concept and the role played by ICT, it is necessary to make an analytical distinction between knowledge and information. Turnbull's (1997) concept of "knowledge spaces" can be useful in this respect. These are spaces in which knowledge is assembled through the concurrence of various agents who make use of their skills and available resources, employing forms, structures and standards inherited from the past and circulated through channels set in place by tradition. The performative dimension of knowledge is instantiated in these spaces, in which knowledge production activities are organized and regulated, rules for validity are outlined, and the roles of agents producing knowledge are defined. An example is the space of production of scientific knowledge, marked by the activities of skilled researchers that engage in research work standing by the rules and standards for the production of scientific knowledge in a given discipline, and employing its resources. Information stands for the representational side of knowledge and is the product of such activities. Christie (2004) argues that what communication technologies can handle is not knowledge, but information. Knowledge is always produced in a context, embedded in social interaction, nurturing connections with the social and natural world. The data stored and transmitted through human-made media, are, on the other hand, just representations or abstractions of prior acts of knowledge production.

In Africa, limited education and literacy, restricted copyrights laws, and diffused oral cultures have a notable impact on the access to knowledge and information. These issues have been addressed in recent years by scientific research as well as through the advancement of standards, programs and actions by international development organizations. From a global perspective, the Millennium Development Goals (UN General Assembly, 2000) address the issue through the following objectives:

- achieve universal access to primary education, as education and literacy are at the basis of access to information, contributing to the development of human resources and knowledge production;
- develop a global partnership for development, especially “in cooperation with the private sector, making available the benefits of new technologies, especially information and communications”.

From the World Summit on the Information Society organized in Geneva in 2003 (ITU, 2003) a “plan of action” was issued with the goal of building an inclusive knowledge society and defining roles and accountability of stakeholders in pursuing access to information and knowledge development. According to this plan, governments are the foremost actors that can motion positive trends by developing and implementing national e-strategies and making available necessary resources (including infrastructures, tools, and human resources). Second, the private sector is paramount in the production and distribution of information as well as in the development of ICT for a sustainable development context. Finally, the involvement of the civil society is extremely important in order to create equitable and sustainable access in the development of ICT-related initiatives.

Access to knowledge and information is also explored from a law perspective (Armstrong, De Beer, & Kawooya, 2010; Kapczynski, 2008; Malcolm & others, 2010; Shaver & Rizk, 2010). Opening the barriers of copyright restrictions may increase the sharing of information at a global level, which is at the basis of the production, innovation and development of knowledge.

This study can be positioned amidst these international efforts aiming to increase access to human knowledge and capitalize on it in order to foster societal and economic development. In particular, we focus on the role of communication technologies (including print, analogue and digital media) for enhancing access to information. To this purpose, we introduce the related notion of access to communication technology, and in particular access to ICT. Van Dijk and Hacker (2000) point that access to ICT is a multidimensional concept, inclusive not only of physical access, but also of psychological factors such as motivation, sets of skills needed to handle ICTs appropriately, and the usage that is made of them.

In this study, we employ a model of access to ICT that takes into account the interplay between ICT and social practices, drawing on the writings of Mark Warschauer (2002, 2004). The model outlines four sets of resources that are needed for the integration of ICTs in social practices: physical (technological infrastructure), digital (content and materials made available online), human (skills, especially literacy), and social (the social and institutional infrastructure that supports usage of ICTs). These four categories of resources are on the one hand conditions and enablers for effective ICT use, and on the other the outcomes of effective use, so that if handled well in the long run they can contribute to development and social inclusion (2004: 46-8). Warschauer's model of access is used in the paper to compare challenges and tendencies in accessing information through print and digital media in the city of Douala.

3.1.3 The case of Douala

This paper draws on a qualitative study conducted as part of the international research project Mobile Access to Knowledge: Culture and Safety in Africa (Mobile A2K). The study investigated relations between cultural production and perceptions of safety and security in three African cities (Douala, Johannesburg and Luanda), and assessed the conditions for improving citizen access to information. Results from the study conducted in Douala, Cameroon, are presented hereafter.

3.1.3.1 Context of Douala

Douala is the largest city of Cameroon with three million inhabitants and it is the economical capital of the country. The city has gone through a dynamic commercial development since 1960, during the independence period. Nonetheless, in 2000 the

International Monetary Fund and the World Bank qualified Cameroon as a Heavily Indebted Poor Country (IDA & IMF, 2000). The main causes can be traced back to a major financial crisis, which started at the end of the '80s, and brought the Government of Cameroon to firstly reduce public expenses, then to close parastatal firms, and finally, in 1994, to devaluate the currency (XAF) by 50%. These measures generated dramatic social consequences and widespread poverty. World Bank statistics suggest that 40% of population in Cameroon is below the national poverty line (The World Bank, 2007).

The field of education has been one of the first sectors deteriorated by the cuts in public expenses. The financial crisis produced a deficit of more than 30.000 teachers and a downgrade of public educational infrastructures, so that in many cases more than 200 students were hosted in a single classroom (Ngonga, 2010) A high level of competition between public and private educational institutions escalated together with diffusion of corruption among educators (World Bank, 2013). At present, Cameroon does not fulfil the Millennium Development Goals of providing universal access to grade 1, and does not achieve a 95% completion rate in primary education. Indeed, only 60% of students complete the 6 years of primary education without repetition, while the dropout rate surpasses 10% of enrolments during the first years of study (Ngonga, 2010).

3.1.4 Methodology

This paper attempts to frame what “access to knowledge” means in the city of Douala, through the description of challenges and tendencies in the production and distribution of information. Data has been collected through two different strategies. Before the fieldwork, a desk research was conducted (mainly scouting digital resources) looking at information about the cultural and safety context of the city. This was followed by an ethnographic study in the city of Douala (done in the period Dec. 2012 – Jan. 2013), in which data were collected through a multi-method approach.

The results presented herein are based on the analysis of data from three sources: 1) the ethnographic observation of public and private primary schools, private and university

libraries, the municipal archive of Douala, contemporary art centres, bookstores and telecentres; 2) qualitative interviews with primary school teachers, scholars, cultural, municipal and telecommunication operators, artists, and community members (n=40); and 3) a questionnaire (n=200). Interviews were used to assess the access to print, analogue and digital media used to produce, distribute and access information in Douala, and about the city itself. A questionnaire on the use of mobile phones has been submitted at the end of the fieldwork with local inhabitants living and working in two popular neighbourhoods of Douala: New Bell and Bessengué.

The questionnaires presented a total of 52 closed and open questions and they were divided in four sections aiming to evaluate (1) mobile phone usage and communication, (2) knowledge and perception of public art, (3) impact of public art on security and life style; (4) security problems and requests for improvement. This paper considers only the results emerged from the first section of the questionnaires on mobile phone usage.

3.1.5 Results

The goal of this section is to discuss what access to information means in Douala, by defining challenges, accountabilities and potentialities in accessing information and producing knowledge. The first part delineates the predominance of orality in the production and distribution of local knowledge. In the second and third parts Mark Warschauer's (2002, 2004) model of access is used to outline challenges and tendencies in accessing information through print and digital media.

3.1.5.1 Knowledge embedded in the oral tradition

Available documents about the city of Douala in its present and historical dimensions are scarce and incomplete. This contrasts with the rich and vivid knowledge held by local inhabitants. People living in the popular neighbourhoods of Douala preserve the history of the city in their memory. When engaged in interviews, members are able to tell, explain and trace back meaningful events, which have marked the past of the areas that they are inhabiting. The role of the local people as guardians of knowledge and history is crucial not only for the content they provide, but also for the fact that this knowledge can be accessed almost exclusively through their storytelling. Written information about the

history, cultural identities, and the process of urbanisation of Douala is poor and difficult to access. This is because most of these areas (except for the settlement around the coast) have grown up spontaneously. Some of them are not even located on maps, as the city has been expanding horizontally, and local authorities have little control over the management of these lands. Dwellers are therefore positioned as primary sources of information on their neighbourhoods' history, spatial expansion, and the underlying processes explaining the current ethnic composition of the population.

The knowledge held by locals is at times incongruent with official information about the city. For instance, in Douala, as in many African cities, the way places and streets are known and called by locals does not correspond with the official names written on maps. Learning how to move around the city is a way to learn about the city itself, as the name of streets, crossroads and landmarks clearly depict the history of those places. Toponyms of Douala can provide information on the name of the family which owned the land, on physical and natural elements of the area, or on events that have marked and injured that site (Philémon & Foondé, 2011). This information is part of the local knowledge existing only in the memory of inhabitants, inaccessible to the global information society flows. Often urban landmarks report violence like Carrefour trois morts (Three dead crossroad); Carrefour trois voleurs (Three thieves crossroad); Bepanda Double-ball (Double-shots in Bepanda). Some suburbs witness a reality of alcoholism and prostitution, like Quartier Non-glacé (No-ice area), Rue de la joie (Street of happiness), Trois Bordelles (Three brothels), and Rond point j'ai raté ma vie (Roundabout I-Miss-My-Life). Some others, like Nylon, Brazzaville, Lagos, and Congo, indicate the provenance of immigrants stating the process of foreign immigration, and city urbanisation. The precariousness affecting Douala is given by the name of the areas, e.g.: Mille problèmes (Thousand problems) and Venez- Voir (Come and see). However, people's positive look on the future is not excluded, showing citizen aspirations to welfare in districts like Vie Tranquille (Quiet Life), Petit-Paris (Little Paris), Denver, and Santa Barbara.

Local inhabitants need to portray the historical and cultural ramifications of these living places, in order to fix the past and to frame their identity. Several media initiatives active in the city attempt to capitalize on this predominantly oral knowledge pool, and facilitate inner-city cultural production and communication. Informal radios and TV channels are trying to capture present-day communication flows and make them accessible to local communities through official and informal communication media. Since 2000, following the law liberalizing the audio-visual sector, Douala has become the location of a number of informal and low-cost audio and video-productions, producing and distributing information on Douala through the so-called “fait divers” (gossips and events into the city), “cinema du quartier” (self-financed movie series in French played by local actors of Douala and distributed only on local TV channels), and contemporary local songs depicting the reality of the city and mainly addressed to its citizens (Pucciarelli & Santanera, 2013).

3.1.5.2 Access to written information

Physical resources

Challenges

In Douala access to physical resources producing and distributing written/printed information is challenged by the limited presence of libraries, editorial houses, archives, and bookstores. This implies that books, due to their rarity, are extremely expensive goods. The city does not have a public library. Public infrastructures providing access to information include:

- The Centre of Documentation and Information (Figure 19): the municipal archive of Douala hosting urban, national and international public documents (projects, official communication), and newspaper clippings.
- The student library of the University of Douala, primarily furnished with students’ theses and (obsolete) academics French books.



Figure 19 Centre de Documentation et Information (Archive) Office 211 at the Municipality of Douala (Communauté Urbaine de Douala)

In the private sector, the French Institute of Cameroon hosts the biggest library of the city, with a collection limited to 12.000 documents (including books, journals, videotapes, CDs, DVDs, films), and a public subscription of 1770 members (IFC-Douala, 2011), corresponding to 0.06% of the population. Other private initiatives are focused on specific subjects: the open consultation library of Doual'art provides books, journals and videotapes specialized on the arts and urban fields; the documentation centre of the Port Autonome de Douala focuses on maritime practices and right; and the France-based association "Kalati, on lit au Cameroun", builds small private libraries addressed to primary and secondary school students in the poorest neighbourhoods of Douala.

Concerning the market, instead, there are only three bookstores furnished with manuals for primary and secondary schools and some readings for pleasures in French language. Bookshops specialized on academic publications don't exist. Only one Cameroonian publishing house, the recent installed Afrédit, is active into the city. Others include the

French-Harmattan, and two religious ones: the catholic Librairie Saint Paul, and the protestant Clé editions.

Tendencies

Current initiatives for providing access to tools and infrastructures for print media come from the civil society and the private sector. At the level of the public institutions, despite the presence of a public municipal archive, there is not a clear system of organization of the collected material. The archive content is roughly divided by topic (like security, culture, education, etc.) and, as the archivist declared, “(t)here is no standard of relevance in the research and selection of content: pieces of information are picked up from national journals and international magazines and added to the related shelf” (personal communication). One major issue affecting the development of public institutions for information access is the lack of financial resources. For instance, the public university library of Douala has extremely poor equipment due to a permanent lack of budget for the acquisition of new didactical material and trained personnel to provide access to it.

Editorial houses, even the local one, do not receive any public financial support. Since funding is scarcely available from other sources, Cameroonian publications are generally published in limited editions due to the high costs of production (Pape-Thoma, 2010), leading to a poor commerce of books in Douala. To cope with the high costs and limited access to books for study, primary and secondary students generally make use of secondhand manuals. Differently, university students, to prepare for exams, rely on the free documentation found on the Internet, or on students’ theses archived in the university library.

An important aspect regards the infrastructure policy. No policy, law or official text regulates the issue of libraries and books. This leaves space for the private sector to play a more predominant role. The biggest efforts in providing access to physical resources are done by foreigner and private initiatives. Local institutions need to count on the financial

collaboration of international stakeholders through project-based activities, while the organization and management of the collections is usually done autonomously.

Content Challenges

Access to information about Douala is challenged by the scarcity of written documentation about the city produced and distributed into the city. For example, the public archive provides no historical information regarding violent episodes of the past in which the government was responsible (such as the Ghost Cities period of 1991, the Operational Command attack of 2001, and Emeuts de la faim of 2008). Accessible written documentation mainly concerns reports of national and international research and development programs, students' theses and few local published books. Newspapers are the most diffused media documenting the present of Douala, but they are strictly controlled and censored by the government (Reporters Without Borders, 2013).

Tendencies

Tendencies in the production of content on the city of Douala are marked by the involvement of external parties, researchers and international associations. Documentation produced by foreign researchers and edited by foreign publishing houses and journals, is often stored in international libraries and archives to guarantee their preservation (e.g., the Basel Mission Archive). Doual'art, a contemporary art centre of the city, has promoted an interesting project produced locally. The project, titled Douala: Ville d'art et d'histoire, consists in the installation of Arches de la Mémoire – iron design sculptures conceived by Sandrine Dole – aiming to mark historical sites of the city dating back to the colonial period (19th century). Eighteen sculptures have been produced at present. The relative descriptive panels have been nestled into the sculptures providing the picture of the original building as well as written information documenting the history of the place. The goal of these site-specific installations is to preserve the public memory of citizens as well as to promote and valorise the history and cultural heritage of Douala.

A second interesting initiative promoted by Doual'art is the Liquid Journal. In the frame of SUD 2010 – Salon Urban de Douala – i.e. a triennial festival of urban art dedicated to the theme of “water”, many scientific research activities and artistic projects have been conducted all along the year 2010 in the poorest neighbourhoods of the city. Scientific results and step-by-step development of art projects have been documented in six bimonthly publications freely distributed in the neighbourhoods where research had been conducted. These journal issues have been an important source of information on the city. For local communities, they served to inform and update them on the safety conditions and public art development. For the global society, they contributed to raising the level of written information on issues that are otherwise transmitted only orally, as well as to documenting cultural and safety issues of the city.

Human resources Challenges

Widespread corruption and the cut of expenditures in education generated a lack of trained personnel specialized in the production and distribution of information. This phenomenon is especially poignant in the education sector. Since the economic crisis of 1987, the government of Cameroon has not been able to guarantee an adequate number of teachers in public schools, so that often classrooms reached 200 students. Among the major consequences of the crisis, there was an unexpected and disproportionate reduction of public salaries of respectively 30% in January 1993 and 50% in November of the same year (Konings, 1996), which promoted a pervasive corruption among teachers and administration officials (World Bank, 2013).

Apart from the low financial capacity, personnel in information-provision centres often assigns little importance to the collection and cataloguing of written materials, so that most of the time information remains on disorganized paperwork. The lack of a meticulous archival work is characteristic as well of other public institutions, and produces in turns problems of communication between departments and a consequent slow bureaucracy in managing relations with citizens.

Tendencies

Since 2001, one of the main national strategies to achieve the MDG of providing universal access to primary education is to strengthen the administrative capacity and governance, so to ensure better and more transparent use of limited public resources (Stratégie du Secteur de l'Éducation 2000). To support this strategy, four years later the World Bank funded a project on Education Development Capacity Building aiming to improve the educational information system, the monitoring of activities, and the inclusion of the private sector in decision-making processes. However, in February 2013 the World Bank rated the Government performance as moderately unsatisfactory, due to little administrative accountability, commitment, and no clear progresses demonstrated by the ministries of education in driving the project activities (World Bank, 2013).

At the same time, the private sector gains increasing importance in education. A comparative analysis (Ngonga, 2010) of key performance indicators for education revealed that students' performances are higher in private schools. It is estimated that 25% of parents, despite the high cost of schooling, make efforts to guide their children in private institutions where classrooms host no more than 70 students (ibid.).

Social resources

Challenges

From the field research it emerged that public institutions appear to lack both interest and initiative in offering access to information in and about Douala. At the same time, the government does not provide any incentive to encourage the development of physical, written and human resources, such as for example the provision of scholarships for research development. As declared by two doctoral students in International Law, "access to information for education in Cameroon is a personal affair" (personal communication 2013), as students should find their own ways to pursue their researches, both in terms of economic efforts and in accessing bibliography.

Tendencies

The lack of public policies in fostering access to written information interplays with a general poor interest of the local community toward reading activities. While local and international institutions are doing some efforts in this direction, they tend to invest more in digital rather than in traditional resources, which are more expensive and less accessible to local communities. On the other hand, the civil society demonstrates an increased engagement in informal activities for filling these gaps, especially with respect to education and training. Some examples are the organization of repetition courses by university students, or assisting children or adolescents in studying and doing homework. This is a common strategy for higher education students to pay university fees or fund their researches.

3.1.5.3 Access to digital information

Physical resources

Challenges

Expensive computers and absent or low-bandwidth Internet connections are the main challenges in accessing ICT resources. In 2007 the access and usage of ICT was relatively poor, with a penetration rate of computers in the Cameroonian public administration of 6.2%, and Internet access of 9.2% (MBA, 2007). Infrastructures and tools providing access to ICT, like the Internet and computers, are still luxury goods for most of the population of Douala. The monthly cost of an ADSL Internet connection corresponds approximately to the fee of renting a house in a popular district. In addition, the quality of the service is poor, due to the extreme slowness of the connection, with a bandwidth reaching maximum 512 kb. Cameroun Telecommunication (CAMTEL) is the parastatal firm providing fibre optic all around Cameroon. Since 2006, it has shared the market with the two main mobile providers: MTN and ORANGE, opening the access to mobile Internet solutions.

Tendencies

To benefit from computer and Internet access, local people adopt several strategies, among which going to telecentres, buying second-hand computers, and using Internet keys and 3G mobile solutions for connecting. Unfortunately, the challenge of bandwidth is not yet resolved. People having access to electricity and computers generally access the Internet through GSM modems, which allow them to subscribe to an Internet provider, and to pay only actual usage. The Internet fee is paid by recharging the SIM card of the modem or of

a smart phone. Private access to the Internet is an increasing practice, in particular among university students and scholars. However, the most widespread popular alternative is to access through the numerous telecentres located around the city, which are generally the cheapest solution (one hour of Internet access corresponds to the cost of a taxi fare).

Despite limitations regarding private access to the Internet and computers, access to mobile technologies and smartphones is increasing at high speed. Mobile phones are the most diffused and integrated ICT in Douala. From the survey conducted in New Bell and Bessengué, it emerges that 94% of respondents own a mobile phone, which often is a smartphone (60%). Mobile connectivity continues to be expensive (one day of mobile Internet connection corresponds to one week of average cost in mobile traffic expenses) and slow (e.g. it often does not allow to upload images on Facebook). Nonetheless, results from the questionnaire show that 16.5% of respondents access the Internet via mobile phone.

Content Challenges

Online information provided on Douala is poor and does not satisfy the most basic criteria that a common user/visitor would expect, such as finding information about the history, the culture of the city, as well as tourist information on hotels, restaurants, and touristic activities. The online presence of Cameroonian institutions is very poor. For instance, the Ministry of Culture of Cameroon does not have a website. Others, such as the website of the Ministry of Education and that of the Urban Community of Douala present a clear information architecture, yet in July 2013 most sections turned out to be completely empty (including the categories “education”, “environment”, “culture” and “tourism”). Up until autumn 2012, the information provided on Douala on Wikipedia described the city quite poorly. An Internet research conducted before the fieldwork, in October 2012, did not present any information about the history, the geography, and the cultural and educational context of the city.

Tendencies

At the end of 2012, the telecommunication company Orange started a collaboration with Doual'art under the project WikiAfrica Cameroun, aiming to enrich Wikipedia with information about history, cultural heritage, tourism, and education. Nowadays, the page of Douala has been updated with new categories of information including: History, Name, Geography, Cityscape, Architecture, Culture, Contemporary life and See also. Also other relevant sections have been enlarged and modified, like the introduction of the city, Climate, Education in Cameroon, Transportation and Points of interest. A second objective of the project is to create and make accessible on Wikipedia all the needed didactical materials to obtain the diploma of primary school, contributing in this way to reaching the Millennium Development Goals. It is to be noted, however, that most of the content uploaded on Wikipedia has been written by foreign researchers and practitioners, while local perspectives and voices continue to remain absent.

At the local higher education level, online resources are fundamental, and constitute often the only didactical material available to students to prepare their exams. Persee.fr is among the most used web portals providing Open Educational Resources in French, including scientific articles and international theses.

Human resources

Challenges

The production of online digital resources is particularly challenged by the limited digital literacy and the lack of specialized personnel working in public offices. In 2007 the Inspectorate of Pedagogy in Charge of Computer Science in Education conducted a survey on the state of ICT and human resources capacity in primary schools and teachertraining colleges. It emerged that:

“(B)oth teacher trainers and in service teachers are computer illiterates; illiteracy at the school level (teachers and head teachers) was estimated at 96%. There is no public or private ICT pedagogic training centre within the national territory, conducting training for educators at various levels.” (Ndongfack, 2007, pg. 10).

Tendencies

Some attempts to integrate ICT in Education have been done by the ministries of Education for primary schools, through the Strategy for implementing the basic education sector ICT policy in Cameroon 2007-2012; and for secondary schools through the *Programme officiel d'informatique pour le premier et le second cycle de l'enseignement général et les ENIEG* (Ecole normale d'instituteurs de l'enseignement) 2010 (Tr. Official Informatics Programme for the First and Second Education Cycle and the Schools for Teacher Education). However, from the fieldwork it emerged how the implementation of these programs is marked by confusion and lack of homogenous treatment both in private and in public schools.

Concerning the integration of ICT in public administration, and the development of adequate human resources, in 2011 a National Program for Governance and strategic management of the state has been definitively launched. However, in Douala the lack of human resources competence and know-how hinders the provision of substantial online information on public websites, contributing in this way to further slow down the bureaucracy.

At the university level, the University Technology Institute (IUT) of the University of Douala, the Douala Institute of Technology (DIT), and the Superior Institute of Technologies and Industrial Design (ISTDI) are the main higher education institutions offering bachelor and master courses in related fields.

From the private sector, some projects, like the above-mentioned WikiAfrica, include in their programs training activities aiming to increase capacity building of public and private employees in producing and distributing information. Moreover, the civil society is also included in the WikiAfrica project through the Wiki Loves Monuments training program.

The goal of this workshop is to provide local communities with digital skills enabling them to participate to the international photo contest Wiki Loves Monuments organized each September by the Wikimedia Foundation. The contest aims to enrich open licensed written and visual documentation on the world cultural heritage.

Social resources

Challenges

Social infrastructures, such as no-profit organizations and telecentres, have to deal with problems related to slow bureaucracy and poor Internet connection. These permanent barriers, in turn, generate a reduction of motivation in the demand of information as well as in the production of new pieces of info.

As declared by a member of the project WikiAfrica in charge of the training: “One of my major concerns is that – will we be able to put in the minds of people that it is important to use a computer, it is important to work on Wikipedia, it is important to promote and share knowledge via the Internet? Because the real challenge here is changing minds, it’s to change public opinion. That is my concern” (Personnal communication 2012).

Tendencies

An important step in opening access to digital information has been realised by Orange, which since the beginning of 2012 has provided free Internet access to Wikipedia through mobile phones, as well as low cost Internet solutions to access social networks.

In the last years two Asian companies, Techno and Itel, have entered the Cameroonian market of mobile phones offering low-cost smartphones, equipped with offline options. Mobile devices include, for example, an antenna allowing users to receive radio and TV signals, and are equipped with photo and video editing applications. Indeed, besides traditional mobile phone functions such as calling and texting, results from the survey indicate that people use their mobile phones mainly for leisure activities that do not require internet connection, like storing music (49%) and videos (24%), taking photos (45%), and listening to the radio (43%).

The diffusion of smartphones has also stimulated telecentres to broaden their activities. The owners of telecentres usually download music and videos from YouTube and create digital libraries of songs, which can be transferred to their young costumers’ devices in a fast way through a Bluetooth connection.

3.1.6 Discussion

This section discusses the findings on the current status of information access in and about Douala, highlighting the following elements: the predominance of orality in relation to the role of the civil society; the interplay between information production and its access; the transition from orality to digital means of information production and distribution; and the role of public vs. private institutions.

3.1.6.1 The predominance of orality and the role of the civil society.

One of the most significant findings of this study is that there is a clear discrepancy between the rich knowledge about Douala held by its inhabitants, and the scarcity of mediated information on the city. The inhabitants of Douala witnessed the city growth or were informed about events from previous generations. This rich knowledge has not been represented in forms that can enhance its distribution in writing or digital form. The role of the civil society as holder and custodian of this knowledge becomes therefore central to any efforts engaging with expanding the pool of information on Douala for its own inhabitants or for the world at large. Some international research projects, such as Verba Africana (Merolla, 2012) have tried to blend African oral traditions with digital media, especially experimenting with digital storytelling and video production. However, there is little evidence on how these digital productions are accessed by the local and international audience.

3.1.6.2 The interplay between information production and information access.

While the focus of the study was on access to information, it has been noticed that this cannot be treated separately from information production. This approach is consonant with that advocated by Shaver and Risk (2010), who argue that the best access policies are those that increase “the total production of information and knowledge goods and distribute them in a more equitable fashion”. The scarcity of available information about Douala parallels poor infrastructures and resources for both producing and accessing it.

There is a need to invest in documenting the city in its historical and contemporary dimensions in parallel with efforts for bettering access to information. Importantly, efforts for information production need to be sustained from a holistic vision, which looks in the long run at how this information will be distributed, for whom, and through which channels. Recent initiatives on information production about Douala have been carried out through initiatives of the private sector, demonstrating a preference for digital media production, and relying often on external funding (such as the Ville et histoire and the WikiAfrica projects). There is a lack of a unified

strategy for information production, which in the long run can result in discrepancies between the type and location of the content produced and the possibilities of accessing it by people within and outside the city.

3.1.6.3 From oral to digital and the written media gap.

An overall tendency can be noticed to migrate from a predominantly oral tradition of knowledge communication to a digital one, without going through the written media step characteristic of Western societies. As confirmed also by Scott (2012), access to written information is limited by factors ranging from low financial resources for the printing and distribution of written materials to the lack a proper policy infrastructure for regulating public libraries. Some studies (Gilberds & Myers, 2012; Nwaerodu & Thompson, 1987; Vannini, Pucciarelli, & Rega, 2013) have demonstrated, instead, the potential of local broadcast media and in particular radio as a vehicle for transmitting oral contextual knowledge toward the society and for the active engagement of local communities in divulgating educational content. However, the distribution of information through local broadcast media presents some drawbacks. In particular, it has only a limited scope of outreach, so that information continues to be kept within the confines of the city without reaching the global information society.

On the other hand, the role of computers and the Internet is becoming increasingly important in Douala. Despite high costs and a still frail infrastructure, several aspects can be highlighted, which indicate a tendency to reduce the information gap through digital means:

- Investments in digital production of information take precedence over those in written media;
- Local people are interested to access digital content over the Internet using private connections as well as public access venues such as telecentres;
- Access to information via mobile phones is increasing.

Concerning the last point, it should be noticed that the study on Douala indicates that mobile phones are mostly used for accessing leisure content, such as video streaming and music, which once again suggests synergies with an oral culture. Only few people accessed learning content and used advanced services such as online banking.

Summing up on these tendencies, it can be predicted that in the long run digital media production and distribution will grow, while the role of written media may even decrease.

3.1.6.4 Private vs. public access.

The role of private institutions overrides that of public institutions for both information production and distribution. This is due to an overall advantage in human resources, expertise, and financial resources (often relying on international projects). Gillward (2010) stresses the fundamental role played by international institutions (such as the World Bank, International Telecommunication Union – ITU, the United Nations Conference on Trade and Development – UNCTAD, etc.) in creating and making accessible structured data and information on the Global South, against the few and premature efforts done by African governments. However, the work of private local institutions in the production and distribution of information is generally threatened if pursued as mere commercial activity. Evidence from Douala suggests that the rise of private and no-profit educational institutions is an important factor as well, functioning in the long run to take precedence over public institutions in educating the local population and gaining legitimacy in its eyes.

3.1.7 Conclusion

This paper approached the issue of access to information in developing contexts, presenting the city of Douala as an illustrative case. Based on recent findings from a qualitative study, the paper depicted the challenges in accessing information in and about the city of Douala. Warschauer's (2002, 2003) model of access was used to highlight the place of print and digital media in the production, distribution and access to information.

The analysis indicated that the limited access to information is conditioned by a substantial lack of tools and public infrastructures for the production and distribution of information

about the city amongst its dwellers and outside the city walls. Douala is marked by a poor educational system, the absence of a public library, and the existence of only few, nonspecialized bookstores, editorial houses and archives. Access to tools for the production and distribution of information is also difficult. Books are expensive for their rarity and high production costs. Computer and the Internet are still luxury goods, even if their usage and diffusion has considerably grown thanks to the numerous telecentres located throughout the city. Online information on Douala is poor and incomplete, and the challenges in using the Internet as an information production and provision platform are further marked by low bandwidth and high connection costs. On the other hand, the diffusion of mobile technology is on an ascending curve, reflecting the trends verified for Cameroon and Africa in the past years. The growing role of mobile technology in facilitating access to information is marked as well by initiatives taken by mobile network operators, for instance through provision of free access to information-provision sites such as Wikipedia.

This portrayal is marked by a series of salient aspects emerging from the analysis:

- The discrepancy between the rich knowledge held and transmitted orally by inhabitants and the scarcity of information about the city;
- The rising of digital over print media, marking the tendency to go through a huge leap from oral to digital with no intermediary stage focused on print media, as characteristic of Western societies; and
- The growing role of private institutions in information production and distribution, while public institutions struggle with corruption and severe lack of financial resources.

These findings indicate important priorities in dealing with the transition to an information society (Webster, 2007) for Douala as an emblematic case of a developing context marked by poverty and predominance of oral means of knowledge production and distribution. In particular, it points to the importance of involving the civil society in information production efforts and of adopting a holistic view, by which information production and distribution are to be seen in their interplay with information access.

3.2 Mapping the digital Douala: lights and shadows of an African City.

Marta Pucciarelli, Sara Vannini, Lorenzo Cantoni ¹

The topic of access to knowledge and information and communication technologies (ICTs) in Africa has been intensively discussed in discourses related to the digital divide and democratization. In this vein, this paper addresses the relation between two interconnected representations – virtual and physical – of a very specific African urban context, the city of Douala. In this study, the city is interpreted as a macro-community enacted by micro-communities of practices, which are constituted by people who perform the same commercial or public activity, or who live in the same neighborhood. The study focuses, then, on the analysis of the websites of socio-economic activities which have an online presence and that, thus, are reachable in the virtual realm. By promoting their activities, these websites contribute to constitute the image of the digital Douala. The paper, then, portrays not only on the extension of available information (including both the parts of the city which are extensively represented and the parts that are left in the shadow), but also the micro-communities that have a presence online: who they are, where their online presence is produced, and in which areas of the city they are situated. Outcomes provide an energetic and dynamic picture of the city which define a clear digital divide in-between sectors and areas. While the digital Douala confirms to hold economic and commercial images and narratives, it also presents an irregular and unregulated development and a scarce involvement of the public sector into the social well-being of its inhabitants.

Keywords: Access to information in Africa, Douala, Digital city, Digital mapping, ICT4D

3.2.1 Introduction

Since the World Summit of Information Society the topic of access to knowledge and to information and communication technologies (ICTs) in Africa, and its relationship with democratization and social equality, has been intensively discussed. The Internet has been seen as both a development enabler and as an undemocratic instrument of power, increasing, rather than bridging, the already vast divides between the richest and the poorest in this world (Merolla, 2012).

Divides and differences among social groups are described by development and ICT for Development (ICT4D) frameworks by employing temporal and spatial metaphors. The poorest are said as being *at the bottom of the pyramid* or *left behind* in technological advancements, confined in *remote* areas where they are *unreachable*

and information arrives only too *late*, and they are compared to a *globalized, connected and advanced* world (Graham, 2008).

Spatial and geographical studies offer an interesting perspective on how communities in developing countries are benefitting – or not – from being connected, and how their voices are audible online at a global level. For some communities, the combination of virtual and physical spaces into “hybrid places” (Graham, 2008) is more and more a common reality. These are the communities whose voices are contributing to shaping the discourses around their geographies. However, other spaces endure silent, in a digital shadow.

Nonetheless, development theorists have not fully explored many of the issues related to technologically augmented/altered spaces (Graham, 2008), and much remains to be done to understand how spaces are influenced by the intersections between the digital and the physical, between culture, place, and the cyber world (Zook & Graham, 2007b).

In this vein, this paper constitutes the first step of a larger research aimed to study the image of the digital and the physical Douala, Cameroun’s largest city and its economic and commercial capital. It will describe: (i) the evolution of the city’s online presence; (ii) areas, boundaries, and landmarks that are visible *vs.* invisible online; and (iii) the relationship between the digital and the physical Douala, as perceived by people who physically experience the city.

As a first step in such study, this paper will focus on the analysis of the online information produced in the city, and published on websites of socio-economic activities – businesses, private and public institutions operating into the city – which are present online to be reachable in this additional realm, and to promote their activities. In this study, we interpret the city as a *macro-community* enacted by people and defined by practices, a community composed by *micro-communities* of practices (Lave & Wenger 1991; Wenger 1998) constituted by people who perform the same commercial or public activity, or who live in the same neighborhood. By implementing websites about their own activities, producers of online content are actively participating to the definition of the online image of the city. Therefore, they will be considered as proxy to show the overall process of content production and distribution within the city itself. User generated content on social media will not be considered for this paper because its focus is to analyze the content produced by socio-economic activities of Douala. The data gathered will be analyzed to be further used to inform visual representations of situated practices of content production and distribution. This study aims at better understanding which are the micro-communities that have a presence online; where is their online presence produced, and in which areas of the city they are situated.

3.2.2 Related works

Since access to technology and the Internet has become a “democratic” and almost “taken for granted” commodity, especially in the Western world, the way we

experience physical places has also changed. “Hybrid spaces” (Zook & Graham, 2007a), combinations of physical and virtual spaces where the cyberspace influence the perception and navigation of the physical one, have been generated and shaped by geographic information systems (GIS), geo-located Internet searches, and digital maps, as well as by “virtual doubles” of physical places and activities. “The use of information ranked and mapped in cyberspace to navigate and understand physical places [...] is a socially constructed process that embodies a range of political, economic, and cultural considerations” (ibid., pg. 466).

This intersection between the digital and the material is described by Graham (Graham 2013) with four notions that zoom in onto the topic: a palimpsest, augmented reality, codes, and DigiPlaces. First, as “medieval writing blocks that could be reused while still retaining traces of earlier inscriptions” (Graham 2013, pg. 1), places, and cities in particular, are described to have a *palimpsest*: “Cities are incessantly made and remade, and layered with historical, contemporary, tangible, intangible, visible, invisible, material, and virtual elements” (ibid., pg.1). Second, the way hybrid places are experienced is influenced by *augmented reality*, i.e. virtual information, which is, therefore, power-laden. According to the author, “we should be increasingly concerned with the ways in which augmented inclusions and exclusions, visibilities and invisibilities will shape digital representations. As we experience not just the city, but the augmented city, digital geographic representations don’t just influence how we think about places, but also, in a very real sense, influence how we move through, interact with, and enact place” (ibid. p.3). Third, our experience of the place is mediated also by the digital data that is virtually generated, that is publicly exposed to and used by researchers, policy makers and practitioners. This is what Graham calls “*code*”. Here we can see the very base of so-called smart cities: city organizations that leverage on digital traces being constantly be left by objects, sensors, and human beings (a concept closely connected with the one of “big data” and “web of things” or “3.0”). Finally, the notion of *DigiPlace*: “a way of imagining the highly subjective and individualized experiences of the melding of cities and information” (ibid. pg.5).

“Hybrid spaces”, or “DigiPlace”, do affect how people experience and understand geographies, distorting their representations of places in often non-transparent ways (Zook & Graham, 2007b). At the same time that it creates hybrid spaces, the Internet can alter “relational positionality” of spaces (Graham, 2008). If we think how a commodity chain can be modified through online disintermediation, thus bringing places closer, or how networks can ignore in-between spaces, we understand how the Internet has been frequently regarded not only as a developmental enabler, but also as “an economic and social revolution with the ability to fundamentally reshape the globe” in geographical terms (Graham, 2008, pg. 775).

Access to the Internet is not, however, universal. Despite countless efforts to bridge the digital divide in the last 25 years, differences in possibilities and capacity to access physical, digital, human and social resources that are needed for the

integration of ICTs in social practices, are still an issue for many communities throughout the globe (Kleine & Unwin, 2009; Warschauer, 2002, 2004). For many, the digital divide is at the basis of differences to take part to the information and knowledge society, while ICTs are seen – more or less critically – as instruments to achieve socio-economic development (Heeks, 2008; Unwin, 2009). Yet, the so announced promising benefits of the Internet era are still unattainable for the poorest and most remote populations (Graham, 2008), and not a few scholars believe ICTs to have enhanced socio-economic differences between the hyper-connected richest and the remotest, under-skilled poorest (Unwin, 2009). Altered relational positionalities of spaces can transcend distances and leave in an even darkest shadow any jump-over in-between connected realities.

Graham also suggests that, as the ways in which places are represented online influence the way we perceive and interact with them, “the informational shadows of cities truly matter” (Graham 2013, pg. 5). At points, these informational shadows can become informational voids: the lack of online content about, and contributions from a place can indicate – and further contribute to – its marginalization, as well as the “disempowerment” of its people. Questioning which are the voices that will be the loudest, and which are the ones that are – still – silent becomes, then, fundamental to understand the geography of development (Graham, 2013).

Many communities in Africa are not online: connectivity and access is still an issue for many African countries, and many people do not use online content (not to mention its production). In Douala, in particular, even for accessing basic historical information about the city, the predominance of orality over the printed and digital media is evident. However, at the same time, we are assisting to the rise of digital media over print media as prevalent means of information access, and to the growing role of private institutions in information production and distribution (Pucciarelli, Sabiescu & Cantoni, 2013). So, who are the ones, then, who speak, thus influencing the online image of Douala? Who are, instead, the ones who do not have a voice? Observing online presence of various players (be they companies, institutions, services etc.) and their relationships with the space of the city allows to rethink to the concept of space as “spacing”, i.e. as a “processual and performative, open-ended and multiple environment” (Beyes & Steyaert, 2012).

In this study, we interpret the city as a *macro-community* enacted by people and defined by practices, and composed by *micro-communities* of practices (Wenger, 1998), constituted by people who perform the same commercial or public activity, or who live in the same neighborhood. The same way, the digital environment of the city is enacted by online content creators, who can be grouped in *micro-communities* of practice, according to the activities they perform. What is, then, the image they contribute to produce about Douala? And how much of Douala is represented online, and how much remains in the shadow?

3.2.3 The case study: Douala

Douala is the largest city of Cameroon, inhabited by three million people. The city is the major economic and commercial hub of the country, due to the presence of its strategic harbor on the Atlantic Ocean, and to its active role as trade intermediary of Cameroon and of the whole central Africa. Since the independence of Cameroon, in 1960, a non-regulated economic development has started in Douala, enhanced by a substantial lack of regulations by national and local authorities. This resulted in a rapid, uncontrolled, and horizontal urbanization of Douala, where different social groups converged. From an urban point of view, before the independence, the city was clearly divided in two areas: the colonizers settled along the coast and in the area of the commercial harbor, while the locals were forced to move into the inner part of the city (Njoh, 2007).

Nowadays, the city is formally divided into six administrative districts, forming a total of 118 neighborhoods. However, the urban plan still reflects the polarization between wealthy and poor communities of Douala. The wealthy area includes the administrative and commercial centers – respectively Bonanjo and Akwa – and some residential neighborhoods: the historical Bonapriso and Bali, and the new residential area located in the North East of the city – Bonamoussadi, Kotto, Makepe and Logpom. The remaining neighborhoods are mainly built as informal settlements, and characterized by a lack of public services (such as regular electricity, access to water, sewers, and paved roads), widespread poverty and diffused unemployment (Loe & Meutchehé Ngomsi, 2004). This situation generates a complex and competitive urban landscape. In 2000, the International Monetary Fund and the World Bank qualified Cameroon as a Heavily Indebted Poor Country (IDA & IMF, 2000) and in 2007, 40% of population in Cameroon was found to be below the national poverty line (The World Bank, 2007). At present, Cameroon does not fulfill the Millennium Development Goal of providing universal access to education.

3.2.4 Methodology

3.2.4.1 Data collection

For the data collection process, all the socio-economical activities based in Douala, which are formally listed in the municipality register, have been considered. Douala Zoom (2010-2011) is the only printed and available register that provides basic information about the formally registered socio-economical activities in Douala: the information it provides includes the name, telephone number, address, email, and

position on the neighbourhoods' maps of each activity. Furthermore, all activities are classified in categories.

Each activity was checked from May 2014 to July 2014, in order to understand which ones were online, using the Google search engine on three different Top Level Domains (TLD): Cameroon (google.cm), France (google.fr), and Italy (google.it). The online research was conducted using as keywords the name of the activities, the neighborhood, and the city (e.g.: Sodepa, Bonendale, Douala). Only the first page of Google results was considered, and only official websites or social networks' public pages providing updated content on the activity were considered as a relevant online presence. The presence of activities on online catalogues (such as qalao0.cm, douala.franceserv.fr, obosoo.com, fr.businesslist.co.cm) was not included for two main reasons:

1. The information provided there is the same given by the Douala Zoom register;
2. The presence of activities there is not directly controlled and managed by the activities themselves, while this research focuses on how the micro-communities of Douala voluntarily decide to be online and to invest their time in building their own online image (in a direct way), and the one of the digital city (in an indirect way).

After recording the online presence of Douala activities on a database, they have been classified as local, national or international according to their origin/headquarter. We have classified as *local* all the businesses where the main headquarter is in Douala; as *national*, the activities where the headquarter is in another city of Cameroun; and as *international*, when the headquarter is in a foreign country. This was due to the need to understand whether producing and online image of the activity depended on the voluntary choice of local companies, or was simply a matter of following the standards of an international company, something that might have been fully managed from outside the city and the country itself.

The overall process resulted in a database organizing information under the following sections:

1. Category of the activity
2. Name of the activity
3. Neighbourhood
4. Address
5. Online presence
6. Link to the website
7. Link to the social media

8. Origin of the activity

Finally, a map of Douala was produced, that geo-localizes the information recorded in the database. The map aims to visualize the areas of the city that are represented online: the original map used was provided by the Douala cartographic center, and modified according to the locations of the online activities recorded in the database.

3.2.4.2 Data cleaning

Before being analyzed, data in the database needed to be cleaned: many activities were reported more than once, as they belonged to different categories or have branches in different areas of the city.

If the same activity was repeated in two different categories, only the most fitting category was kept (e.g.: a medical clinic was reported in both “clinic” and “surgery”: only the category “surgery” was kept, as it better represented the selected activity). If the same activity was repeated in more than two categories, only the most general one was kept (e.g.: a medical clinic was reported in “clinic”, “surgery”, “gynecology”, etc.: in this case, only the category “clinic” was kept).

When the same activity was repeated in the same category but in more neighborhoods of the city, all instances were kept, so that it was possible to geo-localize their online presence on the map.

3.2.4.3 Data analysis

The total number of existing activity categories in Douala is 327. The categories were grouped into 20 macro-categories, which from now on will be called micro-communities. Defining the 20 macro-categories was necessary for the analysis of the data, as it permits to reduce the spectrum of existing activities in Douala and to better represent their presence online.

A descriptive analysis was performed on the data, in order to analyze the image of Douala from three perspectives, answering to three main questions about the city:

- Which are the micro-communities that have the strongest presence online, and which offer a digital image of the city are?
- What is the geographical origin of each socio-economic activity that has a presence online? Is the community that (indirectly) defines the virtual image of Douala local, national or international? Where do the voices that speak about Douala in the virtual environment come from?

- Which territories of the city are promoted by the concerned micro-communities? Which is the visibility and invisibility level of the neighborhoods of Douala? What can it depend on?

Data regarding the online activities were, then, reported on a map, in order to highlight visible and invisible areas of the city.

3.2.5 Outcomes

This section provides a detailed account of the most frequently represented categories of socio-economical activities of Douala in the online environment. Visible and invisible *micro-communities*, as we defined them, are reported based on the level of their online presence and in relation to the total available online resources. In addition, their online presence is analysed from a geographical perspective, highlighting the relationship between the origin of the activity and the neighbourhoods of the city that appear most frequently.

3.2.5.1 Visible and invisible categories

According to Douala Zoom, in Douala there are a total of 4'527 *socio-economic activities* formally registered, only 12.2% of which (corresponding to 552 activities) are represented online. In 89.7% of the cases, online activities are present through a website, while in the remaining 10.3% cases they are promoting their presence through dedicated and updated social media pages, in particular on Facebook and Twitter.

As reported in the methodology, some of the socio-economical activities have their headquarter in a neighbourhood and different branches in other areas of Douala. Thus, the analysis was performed on a total of 4'835 *socio-economic instances*, so to include 308 branches, and on a total of 716 *online instances*.

All 4'835 socio-economical activities were categorized into 20 macro-categories – or *micro-communities* – defined by regrouping the 327 categories already provided by the

Douala Zoom register into more general ones. In a further step, all activities present online were analysed in order to record their origins.

Table 2 Online representation and origin of socio-economical activities of Douala organized in micro-community lists all micro-communities and reports their online presence: (i) within their category; (ii) within the total of available online resources; and (iii) according to their local, national or international origins. A descriptive analysis of the results follows.

Table 2 Online representation and origin of socio-economical activities of Douala organized in micro-community

Micro-community	N. of instances with a website	% online presence within micro-community	% online presence of the micro-community within the total available websites and social media pages	Origin of the activity (only the most represented)
Bank and insurance	139	36.1	19.4	Local (36.7%) International (35.3%)
International organization	14	31.8	2.0	International (100.0%)
Career	12	29.3	1.7	Local (66.7%)
Communication and media	43	28.0	6.0	Local (51.2%)
Transport	26	27.9	3.6	International (57.7%)
Industrial production and distribution	100	23.3	14.0	Local (61.0%)
Social services	10	21.3	1.4	National (60.0%)
Technology	49	19.4	6.8	Local (55.1%)
Urban environment	19	16.9	2.7	Local (100.0%)
Education	58	16.6	8.1	Local (87.9%)
Hospitality	40	13.6	5.6	Local (85.0%)
Art and culture	6	11.7	0.8	Local (100.0%)
Retailer	76	11.4	10.6	Local (60.5%)
Import-export	27	10.9	3.8	International (59.3%)
Security	6	10.0	0.8	Local (50.0%)
Maintenance	13	6.2	1.8	Local (92.3%)
Professionals	43	7.3	6.0	Local (81.4%)
Entertainment	4	6.4	0.6	Local (100.0%)
Health	25	5.2	3.5	Local (72.0%)
Public administration	6	4.9	0.8	Local (66.7%)

The *micro-communities* most frequently represented within the online landscape are Banks and Insurances (19.4%), Industrial Production and Distribution (14.0%) and Retailers (10.6%). If we add also Import-Export (3.8%), we can notice that almost half of the micro-communities that are present online (47.8%) belong to finance and commerce, confirming and supporting the diffused narrative of the city as the economic and commercial capital of the country. Members of the micro-community Bank and Insurance are also those with the higher online representation within their own micro-community. Indeed, more than one third of Banks and Insurances (36.1%) appear to be present online. Differently, Retailers are represented on the total activities in a larger number if compared to the Import-Export micro-community. Nevertheless, they have almost the same importance, in terms of online presence, within their own micro-community.

Another interesting result concerns the four least frequent micro-communities in the online landscape: Entertainment, Art and Culture, Security, and Public Administration. As for Entertainment, it seems strange how activities such as nightclubs and bars are so little promoted online. Contrarily to what one westerner could imagine, this does not mean these activities do not exist, nor that they are not popular: their channels of promotion pass through other, probably more informal, communication streams. Differently, the micro-community Art and Culture appears 11.7% of the times online, although there are very few institutions providing these kinds of services. This fact suggests how the diffusion of the city's cultural identity is quite valued in comparison to the micro-communities Retailers and Import-Export. A very similar account is to be done also for the micro-community Security. Douala is considered one of the most dangerous cities in Africa in terms of safety (Loe & Meutchehé Ngomsi, 2004; Pucciarelli, 2014). In general, this micro-community is not very visible in the virtual environment. Yet, information relating to security in Douala appears 10.0% of the times within its own micro-community, similarly to retailers and import and export.

We could expect that the categories of Hospitality, Communication and Media, and Technology reported higher frequencies within their own categories, considering the audience they are addressing and their very own nature. At the same time, it is surprising the high frequencies of the categories Career, Education, and Social services. This suggests a shift among the local population (the young generation in particular) from an oral culture to a digital culture when searching information (Pucciarelli et al., 2013).

Finally, the micro-community Public Administration is one of the least frequent both in terms of general representation (0.8%) and within its micro-community (4.9%), thus suggesting a high prevalence of the private sector on the public sector in terms of communication with both the local and the international online public.

3.2.5.2 Local, national and international

In this section, we will present which are the voices behind the online presence of socio-economical activities in Douala; by doing so we will indirectly contribute to provide the digital image of the city. In order to do this, all the activities that have an online presence were classified either as local, national or international.

Obviously, national and international businesses have branches in Douala. In such cases, being present online is not strictly related to a voluntary decision of the community living and working in Douala: the image of the city, in these cases, depends by national or international choices, often responding to specific standards of online communication.

Figure 20 The origins of the online presence of businesses in Doualashows the online socio-economical activities in Douala according to their local, national or international origins.

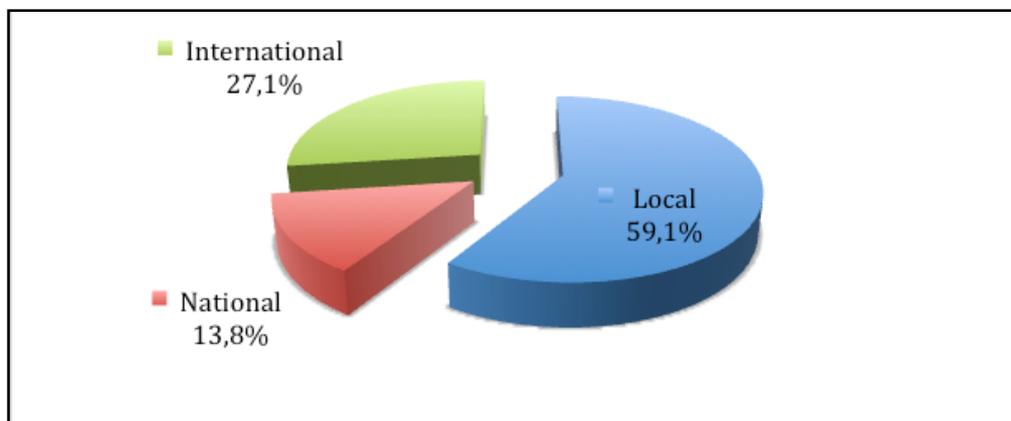


Figure 20 The origins of the online presence of businesses in Douala

The digital image of Douala is provided mainly by local communities (59.1%), living and operating in the city. In particular, the digital image produced by the micro-communities Art and Culture, Entertainment, and Urban Environment (the latter includes businesses

operating in the field of buildings and public works, draining, water treatment, town and land planning) is 100.0% local.

However, almost one third of the city online presence (27.1%) depends on international communities, confirming the important role of international trade within Douala. Online micro-communities in Douala depending on international communities (see Table 1) mostly include Bank and Insurance, International Organizations (specifically embassies and consulates), Transport, and Import-Export. Once again, these results confirm the narrative of the city as an economic and commercial metropolis, and highlight the fundamental role of its geographical position for trading within and outside central Africa.

Finally, 13.8% of the online representation of Douala is given by national voices. Besides reconfirming the economic and commercial importance of the city, this means that Social Services is the most represented micro-community from a national point of view. This is a first indicator of the lack of information about the real-living condition of the inhabitants of this economic capital. This can be also seen by the lack of public administration services as it's quite interesting that only 66.7% are represented by local voices, while the remaining part is represented equally (16.7% each one) by national and international voices.

This data suggests that, on the one hand, the digital Douala is characterised by an economic and commercial image while, on the other hand, the city is also characterised by an irregular and unregulated development and by a scarce interest and involvement of the public sector into the social well being of its inhabitants.

The next section will move in this direction, highlighting the geographical image of the city produced by its micro-communities, as well as the invisible layer of the city, which emerges by the visual representation of their online presence.

3.2.5.3 Visible and invisible neighbourhoods

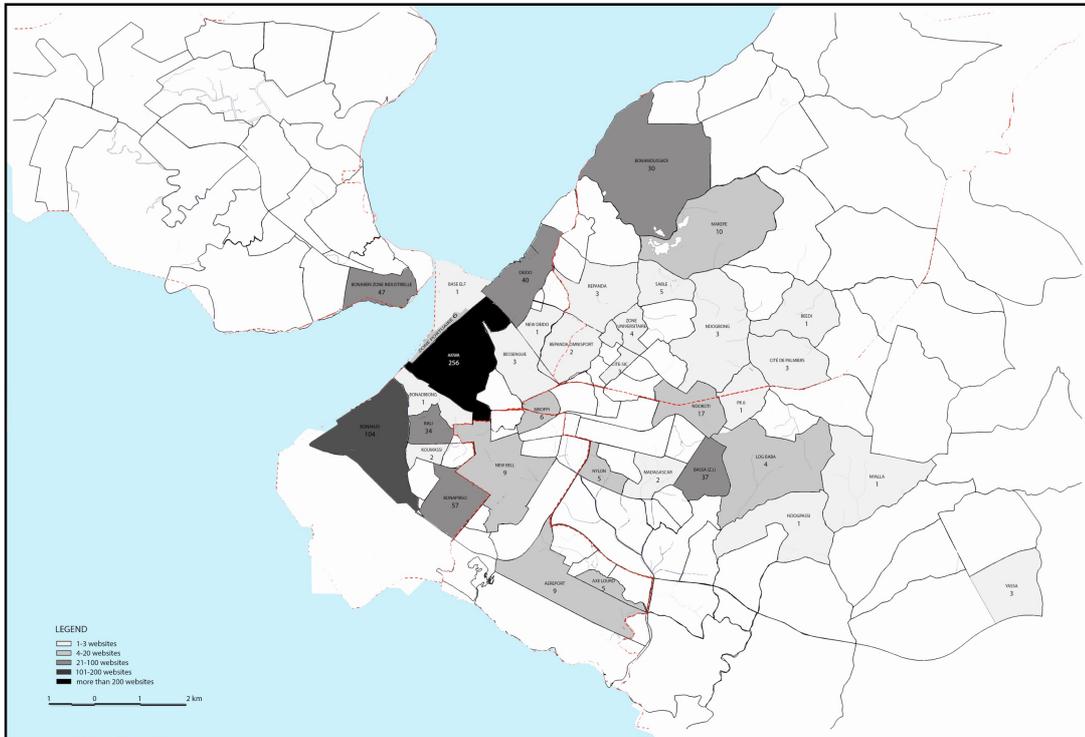


Figure 21 Map of visible and invisible online neighborhoods of Douala

Douala’s urban territory is composed by 118 neighborhoods, in 53 of which formally registered socio-economic activities exist. Only 36 of them, instead, have a presence online, constituting 30.5% of the total number of neighborhoods.

The neighborhood that appears most frequently online is Akwa (in black in Figure 21 Map of visible and invisible online neighborhoods of Douala). Akwa is one of the historical areas of the city: it faces the harbor of Douala and it is considered the commercial center of the city. 256 online socio-economic activities are present within the neighborhood, corresponding to 35.8% of the total online activities analyzed. 19 out of 20 micro-communities are present in Akwa (Public Administration is the only one missing): the ones that appear most frequently are retailers, banks, and legal branches of import-export activities and industrial production and distribution.

The second neighborhood in terms of online presence is Bonanjo (in dark grey in Figure 21), another historical and prestigious neighborhood of Douala, which is considered its administrative center. A total of 104 activities have an online presence in Bonanjo, corresponding to 14.5% of the total, and constituted most of all by

banks, hospitality activities, professionals (lawyers in particular), and legal branches of transportation activities.

After the loud Akwa and Bonanjo, whose presence online corresponds to 50.3% of the whole online presence of the city of Douala, and whose voices are, therefore, the loudest, we can find neighborhoods that are represented by a range of 21 to 100 online activities. These are the neighborhoods of Bonapriso (57), Bonaberi (47), Deido (40), Bassa (37), Bali (34), and Bonamoussadi (30).

With the exception of Bonamoussadi, prestigious residential area outside of the city, which has been expanding considerably in the last 10 years, all the other neighborhoods traditionally belong to the Sawa ethnic groups, the most powerful traditional family authorities within the city. Chiefs of the families and holders of the traditional political power do live here (the Bell in Bali, the Ndumbe in Bonaberi, the Deido and the Bassa in the neighborhoods named after them). While the neighborhoods of Bonaberi and Bassa are essentially industrial areas, the other areas are dedicated to prestigious residences and are better equipped than others in terms of services such as water, electricity and sanitation access, supermarkets and grocery stores, paved roads and stone buildings. The micro-communities that are mostly present in these areas are banks and insurances, and professionals in Bali, education, international organizations, and retailers in Bonapriso, banks and insurances, and career in Bonamoussadi.

Differently, the neighborhood of Deido is characterized by informal housing. This even if the area is an essential point of reference of the city, thanks to its strategic position of entry and exit point to/from the city, as well as entertainment and night life center. This neighborhood is characterized by micro-communities of banks, industrial production and distribution, retailers and urban environment services. The *rues de la joie*, the well-known entertainment nature of the neighborhood, does not produce any echo online.

The neighborhoods that are represented by a range of 4 to 20 online activities follow, and are represented in light grey in Figure 21. These are: Ndokoti (17), Maképé (10), New Bell (9), Aéroport (9), Zone Portuaire (6), Mboppi (6), Axe Lourd (5), Nylon/Saint Michel (5), Sable (5), and Log baba (4).

New Bell and Mboppi are central neighborhoods. New Bell is a historical neighborhood, one of the largest of the city, a city into the city thanks to the melting pot of people, cultures and activities present there. Mboppi is a small neighborhood, named after a drain running through it, and typically flooding the area in the rain seasons. Even if they lay only few kilometers from the most prestigious areas of the city, both neighborhoods are characterized by informal settlements and a lack of basic public services (water, electricity, sewers). Nonetheless, both areas are very important landmarks of the city as they host the biggest markets of Douala (the Marché Congo and the Marché Central in New Bell, and the Marché Mboppi in Mboppi). None of the online activities retrieved is connected to these three important reference points.

The areas of the airport (Aereoport) and of the harbor (Zone Portuaire) are characterized by industrial distribution, import-export and transportation activities. With the exception of Maképé, a new area in the North-East of the city inhabited by the new middle-class of Douala, all the other neighborhoods are crossed by the most important roads of the city. The neighborhood of Axe Lourd is named after this. These areas are represented online mainly by banks, and industrial production and distribution micro-communities, despite they are mostly known by locals for their role of informal and commercial centers.

Finally, the neighborhoods with one to three activities online are presented in the map (Figure 21) in very light grey. They are 18 neighborhoods in total (Base Elf, Base Naval, Beedi, Bepanda, Bepanda/Ominisport, Bessengue, Bonadibong, Cité de Palmiers, Cité SIC, Koumassi, Madagascar, Ndongbong, Ndogpassi, New Deido, Nyalla, PK8, Yassa, and Zone Universitaire), and their main activities with an online presence are constituted by banks and insurances, industrial production and distribution, and education.

Figure 21 shows, in pure white, all the *invisible* neighborhoods of the city, where no micro-community is online. These are neighborhoods that are considered as no-zones, where the access is made difficult by the scarcity of roads and services. The invisibility of the area beyond the river, in the district of Bonaberi, is striking. Despite the vastness and historical importance of the territory, only its industrial area is represented online. From the map, it might seem that the area belongs to another municipality, while it is formally part of the administrative Douala. The same can be noticed for the more continental areas of the city, the ones that are very far away from the river, and for the areas that are the least represented online – with less than three activities. The areas that are not facing the river are invisible in Douala's digital double. They are mostly abusively assembled areas, built after the population explosion of the city, with no estate value. Because of the continuous floods, neighborhoods are often constructed upon areas not suitable for construction, and are not supplied by public services. Nevertheless, these are high density areas, where many working and cultural activities are happening.

Generally speaking, the neighborhoods that are not served by paved roads do not have a voice online, which links their online communication situation with a more general difficulty in communicating also offline. Of a different nature is the lack of presence online of the main markets of the city. The markets, which are among the most important landmarks of commercial and social activities of African cities and located in easily accessible, but poor, areas of the city, are very rarely used to promote their neighborhoods online.

3.2.6 Conclusion

This research has attempted to provide a picture of the online presence of socio-economical activities – businesses, private and public institutions – operating into the city of Douala in Cameroun. By doing so, and by organizing such data according to

sectors and geography, an additional layer has been added to the city map. It enriches the understanding of Douala in several ways, showing which different communities and neighborhoods are emerging in the online realm, and – at the same time – which ones are lagging behind or, to avoid any judgmental image, are staying outside of the web.

In anthropomorphic terms, we might call this a picture of a city in its Internet infancy, a picture that shows energy and dynamics, and at the same time limits and hindering factors, which are drawing a quite clear digital divide in-between sectors and areas. This paper agrees with recent critical studies on the imbalanced role of ICTs in developing countries (Graham 2014, Unwin 2015) unveiling a specific case in which the image of the digital Douala is enhancing rather than leveraging the digital gap between those who have and those who have not access to ICTs.

Future research should add time to this still image, depicting not only how it is now, but also able to capture the temporal and spatial evolution of the digital Douala. It should also include further sources of information, including user generated contents by citizens as well as other online contents covering the city (e.g.: newspapers) and published by internal or external publishers. In addition, locals and foreigners could be asked to provide their own image and interpretation of the digital Douala, so to add further breadth and depth to the provided image.

3.3 The Digital Birth of an African City. An Exploratory Study on the city of Douala (Cameroun)

Marta Pucciarelli, Lorenzo Cantoni, Nadzeya Kalbaska

In this paper the digital Douala is presented. Different business categories of the economic capital of Cameroun have been tracked along the years (from 1989 up to 2013) in order to assess their emergence into the online world. Such an analysis is able to provide a full picture of the digital Douala, and of the process of its digitization from the very beginning up to recent years. Data has been collected and has been analysed and discussed taking into consideration not only the axes of time and of economic activity, but also its origin and spatial distribution, so to provide a vivid picture of a hybrid space in the making. Such a cross-time analysis is of particular relevance not only for research, but also for its policy-making implications.

Keywords: ICT4D – ICT for development; Hybrid city; Cameroun; Digital development.

3.3.1 Introduction

Available information about developing countries is still limited and biased, generating uneven representations of the world (Armstrong et al., 2010; Gebremichael & Jackson, 2006; Graham, 2008; Obijiofor, 1998). The digital divide and the limited access to information influence also the representation of cities all over the world, along with the lack of available online content make it difficult to create and disseminate background knowledge about “invisible” places, and to break down false ideas, stereotypes and blurring images. The African continent for example is often identified, in the imaginary of people, as a country, rather than a continent (John, 2013; Nicolas Kayser-Bril, 2014; Square, 2014). From a survey conducted by the National Geographic Society in 2006, it emerged that 20% of young Americans thought Sudan, which is one of the largest African countries, is in Asia (National Geographic - Roper Public Affairs, 2006).

Tim Unwin (Unwin, 2009, 2015) suggests that the diffusion of Information and Communication Technologies (ICTs) and the Internet has increased rather than leveraged the gap between those who have and those who do not have access to information. Other

researchers (Graham et al., 2014; Graham, 2002; Warf, 2001; Zook, 2006; Zook & Graham, 2007a) use cartographic representation of information to show this gap. Through the geography of information, they highlight how the combination and interaction of online and offline spaces is shaping “hybrid spaces” (Graham, 1998; Paradiso, Claval, Pagnini, & Scaini, 2006; Silva, 2006; Zook, 2006; Zook & Graham, 2007a), which are modifying the way people experience the places themselves.

This paper is the first part of a wider study aiming to understand the hybrid space of an African city – Douala, in Cameroon – exploring how its online representation is produced and what are the relations with the physical city. If from one side a previous study has focused on the invisibility generated by the uneven distribution of ICTs and the Internet (Pucciarelli, Vannini, & Cantoni, 2014), this paper wants to explore how the information that already exists in the digital realm is contributing to shape the “visible city”. It focuses on the digital production processes by highlighting how the online representation of Douala has evolved in time despite physical, language, human and social barriers, influencing access to information, and consequently the knowledge and perception of the city. By doing so, it will first present in slow motion the digital history of Douala from 1989 to 2013; second, it will focus on whose voices are contributing to shape the digital city in three given years: 2007, 2010 and 2013.

3.3.2 Literature Review

In 1992, during the campaign that proposed Clinton as candidate for the presidency of the United States, Al Gore launched for the first time the metaphor of the “information superhighway”, in order to promote the development and diffusion of ICTs and the Internet to the global public. He explained how each individual could have the possibility to interact with others all over the world, through the use of computers acting as superhighways for the transmission of messages. Few years later, in 1995, president Clinton used for the first time the expression “Digital Divide” referring to the overview on the use of the Internet realized by the NTIA (National Telecommunication and

Information Association), entitled “Falling through the net: A survey of the “have nots” in rural and urban America” (McConnaughey et al., 1995).

African scholars (Nyamnjoh, 1996, 1999; Okigbo, 1995) immediately reacted to the information superhighway by reporting how the digital divide would have mainly concerned developing countries already disadvantaged by economic and social inequalities – but in particular “because the highway is yet to be travelled by enough Africans and/or Africa-based users” (Okigbo, 1995, pg. 120), and “Africa finds itself left behind, being more of an observer than an active participant” (Nyamnjoh, 1996, pg. 8).

Around twenty years later, international scholars (Castells, 1991; Graham, 2008, 2013; Graham et al., 2014; Unwin, 2015; Warf, 2012; Zook, 2006) suggested that the diffusion of Information and Communication Technologies (ICTs) and the Internet has increased, rather than reduced the gap between those who have and those who do not have access to the information. The so-called “geography of information” highlights the striking contrast between those areas of the world characterized by networked fluxes of information (as well as by globalization, democracy, economic and political power) from the invisible ones, which remain in shadow, despite their large geographical surface (Zook, 2006). This remarkable contrast in information fluxes and spaces depends on several factors, including a limited access to infrastructures (connectivity and the internet), but especially on “social, economic, political, regulatory, and infrastructural barriers that continue to disadvantage many of the world’s informational peripheries” (Graham et al., 2014, pg. 746).

Even if digital divide depends on several causes, today African metropolises are taking the so-called super-highway, in order to emerge above the digital surface.

Last data show how technological diffusion and, in particular, mobile technologies are spreading at incredible speed. According to the data supplied by the International Telecommunication Union (ITU), individuals using the Internet in developing countries grown from 7.3% to 35.3% during the last fifteen years, while just in Africa they rose more than ten times, growing from 2.4% to 20.7% (ITU, 2015.). If we add to this picture

the statistics from Cameroon, which is the country analysed within this study, we can see even more impressive results. Individual use of the Internet has increased more than twenty times, passing from 0.2% in 2000 to 11.0% in 2014 (ITU, 2015), with 2.8% of Facebook penetration rate only at the end of 2012 (Internet World Stats, 2015). Despite 2/3 of the population residing in developing countries still remain offline, statistics offer a positive perspectives suggesting that “for every Internet user in the developed world there are two in the developing world” («ICT Facts and Figures – The world in 2015», s.d., pg. 1).

If, on one hand, as Graham suggests that invisibility really matters, on the other hand there is little attention about what exists yet, what is giving its contribution to create the image of “the world’s informational peripheries” and how it has evolved during the course of time.

Understanding the digitalization processes of a metropolis in a developing country is a paramount step to look into its *hybrid space*, i.e. the combination of the physical and digital place, which affects people experience of that place, shaping their representations. According to Graham (Graham, 2013) the hybrid city is shaped first of all by “historical, contemporary, tangible, intangible, visible, invisible, material, and virtual elements” (Graham, 2013, pg. 1) that layer and compose its *palimpsest*; second, from power-laden virtual information, offering an easy-to-use *augmented reality* of a place, which suggests and influences opinions, behaviors, movements, and interaction within a place; third, by virtually generated *codes*, such as “big data” and “web of things” or “web 3.0” employed by researchers, policy makers and practitioners to publically expose their theories; and finally, by the *digiplace*, which entails people imagination and subjective experience of a place based on the melding of cities and information (Graham, 2013).

It is therefore important to consider within the online visibility of a city whose actors are contributing to the production of the digital city, both globally, and in terms of saturation within the category those stakeholders are representing. Herein the goal is to go in depth

to this online visibility, focusing on the temporal and spatial evolution of online stakeholders and understanding their investment over the years in order to be online.

3.3.3 Outlining The Douala Case

Cameroon is a lower middle income of Sub-Saharan Africa, ranked 153 out of 188 countries and territories in the Human Development Index (UNDP, 2014) and qualified as a Heavily Indebted Poor Country (IDA & IMF, 2000). The country estimated total population is 22.77 million, of which the 39,9% lives below the national poverty lines (World Bank, 2014). The demographic divide between urban and rural areas is striking: according to World Bank data more than half of Cameroonian people (53.82%) lives today in urban areas (Trading Economics, 2016).

Douala is the biggest city of Cameroon, an African metropolis that, since the 1960es, has seen the population and the urban environment spread like wildfire to accommodate the 3 million people who now live and work in the city, and occupy it. Thanks to its strategic harbor on the Atlantic Ocean and to its essential role in trading, both within Cameroon and within Central Africa, Douala is the economic and commercial heart of the country.

However, access to the ICTs and the internet in Douala is still limited and biased due to limited access to infrastructures, tools, human, and social resources facilitating the production and distribution of information. This lack is also connected with (1) the gap between the important oral history and the scarce written information about the city; (2) the spread of digital media over print media as main communication channel; and (3) the increasing success of private companies over a public policy in the production and distribution of information (Pucciarelli et al., 2013)

3.3.4 Methodology

This paragraph presents the processes through which the online visibility of the city of Douala has been defined. It includes three sections describing the data collection process, the refinement and the limits of the database.

3.3.4.1 Data collection

The data collection process considers all Douala's socio-economic activities which are officially listed in the municipality register. The only formal, printed and publicly available register that classifies socio-economical activities into categories is *Douala Zoom*. *Douala Zoom* (2010-2011) is a sort of yellow pages directory, which provides details of every socio-economic activity, including its name, telephone number, address, email, and position on the neighbourhoods' map. *Douala Zoom* is redacted in the two official languages of Cameroon, French and English, even if most of the analysed website used French as primary language.

The online presence of Douala's activities was checked from May 2014 to July 2014 by typing keywords such as the name of the activity, the neighbourhood and the city (e.g.: Sodepa, Bonendale, Douala) in the Google search engine on three different national localizations of it in order to verify potential difference in Google rank results: Cameroon (google.cm), France (google.fr), and Italy (google.it). It has been assumed that, if available, the website of an activity would appear on the first page of Google results. Also Facebook pages and groups have been registered as relevant online presences.

Douala's activities online presence was registered in a database, then each activity was classified, according to its origin/headquarter found in the official website, as local, national or international. This classification allowed to clarify if the online presence of the activity was a result of a voluntary choice made by a local company or if it was simply due to the standards of an international company, managed from another city or country.

For each existing website, a research on Domain tools (www.domaintools.com) has been executed in order to find data concerning the year of the website registration, the country in which has been registered, and its IP address.

The overall process resulted in a database organizing information as reported in

Table 3.

Source	Sections of data
Douala Zoom	Category of the activity; Name of the activity; Neighbourhood; Address; Mail
Google search	Online presence; Link to the website; Link to the social media
Domain Tool	Year of online registration; Register country; IP address
Website of each online activity	Origin of the activity; Diffusion of the activity

Table 3 Sections of data collected related to their primary source

Finally, the online activities recorded in the database were organized in a map of Douala, in order to geo-localize the areas of the city, which are represented online.

In addition to the desk study, a two-months fieldwork has been conducted in Douala from November to December 2013 – generating ethnographic notes and 40 in-depth interviews with local residents, and one focus group with public administration employees. Those qualitative data have been only partially used in this paper, for describing the featuring characteristic of neighbourhoods (see paragraph 3.3.5.3).

3.3.4.2 Data cleaning

Data provided by the database were initially reported in more than one category or their presence was not limited to a single area of the city. Whether the same activity was repeated in two different categories, only the most fitting category was taken into consideration. For instance, if the same activity belonged to more than two categories, the most general one was chosen: for example, if a medical clinic referred to the “clinic”, “surgery” and “gynaecology” categories, only the category “clinic” was considered.

When the same activity was repeated in the same category but in more neighbourhoods of the city, all instances were kept only in the case where it was necessary to geo-localize their online presence on the map.

The database was also filtered from the activities whose online presence was linked to local and global platforms for website building (e.g weebly.com, overblog.com, popolus.org, webs.com, e-monsite.com), assuming that owned domains would provide evidence of an higher commitment to online communication. Moreover, all the activities registered in 2014 were not considered, because the analysis was performed mid of that year, so it was not possible to account for the full year. The same can be said for online presences whose registration year was unavailable.

3.3.4.3 Limits of the database

The categories of socio-economic activities reported from the Douala Zoom register are 327. They have been organized into 20 macro-categories in order to allow the analysis of the data, to reduce the spectrum of existing activities, and to give a better representation of their online presence.

The data presented in this paper are different from data collected in previous studies by the same authors (Pucciarelli et al., 2014). In fact, due to different research goals, different methodological choices have been applied when it comes to data cleaning. In particular:

1. all the branches of activities were excluded from the temporal analysis, paring each website only with the activity's headquarter;
2. websites realized on generic hosting platforms were excluded;
3. websites realized in 2014 were excluded.

3.3.5 Results

This section provides a detailed account of the temporal and spatial evolution of online socio-economic activities in Douala. It will firstly present their online presence from 1989

to 2013: secondly, it groups each category of socio-economic activities, analysing and comparing their online saturation level in three selected period (2007, 2010 and 2013). It follows a description of the online saturation rank of each category in relation to their local, national and international origin. Finally, the online saturation of categories has been analysed in relation to their physical location within neighbourhoods of the city. This spatial analysis compares the areas of the city most visible within the digital landscape and their level of online saturation.

3.3.5.1 Slow motion

This paragraph presents the evolution of the digital Douala from 1989 to 2013. This digital history can be represented by the following graphic (Figure 22), which shows and merges two set of data related to the digitalization of the socio-economic activities within Douala: (i) the ascending curve shows the digital growth of Douala, which is given by the sum of the online activities (website and Facebook accounts) from 1989 to 2013; (ii) histograms show the amount of websites and Facebook accounts which emerge every year in the digital overview. The ascending curve shows how digitalization started slowly until 2004 and then increased sharply in the following years, until reaching a peak of constant growth from 2009 to 2013. 2009 is an important year to the spread of Facebook accounts, too.

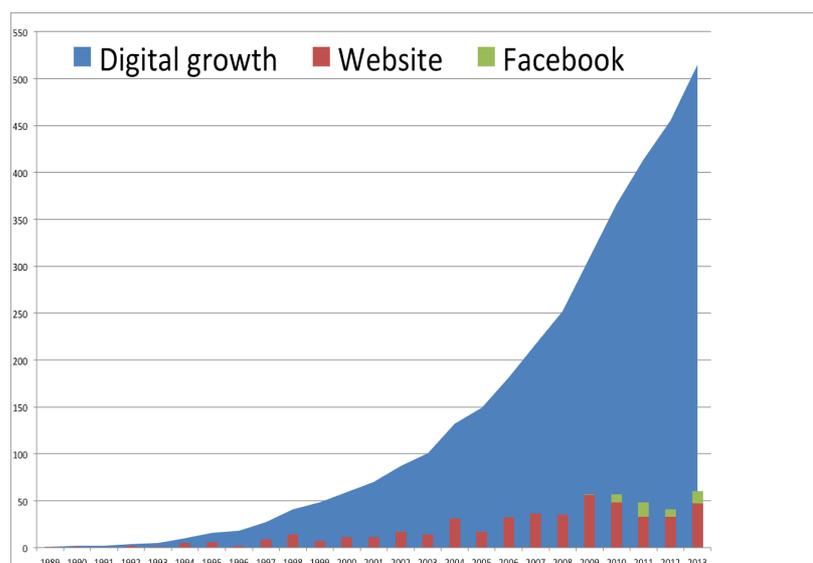


Figure 22 Representation of online socio-economic activities in Douala from 1989 to 2013

On a total of 4529 socio-economic activities, the digital Douala is characterized by the 11.4% of them, corresponding to 513 online socio-economic activities. Douala's online presence is determined by 467 websites and 46 Facebook accounts. Anyway, 97 socio-economic activities have both a website and a social media account.

The fact that the majority of the socio-economic activities are not online does not mean that they do not have any access to ICTs. In 2010-2011, 2590 activities had an email account (57.2%).

An interesting aspect is that not all the activities that have a website communicate their email address in the *Douala Zoom* register. Among 513 online activities, only 350 share their email address (68.2%). Concerning the other 163 activities, which do not communicate their email address, 20.9% have branches in the city, while 41.1% are international activities based in Douala. Moreover, it is surprising that 14.1% of them depends on activities linked to communication and technology, while about a third of these activities (28.8%) is connected to banks and industries, where a direct communication by email is clearly more difficult and sporadic.

3.3.5.2 Still pictures

This paragraph focuses on data related to the online activities' saturation level within each specific category. The term "saturation" assumes here a similar connotation of the more commonly used term "market saturation", indicating the maximisation of product provided in the current state of the market place. In particular, here the saturation level is the percentage of activities that are online within a given category.

It is important to notice that the used database – *Douala Zoom* – is based on socioeconomic activities registered in 2010. We chose to observe the evolution of the online presence in the years 2007, 2010 and 2013. The picture of the year 2010 is the more realistic one,

because it shows the actual number of socioeconomic activities set in Douala, together with their digital equivalent. Data concerning 2007 and 2013 are assumed – due to a lack of further data – to be identical to the 2010 situation. Regarding the year 2013, it is not possible to know how many activities had been registered or closed from 2011 to 2013; the same can be said about 2010: several activities could have been created and closed without leaving any digital trace (for example, it is not possible to measure the online presence of an activity created in 2002 and closed in 2009, even if it had a website).

The following table (

) shows categories according to their online saturation rank in 2013.

Table 4 Table with overall saturation for category in 2007, 2010 and 2013

Macro-category	Online and offline socio-economic activities in Douala	2007	2010	2013
Career	40	6 (15%)	8 (20.0%)	11 (27.5%)
International organization	42	8 (19.1%)	9 (21.4%)	10 (23.8%)
Transport	96	13 (13.5%)	14 (14.6%)	22 (22.9%)
Communication and media	148	16 (10.8%)	27 (18.2%)	33 (22.3%)
Bank and insurance	265	28 (10.6%)	46 (17.4%)	57 (21.5%)
Social services	44	4 (9.1%)	8 (18.2%)	8 (18.2%)
Technology	248	21 (8.5%)	35 (14.1%)	44 (17.7%)
Industrial production and distribution	412	28 (6.8%)	50 (12.1%)	72 (17.5%)
Education	313	9 (2.9%)	26 (8.3%)	39 (12.5%)
Hospitality	304	11 (3.6%)	18 (5.9%)	34 (11.2%)
Urban environment	110	3 (2.7%)	9 (8.2%)	12 (10.9%)
Security	59	4 (6.8%)	5 (8.5%)	6 (10.2%)
Import-export	249	15 (6.0%)	17 (6.8%)	24 (9.6%)
Retailer	657	22 (3.6%)	40 (6.1%)	59 (9.0%)
Art and culture	60	1 (1.7%)	1 (1.7%)	5 (8.3%)
Entertainment	62	0	1 (1.6%)	4 (6.5%)
Maintenance	206	5 (2.4%)	8 (3.9%)	13 (6.3%)
Professionals	606	11 (1.8) %	27 (4.5%)	37 (6.1%)
Public administration	120	3 (2.5%)	6 (4.2%)	5 (4.2%)
Health	488	9 (1.8%)	11 (2.3%)	18 (3.7%)

Observing the position of each category, we can notice that Career, International Organization and Transport are on the top of the chart and remain stable throughout the years. In any case, these categories do not reach more than 100 activities and Career and International Organization, in particular, are the categories which count the lower number of activities (respectively 42 and 40).

In 2007, International Organization already had 9 websites out of 11 on the digital overview. The online presence of Career, instead, reaches the first position only in 2013, passed by International organization in the previous years, while Transport shifts to the fourth position only in 2010, forestalled by Communication and Media.

Watching at the origin of each activity, a very interesting datum emerges: the online presence of International Organization and Transport depends mainly on socioeconomic activities managed from abroad (100% in the case of International Organization and 58.0% for Transport), while Career has a 67.0% local presence.

The escalation of Career to the first position, together with its local origin, underlines the positive evolution in the use of technology among the dwellers throughout the years: Douala's inhabitants use it to find a job and, therefore, to build their own future.

At the same time, the categories Retailers and Professionals are worthy of attention: their actual territorial presence is clearly larger than all the other categories (657 and 606 activities respectively). In spite of this, their online saturation is quite low: in 2007, Retailers is on the 12th position, it shifts to the 13th in 2010 and, finally, to the 14th in 2013; on the other hand, Professionals is on the bottom of the chart, on the 18th position, showing that just 1.8% of this category has a website.

Among the categories that show an important growth throughout the years, we can notice Education, Art and Culture, and Entertainment, which move up four levels, and Urban Environment, which shifts from three positions. Again, the origin of these activities is local: 100.0% regarding Urban Organization, Art and Culture, and Entertainment, 82.0%

for Education. This data demonstrates a tendency to go online of the categories linked to educational, social, cultural and urban activities.

Categories whose growth, instead, drops significantly in the online saturation chart are Import-export, Retailers, Public administration, and Health.

These activities, despite their steadily online growth, seem to have reached the saturation of their online presence in the first years. 70.0% of them have local origin, and apparently do not consider online presence as an advantage just in the years when the majority of the categories emerges (from 2010 to 2013) and, probably, they chose other communication channels.

Finally, Bank and Insurance, Technology, Industrial Production and distribution categories show a constant growth throughout the years, which allows them to maintain their position: more than a half (58.0%) of this huge number of activities.

3.3.5.3 Online saturation of visible spaces

This paragraph aims to compare the online representation of Douala's neighbourhoods against their level of online saturation: that is the number of online activities divided by the total number of activities formally registered within every given area.

Among the 118 neighbourhoods of Douala's urban territory, 53 of them present socioeconomic activities which are formally registered but only 36 of them – 30.5% of the total number of neighbourhoods – show an online presence.

The map below (Figure 23) shows the visible (in grey) and invisible (in white) digital Douala, from which it emerges clearly a digital divide between coastal and inner areas of the city. The darker areas correspond to the most prestigious neighbourhoods of Douala, where most of the socio-economic activities are concentrated.

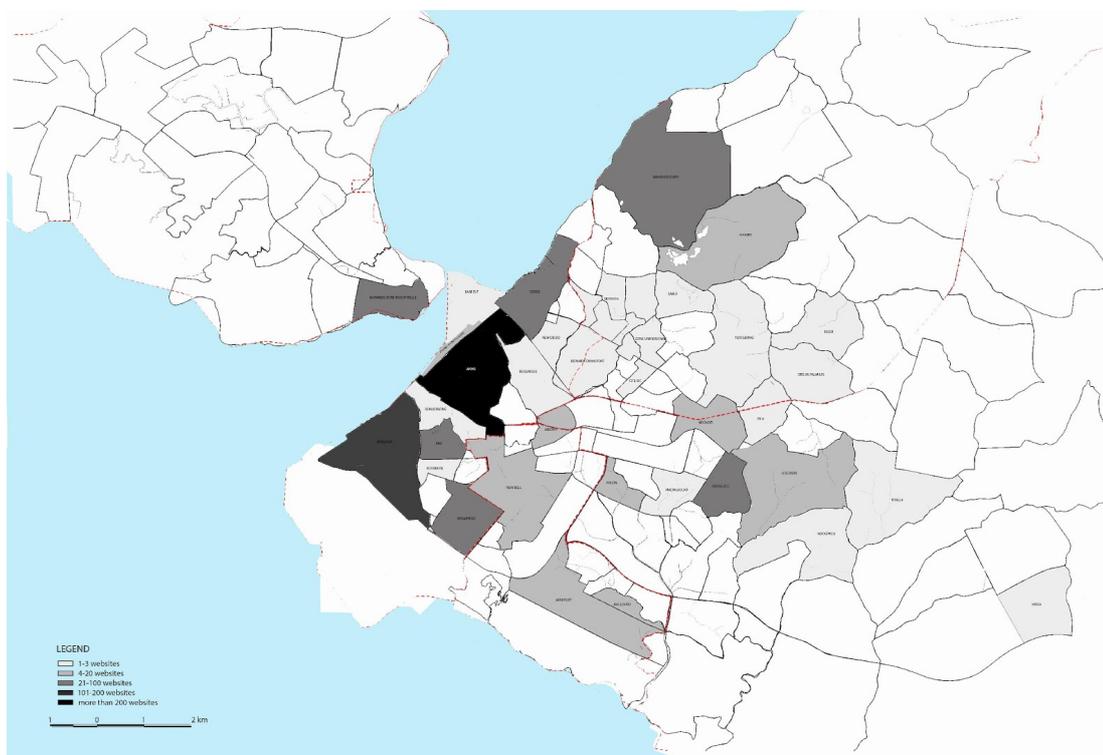


Figure 23 Map of visible and invisible online neighbourhoods in Douala

Table 5 reports and regroups the above cartographic data. The groups 1 and 2, including Akwa (in black in Figure 23) and Bonanjo (in dark grey in Figure 23) are the neighbourhoods that register the highest online presence, which corresponds to 50.3% of the whole online presence of the city of Douala (respectively: 256 online socio-economic activities in Akwa, and 104 activities in Bonanjo). Akwa, the commercial area of the city, presents 19 out of 20 categories (Public Administration is the only one missing) but, at the same time, the saturation level of online activities just reaches 12.3%. On the other side, Bonanjo, the administrative centre of Douala, counts less online activities but almost a fifth of them (19.2%) are online.

Table 5 Table grouping neighbourhood for their online visibility

Group	Colour in the map	Number/Range of online activities	Name of the neighbourhood/s
1	Black	256	Akwa

2	Dark grey	104	Bonanjo
3	Grey	30 to 100	Bonapriso, Bonaberi, Deido, Bassa, Bali, Bonamoussadi
4	Light grey	4 to 20	Ndokoti, Maképé, New Bell, Aereoport, Zone Portuaire, Mboppi, Axe Lourd, Nylon/Saint Michel, Sable, Log baba
5	Very light grey	1 to 3	Base Elf, Base Naval, Beedi, Bepanda, Bepanda/Ominisport, Bessengue, Bonadibong, Cité de Palmiers, Cité SIC, Koumassi, Madagascar, Ndongbong, Ndogpassi, New Deido, Nyalla, PK8, Yassa, Zone Universitaire.

Following the substantial presence of Akwa and Bonanjo, we come across neighbourhoods characterized by less than 100 to 30 online activities (in grey in Figure 23 and group 3 in Table 5): Bonapriso (57), Bonaberi (47), Deido (40), Bassa (37), Bali (34), and Bonamoussadi (30).

Apart from Bonamoussadi, a recently urbanized and Western-style area in the Northern part of the city, all the other neighbourhoods are residential areas where the most powerful traditional families within the city live: Bell in Bali, Ndumbe in Bonaberi, Deido and Bassa in the neighbourhoods named after them.

Bonaberi and Bassa are industrial areas, while Bali and Bonapriso are characterized by luxurious residences well provided with public services. On the other hand, Deido has not the same characteristics: its houses have a simpler architecture, even if the area has a great importance due to its strategic position, which allows to enter and exit to/from the city. In spite of this, and also considering its role for entertainment and nightlife, Deido has not reached the online success of the neighbourhoods mentioned above: its *rue de la joie*, its popular centre, does not produce any digital echo.

Observing the neighbourhoods' saturation level, it emerges that the rising areas – in terms of urbanization and industrialization- show a larger saturation of online activities, which goes beyond the most visible neighbourhoods: Bonamoussadi (25.9%) Bassa (23.4%) and Bonaberi (23.0%). The online presence of these activities may depend on the need to attract a diversified audience. Residential areas, instead, communicate online less than 15.0% of their activities.

The neighborhoods that follow (group 4 in Table 5) are characterized by a range of 4 to 20 online activities: Ndokoti (17), Maképé (10), New Bell (9), Aereoport (9), Zone Portuaire (6), Mboppi (6), Axe Lourd (5), Nylon/Saint Michel (5), Sable (5), and Log baba (4). We can find their representation in light grey (Figure 23).

New Bell and Mboppi are central neighbourhoods where the three biggest markets of Douala take place – the Marché Congo, the Marché Central in New Bell, and the Marché Mboppi in Mboppi – while the areas of the airport (Aereoport) and of the harbor (Zone Portuaire) are well-known for their activities linked to industrial distribution, import-export and transports. All the neighbourhoods are characterized by simple architecture and a lack of basic public services such as water, electricity and sewers, except for Maképé, a new area in the North-East of Douala, where the new middle-class of the city is settled. Moreover, the most important arterial roads of the city pass across these neighbourhoods. The neighbourhood of Axe Lourd just takes its name from the main road crossing it.

From the analysis of the online saturation of this group it emerges that the district of New Bell despite having the largest number of registered businesses (102), it is also the one with the least online saturation (8.8%), followed by Log Baba (13.3%) and Axe Lourd (13.9%). At the same time, if a high saturation level is not surprising for the areas of Aereoport (45.0%) and the Zone Portuaire (35.3%) due to their function as commercial and international gates, it is absolutely relevant for the neighbourhoods of Ndokoti (40.5%) and Nylon (45.6%), which are both spontaneously growth settlements during the Eighties', overcrowded and popular for their role of informal and commercial centers. These areas are online represented mainly by banks and industrial production and distribution categories showing a shift toward the formal economic society and an improvement of the population income, which needs to have a diversified offers of banks. The remaining neighbourhoods present an online saturation between 20.0% and 30.0%. The richest Maképé, differently from the others, is characterized by a higher diversification: 8 out of 20 categories are online.

Finally, finally group 5 (Table 5) includes 18 neighbourhoods – presented in very light grey (Figure 23) – feature from one to three online activities, which include the categories Banks and insurances, Industrial production and distribution, and Education. They are: Base Elf, Base Naval, Beedi, Bepanda, Bepanda/Ominisport, Bessengue, Bonadibong, Cité de Palmiers, Cité SIC, Koumassi, Madagascar, Ndongbong, Ndogpassi, New Deido, Nyalla, PK8, Yassa, and Zone Universitaire.

Half of the neighbourhoods listed above present a saturation level which space from 10.0% to 20.0%. This data is quite interesting compared to the saturation level of the most visible and prestigious online neighbourhood – Akwa and Bonanjo, which feature similar percentage. 5 neighborhoods out of 18 have an online saturation lower than 10.0%. In two cases (New Deido and Koumassi), 50.0% of business is online, while in the remaining two neighbourhoods (Zone Universitaire and Yassa) 1/3 of the businesses have a virtual presence.

The invisible neighborhoods of the city are shown in pure white (Figure 23), with no business having an online presence. These neighbourhoods can be considered as no-zones, characterized by a lack of public services and infrastructures.

3.3.6 Conclusion

Within a very dynamic urban context of Cameroun, the city of Douala, where the most of communication fluxes and economic exchanges are concentrated, at the end of 2013 11.4% of local business were online.

Looking at the digital Douala from a temporal perspective new insights that exceed the static dualism between those who have/have not and those who are visible/invisible can be adopted. Such observations, along with the analysis of online saturation permits to understand how an African city is slowly moving towards the information superhighway, trying to respond and react to the digital divide.

Global visibility shows indeed a dualism between the physical and digital city, offline and online actors, and visible and invisible spaces. The least represented online neighbourhoods in Douala are indeed the most isolated and marginalized areas, characterized by a lack of basic services. This picture confirms the theories by human geographers (Graham et al., 2014; Graham, 2002; Unwin, 2015; Zook, 2000) according to whom ICTs and the internet are stressing the economic and social disparities between those who have and those who have not access to resources.

At the same time, looking at the digital city through the online saturation lens all those categories related to small and medium enterprises fight to emerge in the digital realm despite barriers to ICTs access. Those actors can make a difference in the communication of the physical city, pulling stakeholders from the same category to follow their example, and in turn influencing the hybrid city.

This study has showed how the online visibility of the most diffused categories within the city of Douala – such as Retailers, Professionals, Industrial production and distribution, Bank and insurance, Import-export – does not result in higher online saturation.

The categories that have shown a significant online growth in the years 2007, 2010 and 2013 are exactly the categories with less physical presence in the city, and whose headquarter is just in Douala, with few or no branches spread throughout the city. It is worth noting the category Career showing the highest level of online saturation; along with the categories of Education, Art and Culture, Entertainment, and Urban Environment, which in recent years have tripled their online presence, despite their offline presence still results to be somewhat limited.

Even with regard to the online saturation of the categories within the urban area, it is apparent that the higher the number of formal activities in a given area, the lower is the online saturation rate. This means that where there is little activity formally registered, the greater is the effort and motivation to communicate their online presence, thus ensuring indirectly visibility to the neighbourhood they belong to.

3.4 Douala as a “hybrid space”: Comparing online and offline representations of a sub-Saharan city

This study investigates the complex relationship between the physical and digital spaces of the city of Douala, Cameroon by comparing its online representation with the social representations emerging orally by locals. Using the results of two existing studies reporting on the online image of the city, we investigate the social representations foreigners and locally relevant people have of Douala and uncover similarities and discrepancies of the two resulting representations. Outcomes from the analysis permit reflection on the implications of these and show an unripe, intermediate stage of the “hybrid Douala”, where the virtual space seems still not to be affecting the way the physical space is experienced, as well as where the gaps in the digital divide are perpetuated. At the same time, strong local ownership of certain digital activities suggests how the online image of the city is in the process of being constructed and developed locally. As the spaces of the city start appearing online, the process of hybridization between physical and digital Douala is slowly taking place and offline and online narratives, now rather detached, will possibly soon create a new image of the city to global online narratives.

Keywords: Urban social representation, African city, digital city, hybrid city, Douala

3.4.1 Introduction

When landing in Douala, a chaotic metropolis on the Atlantic Ocean, we are struck by its huge incongruences, as often happens in these cases. Douala, the economic capital of Cameroon, is a city characterized by continuous horizontal expansion. A few prestigious neighbourhoods brag boast historical monuments, economic activities, elegant fenced houses, luxury cars and clean streets whereas the rest of the city lacks basic public services, such as regular power, access to water, formal sewers and paved roads. Poverty and unemployment are widespread, along with a general sense of insecurity and unsafety. However, its complex urban landscape features a new contemporary cultural life that makes the city a landmark for festivals and art installations (Babina & Bell, 2008; ICU, 2012; Pucciarelli, 2014). We could not have understood this complexity solely on the information about the city that can be found online.

Many communities in non-western societies have no voice online; moreover, connectivity and access is still an issue for many countries in sub-Saharan Africa, where many people neither access nor produce online content. According to Graham (2002), the way in which the local heritage shapes the knowledge-based city has still to be adequately articulated. In Douala, the predominance of oral over-printed and digital culture is evident. However, the use of digital media is growing quickly, fostered by the rapid adoption of mobile technologies, leapfrogging the use of printed media as a means of access to information (Pucciarelli et al., 2013).

From a communication perspective, the study of digital and access divides can shed light on what representations are created and whose voices are audible in the digital space and by whom, thereby informing the way and whether communities are benefitting and empowered from being connected. From a geographic perspective, studying the voices contributing to shaping their own geographies versus the ones that endure silence in a sort of digital shadow, can provide understanding of the complex interactions between digital geographies and the physical space to which they refer. New urban “hybrid spaces” (Graham, 1998; Paradiso et al., 2006; Silva, 2006; Zook, 2000; Zook & Graham, 2007a) are, in fact, generated by combination and interaction between online and offline spaces which, in turn, changes the way social groups experience the place itself.

This article draws from two previous studies on representation of digital Douala (Pucciarelli, Cantoni, & Kalbaska, 2016; Pucciarelli et al., 2014) which have shown a strong gap between the physical and political division of the territory and its online presence. A map of digital Douala was created on the bases of the geo-localisation of socio-economic activities operating at a local level. The emerging map highlights an

uneven representation of the city, mainly positioned on the Atlantic coast and showing an online “visible Douala” where most activities are located. Only 11.37% of stakeholders in Douala have an online presence, which is distributed in 36 of 118 neighbourhoods in the city. The “invisible Douala” constitutes 69.5% of the whole territory of the city, which includes underserved areas, spontaneously grown after rapid and uncontrolled urbanisation processes. Almost half of online stakeholders belong to the financial and commercial sector. However, more than half of the online content (59.1%) is produced by local socio-economical activities that have decided to promote their work through websites.

This picture mirrors a clichéd image of the city as the economic and commercial capital of the country (47.8% of the online presence stems from economic and financial activities). Activities, such as art, culture and entertainment, are almost invisible within the overall online landscape (Pucciarelli et al., 2016, 2014). However, a deeper analysis of the saturation of online stakeholders within neighbourhoods shows a completely different picture in which, firstly, the online visibility of the most popular and emerging categories within the economic capital does not result in higher online saturation: the higher the number of formal activities in a given area, the lower is the online saturation rate. Secondly, the categories that have shown significant online growth in the years 2007, 2010 and 2013 are exactly the categories with less physical presence in the city, having only their headquarters in Douala with few or no branches spread throughout the city. Data demonstrates a tendency for categories linked to educational and personal development, as well as social, cultural and urban activities, to go online. Thirdly, where there is little activity formally registered, greater effort and motivation is necessary to communicate their online presence, thus ensuring visibility indirectly to the neighborhood to which they belong (Pucciarelli et al., 2016). These underline the positive evolution in the use of technology among the dwellers over the years.

This study adds a new level of analysis to previous researches of digital Douala. Herein, we aim to investigate digital representation of the city in depth, focusing not only on the

image of Douala emerging from the analysis of online socio-economic practices produced by locals and foreigners over the years. We rather investigate available thematic user-generated content *about* the city which have been produced specifically to communicate informations, suggestions, advice and concerns about Douala to potential visitors.

The objective of this research is to explore the hybrid city by analysing and comparing the online and offline representation of the city held by two groups of people, which are locals and foreigners. To do so, this article will first present an analysis of qualitative data about foreigners (online) and local oral (offline) social representations (Moscovici, 1961) of the city. It will then compare the resulting online and offline maps, thereby uncovering similarities and discrepancies between the two perspectives and reflecting on their implications.

3.4.2 Literature Review

3.4.2.1 The Hybrid City

According to Graham (2008a), the ways in which places are represented online influence the way we perceive and interact with them. At the same time, such ways create “hybrid spaces”; in fact, the Internet can alter the relative position and visibility of spaces. The capacity of the Internet to reduce distances, such as through online disintermediation but ignoring in-between networked spaces, has been regarded both as a developmental enabler and as “an economic and social revolution with the ability to fundamentally reshape the globe” in geographical terms (Graham, 2008, pg. 775). Thus, “the informational shadows of cities”, the silenced and void areas, “truly matter” (Graham, 2013, pg. 5) and the lack of online content about and contributions from certain places can indicate and further contribute to their marginalization and to the lack of negotiation power of its people. Analysing silent (and silenced) voices therefore becomes fundamental to understanding the geography of development (Graham, 2013). In this study, we explore the hybrid city by comparing the offline social representations of city emerging via locals’ ideas, values and practices with the online social representation foreigners have of Douala, which add a richer picture of the online image of the city emerging from previous studies.

3.4.2.2 Social Representations, Urban Spaces and Maps

The Social Representation Theory (SRT) (Moscovici, 1961) has been employed as the theoretical framework in this study for its implications in investigating the information and communication and spaces phenomena. Social representation’s (SR) focus on

communication is stressed since their very first definition means enabling individuals to communicate and to classify their world (ibid). Ever since, scholars have been underlining how SRs are not only enablers of communication but they are also used to shape and share phenomena (Laszlo, 1997).

Urban environments, as social representations, are social phenomena that are products of different social groups interacting with a space throughout history (Alba, 2011). SRs have been extensively employed to investigate geographical spaces, giving rise to reflections on different topics, such as social memory anchored in space (Haas, 2001, 2004; Jodelet & Haas, 2007), residents' urban experiences (Alba, 2002; Rikou, 1997), urban mobility (Marchand & Weiss, 2009), tourist versus residents' views (De Rosa, 2012; de Rosa & Bocci, 2013), social imaginaries of cartographic maps (Arruda & Alba, 2007), and social, cultural and historical factors that come into play in city image making (Jodelet & Milgram, 1977), thereby underlining that the relationship between individuals and environment is mediated by society and is dialectics. Individuals actively and continuously construct their physical environment, where their own identities and values are also negotiated (Farrauto & Ciuccarelli, 2010; Jodelet, 2010; Jodelet & Milgram, 1977). Individuals are social and cultural beings, they give relevance not only to their personal perceptions but also to what their community emphasizes (Alba, 2004; Jodelet, 1982).

At the same time, space has always been represented with maps, both physical and mental, as languages are socio-cultural products resulting from interactions with the environment and with other social actors. Milgram and Jodelet (1977), when studying individual and collective maps of Paris, noticed that maps not only express personal experiences of spaces but also denote individuals' social resources and give importance to social and integrative spaces. Since Geographical Information Systems (GIS) have been widely adopted, much has been written about the ways in which maps and Information and Communication Technologies (ICTs) have interconnected in holding sway over people's daily lives, including their movements, shifts, and perception of urban environments (Castells, 2001; Farrauto & Ciuccarelli, 2010; Pucciarelli & Cantoni, 2012; Zook & Graham, 2007a).

This article presents a study of the SR of the city of Douala, as perceived offline by locals and online by foreigners. These online and offline SRs of Douala will be analysed and compared.

3.4.3 Methodology

Drawing on Moscovici's SR Theory (1961), this study is guided by two research questions:

- What are the social representations local people and foreigners have of the city of Douala?
- How are offline representations (mis)aligned with the representations of the city that are produced online?

The SR theory was used in the data generation phase as well as in the subsequent analysis. According to Moscovici's tenets of SR (1988), the data generation process elicited a wide set of locally-shared ideas, values and practices, both referring to the city and to specific neighbourhoods carefully selected on the basis of available city maps. Data were generated in two distinct phases. Phase 1 took place during a two-month period of field-work, November and December 2013, through ethnographic field notes, 39 in-depth interviews with local residents and one focus group with public administration employees. These data enabled understanding of offline social representations by locals. Phase 2 was undertaken using TripAdvisor, through a content analysis of user-generated content about Douala, reported in the forum "things to do" and "questions and answers" from March 2006 to September 2016.

3.4.3.1 Data Collection



Figure 24 Tourist guide map of Douala, realized by doual'art (2009)

The 22 mapped neighbourhoods in Figure 24 have all been visited. Ethnographic observations, photos, and interviews with personalities of the neighbourhood were generated in each of them by means of 39 interviews and a focus group. Interviewees included 22 traditional chiefs of the areas (*chefs du village*) or older people who directly experienced the process of city urbanization. These interviews were integrated with 8 interviews with medium to highly-educated personalities who had a deep knowledge of the specific neighbourhood, such as history teachers, tourist guides, government officials, retailers and members of the community recommended by other inhabitants because of their community commitment. Nine individual interviews were conducted with people familiar with producing content about the city in general (also online). These comprised a journalist, an essay writer, a photographer, a TV director/cultural producer, a cultural

centre communication manager, a destination manager, a hotel owner, the municipality urban centre director and a politician representing the opposition party, who also owned a cabaret restaurant. Finally, a group interview involved six municipality employees who manage the city's website (www.douala-city.org), comprising two working in institutional communication, one from public relations, a cooperation specialist and two multimedia graphic designers.

The interview included questions on both the neighbourhood and the city, as follows:

- a. Tracing a historical pathway of the neighbourhood's urbanization process and events marking the memory of its inhabitants;
- b. Discussion of common commercial and socio-cultural practices of the neighbourhood and the city;
- c. Providing three keywords to describe the neighbourhood and the city;
- d. Defining the neighbourhood and the city landmarks, relative to both mobility and tourism.

Based on the professional roles of the interviewees, questions also covered the specificity of their sectors within the city, including dealing with tourism, cultural, political, social and urban issues.

Data collection using Tripadvisor was conducted in October 2016. The analysis considered the section *things to do in Douala*, including 9 activities, 90 comments and 21 questions on the *Douala forum "question and answers"*, which received 40 answers from March 2006 to October 2016. A total of 130 user-generated contents in four languages (English, French, Portuguese and German) have been analysed. Only user-generated content produced by foreigners have been considered and reviews or answers provided by locals, or clearly oriented to advertise local business activities have been excluded from the analysis.

3.4.3.2 Data Analysis

To understand the *offline and online social representations locals and foreigners have of the city of Douala*, we employed SRT as "both an approach, a way of looking at social

phenomena and a system for describing and explaining them” (Moscovici, 1988, pp. 212-213).

A bottom-up content analysis of interviews was performed in order to uncover:

- Local practices: by identifying and describing popular activities in the neighbourhoods and in the city as a whole;
- Popular narratives: by eliciting and/or identifying keywords representing Douala, as well as specific neighbourhoods;
- Landmarks of the city: by defining landmarks connected to tourism.

At first, practices, narratives and landmarks have been coded separately. “In vivo” codes (capturing the terminology of participants and users or reporting the names of touristic landmarks) have been preferred usually, such as “Douala ville cosmopolite” (Douala cosmopolitan city), “Douala capital économique” (Douala economic capital), “Douala la rebelle” (Douala the rebel). The codes have been indexed on the basis of their frequency emerging within interviews before they have been conceptualized into broader, thematic categories. Some leading codes have become concepts: “Douala ville cosmopolite” became a broader concept including different codes, such as “Douala Cameroun in miniatures”, “Douala the crossroad of Cameroun”, “Douala multi-ethnic city”, “Douala tolerant city”, etc. Leading codes related to popular narratives and practices were merged into a single theme in order to provide the complex picture of the city (in the case cited above, the concept “Douala ville cosmopolite” became a theme including also the concept of “immigration” emerging from analysis of local practices). Touristic landmarks emerging during interviews have been grouped according to the neighbourhood in which they are located and classified based on the number of times they have been quoted.

The analysis of SR on Trip Advisor was conducted after the main themes emerging from the offline Douala representations were identified and described. Keywords and practices have been selected from each user-generated text and coded separately. The codebook for the forum “things to do in Douala” included the category of activity, name of the point of interest, the neighbourhood, the period of visit, the review grade (1-5), users’ comments,

keywords and practices/activities within the neighbourhood or the city. The codebook for the forum “questions and answers” included the date and title of the post, the question, all answers and the emerging keywords, practices and landmarks. Online keywords and practices were then reconducted to the main themes emerging from the analysis of interviews. Data emerging from the content on the “things to do” forum are mostly related to description of the neighbourhood where such activities are placed. When they are related to the image of the whole city they have been coded accordingly. Differently, data emerging from the forum are mostly related to the general image of the city and its social practices, rather than specifically addressed to a specific neighbourhood.

To compare alignments and discrepancies between online and offline representation of the city, this study discusses:

1. Thematic similarities and contradictions between the narratives emerging from analysis of digital Douala compared with locals’ SRs of the city.
2. Geographic similarities and contradictions between local and foreigners’ representations of touristic landmarks of Douala on two maps.

Maps have been created using five grades of colors (from light yellow with no touristic landmarks to dark green for more than 21 identifications within the same neighbourhood) to represent the number of times touristic landmarks have been identified and reported by locals during interviews (Map 1) or reviewed by foreigners (Map 2) on the TripAdvisor forum “Things to do in Douala”.

3.4.4 Outcomes

The ethnographic fieldwork and interviews showed that locals’ SR of neighbourhoods is quite different from the one represented on the map (Figure 1). The 22 neighbourhoods appearing on the available map were insufficient to reflect the socio-cognitive perceptions of locals, who perceived them only as container areas of 118 neighbourhoods.

Thematically, locals’ SR highlights how the city of Douala is like a *millefeuille* (named after a cake, meaning “a thousand sheets”), presenting several layers of complexity:

“The city of Douala is a *millefeuille*, meaning that there are various layers, it is a *millefeuille* to define its complexity; it is possible to stroll it in a horizontal way,

simply like that; and then to descend from the first layer up to internal one. The model of the millefeuille is an intent to do a chronic fiction. Altogether, you have all the cultural, economic, social parts, all is overlapped and comes together at the same time, all is here, all develops here [...], and it lights up at the same time [...] it is not possible to write it in a homogeneous way.” (L. Manga, personal communication, Douala, December 2013).

In the next sections, we will present Douala SRs according to the main shared themes emerging from the analysis.

3.4.4.1 Douala Ville Cosmopolite, Douala Capital Économique

Offline Locals' Representation

Douala is defined by locals as “the cosmopolitan city” and “the economic capital”; similarly, Paris is defined as the “capital of love” in the Western world. These are the leitmotifs most frequently used by locals to define their city. The two concepts seem to have been learnt by heart and are automatically associated to the city, similar to the song recorded at the beginning of a tape. These definitions refer to a socially-shared set of values, ideas and practices. Firstly, by portraying Douala as a cosmopolitan city is to consider the city as the neuralgic point of a country, characterized by huge national and international immigration flows of people in search of jobs, cheap labour and better life conditions. Cosmopolitan Douala is, indeed, often described as the crossroad of Cameroon, the “Africa in miniature”, and hosting different cities within the same environment; as reported by the writer, Lionel Manga, “*there are several cities within this very same city today*” (L. Manga, personal communication, Douala, December 2013).

Secondly, Douala presents a heterogeneous *human* mosaic (Domosh et. al., 2011). The adjective ‘cosmopolitan’ embeds the concept of diversity of the population, a multi-ethnic city where people from different villages and regions of Cameroon, as well as from different countries, coexist. It is where the native ethnic group, the *dualas*, are a minority if compared to the immigrant population: “*here, the autochthones that we call ‘the Dualas’ are a minority in relationship to everyone else*”, as suggested by the TV Director and cultural producer, Ndoumbe Vincent (personal communication, Douala, December 2013). Defining Douala as cosmopolitan offers the image of a city that is tolerant, welcoming, with an intrinsic attitude towards international integration and an acceptance of differences. This

extremely positive image given by locals is in contrast with the traditional problems and conflicts related to ethnicity and land occupation.

The cosmopolitan representation of Douala is strongly related to the definition of the city as the economic capital of the country. “*The city life of Douala begins with the activity of the harbor*”, suggests Valère Epée, professor of linguistics and master of the Sawa tradition (personal communication, Douala, November 2013). However, the concept of economic capital can be read at different levels. On one hand, the public administration focuses the meaning “economic city” outwards towards global concepts, emphasizing Douala as the industrial and economic heart of Cameroon, a commercial gateway for European business, which is attractive for investments and is competitive at the global level. Douala is a city that allows foreigners to work and operate with a certain freedom (without strict laws and infringements). The main urban investments are often subcontracted to foreign companies (particularly from France and China), which make huge profits; therefore, according to locals, the foreigners just consider Douala a city where they work and sleep. On the other hand, inhabitants focus the meaning of economic capital inwards, towards daily practices. Douala is the city of job opportunities, where people come to get a better life: “*there is always a strategy to earn 2000 CFA*” (F. Etienne, personal communication, Douala, November 2013). Self-motivation and flexibility are, indeed, essential to getting a job in a city where, despite poverty and a high unemployment rate, 73.8% of the economy is estimated to be produced within the informal market (Communauté Urbaine Douala, 2008).

The city creates opportunities by offering people, especially youngsters, the chance to “*se débrouiller*” (scrape along), living or surviving with two or three extemporary jobs such as improvised fruit, peanuts or *quinqualleries* sellers. Instability and economic uncertainty are connected with the high crime rate that characterizes Douala.

Online Foreigners' Representation

Very differently from the locals, the SR online users have of Douala does not place the same emphasis on the cosmopolitan aspect of the city, despite Cameroon being a bilingual country (English-french) “*you need to know the language (French) to get by*” (January 2015, on the things to do: “Marché des Fleurs”). Only one comment refers to Douala as “*a great place with people from different parts of the world*” (May 2015, on the topic forum: “Cameroon safety”). Even the idea of Douala as an international gateway is highly criticized, as it seems unready to host an international public from all over the world. As

reported by many foreigners, the city offers very bad connections in terms of international flights (it is not possible to reach Douala from the American continent without stopping in Europe) and flight assistance, urban and regional travel services and reliable online services from tourism providers.

“The choice of a tour operator is something, in this case and in this country, not to do only through a few suggestions on the web but with a solid set of references. Wanting, for example, just to have a smooth taste of the country and aiming to see something without problems, it is better to organize everything once there, eventually with the help of references given by a hotel of international standard or someone well known, like expats and people living there. Don't pay nothing in advance!” (Oct 24, 2011 on the forum topic: “Better alone than using not trustable local tour operators”)

In relation to Douala as an economic capital, online social representation refers mostly to some neighbourhoods of the city where it is possible to withdraw money or enjoy tourist shopping activities. These neighbourhoods only include Bonapriso and Akwa, the two central areas of the city, which are respectively the colonial residential area and the commercial zone. Foreigners often refer to the markets located in these areas as “*such a tourist trap, but well worth it*” (December 2015, on the things to do: “Marché des fleurs”) where it is possible to find a great variety of quality and local goods. At the same time, they find Douala an expensive metropolis where the price of products always needs to be bargained with good or bad salesmen, suggesting the need to “*adopt the Douala attitude*” (January 2015 on the things to do: “Marché des Fleurs”), as “*most traders try to double price to you once they see you are a foreigner*” (May 11, 2015 on the forum topic: “Cameroon safety”).

3.4.4.2 Violence and Urban Disorder

Offline Locals' Representation

Another recurring theme is the representation of Douala as an unsafe and insecure city because of the overflowing violence and the so-called “urban disorder”. Crime-related violence is diffused in almost every neighbourhood. Crime is represented by the so-called *banditism*, including physical and verbal violence, robberies, pick-pocketing and aggressions. Criminals are rarely caught and punished, an expression of a widespread

corruption, which often allows the *bandits* to be released from jail on the same day they are arrested. Popular justice is the only frequently enforced action to fight crime, leading to public executions. Incidents of criminals being tied up in tyres or punched until they faint and then set on fire near gas stations are not infrequent. These *linchiages publiques* (public lynchings) are not prevented by the police. In some neighbourhoods, the consistency of popular justice has dramatically decreased the crime rate, as Fokou Etienne, chief of the Brazzaville neighbourhood, declared.

Douala is often described as an anarchical city, where risks and dangers are usually related to urban disorder. Frank Danjou, French real estate manager, restaurant owner and inhabitant of Youpwe specifies:

“It is not about chaos. The proper term is ‘anarchy’. The anarchy that reigns here, as you see, I love it, this anarchy which means that there is no order, no rules. Anarchy is societal. Anarchy creates opportunities” (personal communication, Douala, December 2013).

The definition of urban disorder includes practices and social behaviours related to traffic, informal markets, urbanization processes and unhealthy environments within the city.

Online Foreigners' Representation

The confusion, violence and urban disorder of Douala are among the aspects of the city most frequently reported online by foreigners. Douala is described as a dangerous city: “*Crime rates, particularly violent crime, are increasing at alarming rates [...] even during daylight, there have been recent purse snatchings and necklaces ripped off women's necks in the Akwa area*” (January 11, 2012 on the forum topic: “Tourist safety”). Safety is a main issue for foreigners and the theme of entire forum topic discussions. Those topics provide specific instructions about how to move safely throughout the city that call into questions the concept of using ‘common sense’, on the one hand, and the need to always be assisted by someone who knows the city on the other: “*you need to be on guard*”, “*don't roam the streets at night*”, “*don't wear any expensive jewelry, watches or purses in crowded areas*”, “*have a driver wait for you when you go in restaurants for dinner*”, “*make sure the driver appears sober*”, “*stay at international standard hotels*”, “*don't go alone*”.

Safety and security issues are also linked to urban disorder, which characterizes some specific areas visited by foreigners because of specific things to do, like visiting the monumental sculpture “Nouvelle Liberté” by Francis Sumégné in the Deïdo neighbourhood. In this case, the concept of dangerousness is linked to the urban disorder generated by a crowded area, bad circulation and the urban degradation of the area.

3.4.4.3 Transport Issues

Offline Locals' Representation

The most common transport means in Douala are taxis and moto-taxis. The complete absence of public transport, the lack of street infrastructures (lighting, traffic signs, paved streets, sidewalks) and traffic rules enforcement make Douala a very undisciplined city traffic-wise, as well as being almost impracticable for pedestrians. As reported by Samuel Eitel Tak'A Manga, a retired employee at the Ministry of Finance and living in Akwa:

“When people circulate anyhow, when public lighting is lacking in neighborhoods, when the police are absent, when you cannot quickly access some places because of traffic jams or road conditions, this generates security problems” (personal communication, Douala, November 2013).

Referring to the Ancient Route of Bonaberi, Edouard Yetchang, chief of the *New Deïdo* neighbourhood, declares:

“This road does not allow pedestrians to walk without being scared, but what we are witnessing is that there are people on motorcycles who are going to compete aggressively with vehicles” (personal communication, Douala, December 2013).

According to locals, the urban chaos is often due to *bendskineurs*, the fearless moto-taxi drivers who mobilised the city from the 1990s and whose circulation has been forbidden in some neighborhoods (Bonanjo, Bali and Deïdo) in order to avoid chaos. However, Samuel Eitel Tak'A Manga (and the majority of wealthy people), claims that:

“These bikes ... there are hundreds, thousands people that ride in a messy way ... cars too are driven in messy way, in a way that here there is an absolute mess” (personal communication, Douala, November 2013).

The lower middle class prefer using motorbikes despite their constant traffic violations (no driving licences, no helmets, driving in opposite traffic direction) because it is cheaper and faster in the pervasive traffic jams (*emboutteillage*) of the city; moreover, it enables them to reach unpaved streets in neighborhoods where cars could not access. Transportation across the city is quite expensive, so people move throughout their neighborhoods only to satisfy most essential needs (going to work, to the market, to visit relatives and friends, etc.).

Online Foreigners' Representation

The transport issues theme clearly emerges also from online SR. According to online users, “*there's not really a system for public transportation*” (June, 2013, on the forum topic “Driver in Cameroon”) and this prevents people moving safely throughout the city. The bad circulation in Douala and the urban chaos generated by the lack of transport services and infrastructures are directly connected to measures taken by foreigners to prevent safety and security problems.

Taxis are the only means of transport considered by foreigners (none of the comments mention the presence of motor drivers) as they are “*safe, fine and easy to use*”. However, even the act of taking a taxi seems a practice requiring a lot of caution: “*If you take a taxi, buy the entire taxi (e.g. no other riders) and make sure the taxi driver appears sober*” (January 2012, on the forum topic “Tourist safety”), “*make sure you have a safe reliable driver*” (May 11, 2015, on the forum topic: “Cameroon safety”), “*make sure you use a driver recommended by your hotel, the taxis can be doggies*” (January 2012, on the forum topic: “Tourist safety”).

At the same time, renting a car is something highly discouraged because of the huge rate of car accidents and the complexity of driving without any rules of the road.

3.4.4.4 Informal Markets

Offline Locals' Representation

Informal markets in Douala represent around 70% of the economic activities. According to the majority of the people interviewed, informal markets are one of the major causes of urban disorder with peddlers, who are not given public spaces dedicated to markets, occupying any available spot, improvising their stands on sidewalks near crossroads or beside formal businesses and thus impeding pedestrians:

“Especially in some remote areas, such as Ndokoti, which are not very close to the center, it is usual to find the road completely occupied by the market. There is no way to circulate by car because there are beggars who arrive at the market; they settle

wherever they want, without considering at all the sidewalk at the point to occupy the carriageway” (Djatche André Roosevelt, employee at the CUD – Municipality of Douala, personal communication, Douala, November 2013).

Informal markets also involve crime diffusion and increase pickpocketing incidents.

Online Foreigners’ Representation

Among the *things to do* in Douala suggested on TripAdvisor, visiting the “Marché des fleurs” is the first activity people visiting Douala are invited to do. However, the “Marché des fleurs” is something completely different from the informal markets intended by locals and where they go to supply their basic needs. The *Marché de fleurs* is even considered by foreigners to be ‘a tourist trap’ with different shopping stands selling fresh tropical flowers and expensive souvenirs.

None of the online users of TripAdvisor even quote the presence of an informal market in Douala as a featured characteristic of the city. Those markets, unlike the Marché de Fleurs, which is positioned in the colonial residential neighborhood of the city (Bonapriso), are located in the inner neighborhoods of the city. However, the presence of informal traders along the streets of Douala is something possible to find throughout the city (even in prestigious neighborhoods), but which have not impressed online users images of the city.

3.4.4.5 City Urbanization

Offline Locals’ Representation

Descriptions of Douala as an “anarchic city” usually refer to houses: “*the urbanisation has completely overtaken the authorities*” (Lionel Manga, personal communication, Douala, December 2013). Except for the colonial quarters of Bonanjo, Bali, Bonapriso and the recent urbanisations of Bonamoussadi, Kotto and Maképé, Douala’s houses are built on terrains with no cadastral value, having been confiscated by the State for Sawa’s traditional chiefs and sold to the population before being bought again from tribal chiefs. Purchase agreements signed between private citizens in the last 50 years have no legal value.

“In the majority of cases, they are people who have bought (the terrain) in their original village and they are more or less squatters. They may hold titles, they have documents, but they are half-titles, as they are not official because they have bought them from the chief of blocks, or the chief of the neighborhood or chief of the village. This means that the property of the land has been negotiated and that people have paid someone for what they have bought, but they have papers without any official value, as they are not regularly registered at the real estate registry” (F. Danjou, personal communication, Douala, December 2013).

The lack of real estate titles is one of the most serious issues contested by the population because it worsens social disparity. Apart from the unlawful buildings that characterize Douala depending on the problem of land property, the demographic growth of the population over the last 50 years has brought horizontal urbanization of the city, causing deforestation and occupation of high flood risk areas. Therefore, houses have been built in a spontaneous and unorganized way, next to each other, using recycled materials and in areas where access to basic services, such as drinking water, electricity and paved streets, is quite limited or, in some cases, does not exist.

Online Foreigners' Representation

The theme of city urbanization, the anarchy and disorder in house building and within neighbourhoods, were never mentioned by foreigners. Consequently, online social representation of Douala does not mirror this aspect.

3.4.4.6 Unhealthy Environment

Offline Locals' Representation

In Douala, the constant violation of civic codes by inhabitants while travelling, selling goods and building houses generates major consequences for the environment. The difficult climate and the absence of environmental education contribute to making Douala a very dirty and unhealthy city.

Moreover, as reported by Danielle H el ene Ngondjo Son, from the institutional communication office at the Municipality of Douala:

“The negative image, which is often saddled on Douala, is that of a “ville poubelle” (trash city). This is because people do not put much emphasis on the quality of life they lead; you will easily see someone eating a banana and throwing peel on the ground without embarrassment; even if you tell him, he will answer that “Hysacam [the public agency encharged to collect garbage] will do it” (personal communication, Douala, November 2013).

Every year, precipitations reach around 1600 cm. Many neighborhoods are built on muddy and argillous land and floods are regular. In addition, garbage is thrown on the ground and is not collected by Hysacam, established only in 2007, where roads are not paved. The lack of sewers and drainage systems contribute to rain water and garbage being retained, creating puddles and dirty drains that become coves for mosquitos, insects, mice and diseases. Caroline Nadège Ngouegni, journalist and tourism guide in Douala, reports on the difficult mission of respecting the environment in Douala:

“I take the example of a neighbor who was pouring dirty water with trash waste in the gutters; suddenly I stopped her, telling her that this was not normal. ‘You have a garbage bin and then there is a Hysacam that passes by here to collect garbage; what does it cost you to gather your garbage, put it in a bin and pour the water into the gutter?’” (Personal communication, Douala, November 2013). the public agency encharged to collect garbage.

Online Foreigners’ Representation

Online users refer to the unhealthy environment of Douala only in two cases; in one case, they specifically refer to it as a “dirty city” while, in another case, they refer to Douala as a “not maintained city” in terms of the degradation of buildings and road infrastructures.

3.4.4.7 “Douala la Belle, Douala la Rebelle”

Offline Locals’ Representation

According to Mathias Ngamo, journalist in Douala,

“The city of Douala is like a beautiful woman who does not take care of herself... who has everything to be nice but she doesn’t put the right make up on; she doesn’t take enough care of herself” (personal communication, Douala, December 2013).

“*Douala la belle*” (Douala beautiful city) and “*Douala la rebelle*” (Douala the rebel city) are another two redundant definitions given by the population anytime they are asked to identify some keywords that describe their city. the public agency encharged to collect garbage

“Douala la belle” refers to the capability of the city to be attractive, both in economic and cultural terms. Locals depict Douala as the most modern city in Cameroon, a changing and cutting-edge city in terms of urbanization, roads, electricity and technology and internet connection. It is a place “*where you can find everything*” to the point it becomes a stressful city. At the same time, it is a fast and living city “*full of perfumes, full of colours, full of life*” (L. Manga, personal communication, Douala, December 2013). Douala is beautiful also because it has a history to tell and to exhibit through its colonial architecture, as well as a culture, the Sawa, to preserve through its music and traditional events (particularly the Ngondo). In the last 20 years, Douala also witnessed an impressive production of public art installations. “*We argue that a city must have a human face and that public art installations contribute to humanize the city, to provide an aesthetic soul to the environment, not as a decoration but as an aesthetic reflective marker*” asserts Marilyn Douala Bell, president of doual’art, a locally-based art institution. The institution has produced around 30 permanent public artworks and 50 temporal installations; it has reconstructed the history of 30 colonial monuments of the city and organized a cultural-touristic path around them (personal communication, 8 January 2013).

Monumental installations have been set up in the middle of traffic roundabouts (Figure 25); murals or small-scale sculptures have been placed on passageways of informal settlements and architectural installations have been integrated near marginalised residential neighbourhoods. According to the citizens, public art has generated an impact on the urban transformations, contributing to improve the reputation of some districts, increasing economical activities and encouraging the municipality to take care of places that otherwise would have remained isolated (including, for example, the waste collection system around installations).



Figure 25 La Nouvelle Liberté by Joseph Francis Sumegné. cc-by-sa Christian Hanoussek

“If I can add something, I would say actions like this (referring to the work of the artist Tracey Rose within a primary school) are really good. They awaken. They awaken great people, as well as small children” (Ms. David, teacher of The CBC Babylon school, personal communication, December 2012).

At the same time, people report that the beautiful Douala completely lacks cultural and touristic public policies and infrastructures. Douala is not a tourist destination but it is a

compulsory hub for people visiting Cameroon. The majority of tourists in Douala are business travellers or people visiting their family; their touristic paths are limited to Bonanjo historical places and Bonapriso restaurants.

Douala “la rebelle” mainly refers to the city as the centre of civil disobedience in the country “*everybody knows that the majority of Douala’s inhabitants are against the power*”, reports Cyrille Sam Mbaka, vice-president of the Union Démocratique Camerounaise, which is the first opposition party in Cameroon (personal communication, Douala, December 2013).

The biggest political opposition campaigns started in Douala. These include the ones bringing independence for Cameroon in the 1960s (resulting in Douala being considered the city of national heroes), the events causing the political repressions of the last 20 years, such as the so-called *ghost cities* in 1990-1991, the terror regime caused by the *commendement operationel* of 2001 and the *émeutes de la faims* in 2008 (Konings, 1996; Malaquais, 2009; ONDH, 2009; Simone, 2005). Douala is not only a rebel city but it is also a city of conflict. This representation refers to tribal problems between the native Dualas and immigrants coming from the west region of Cameroun, the Bamiléké:

“We are not all Cameroonians the same way. We don’t live in Douala in the same way. There is no homogeneity of view” (V. Ndoumbe, personal communication, Douala, December 2013).

The conflict between the natives and the Bamiléké is very deep because they acquired more lands and higher social position than the natives and, today, they are more numerous than the Dualas. Immigrants are not emotionally attached to the city; they do not feel they belong to the city:

“When they will die, they will be moved to their original village: within the city everybody is a foreigner” (V. Epée, personal communication, Douala, November 2013).

Online Foreigners’ Representation

Douala as a “beautiful city” does not emerge in the online representation of the city but Douala is rather described as a cultural, historical and artistic city. This representation emerges particularly regarding some specific neighborhoods related to the “things to do” foreigners describe and comment on. Otherwise, for concerns of

tourism, online users report that “*nearby areas of Douala (Limbe, Kribi, West Cameroon) are safer, easier to visit, relaxing and more pleasant than Douala*” (24 October 2011 on the forum topic “Better alone than using not trustable local tour operators”). The neighborhood of Bonanjo, for example, which is usually considered the administrative center of the city, is represented by foreigners as a cultural and attractive area where it is possible to visit contemporary art exhibitions, have historical tours around the colonial architectural buildings of the area and to relax in green and quiet areas. At the same time, the presence of a majestic sculpture, the Nouvelle Liberté by Joseph Francis Sumégné (Fig. 4), in the Deïdo neighborhood, allows online users meaningful insights of a neighbourhood that would be difficult for foreigners to access. The Nouvelle Liberté is described as the city symbol, an artistic reference located in the middle of a very busy roundabout, the Rond-Point Deïdo. The artwork is not always appreciated by visitors but it remains one of the most visited and commented “things to do” suggested on TripAdvisor. The place where it is located is contested by visitors, who find very difficult to stop and take pictures, to have any kind of written information about the sculpture or the artist and to enjoy sightseeing without the noise and danger of the traffic and difficulties in movement.

3.4.4.8 L’ambiance de la Joie

Offline Locals’ Representation

Despite people's everyday life difficulties, a general optimism is perceived in Douala among young people: “*despite pockets being empty, we get by*” asserts Ngouegni when she describes the charm of the city (personal communication, Douala, November 2013). There are no cultural entertainment centres like cinemas and theatres in Douala. There are cultural centers or art spaces (e.g., Doual’art or the Mam gallery) but the public is not numerous or elitist and often lack education more than an interest in art.

At the same time, Victor Ndjhoya, communication manager of Doual’art, stresses “in Douala, there is an ‘ambiance’, isn’t there?” (personal communication, Douala, November 2013). *Ambiance* refers to the night-time atmosphere reflected in the profusion of bars, discos, restaurants and cheap stands, where music and lights combine with food, alcohol and women. Eating, drinking, dancing and making love are activities set in Douala's *rues de la joie* (literally “street of happiness”), attended by thousands of young people. The biggest and oldest *rue de la joie* is in Deïdo, followed by the *rue de la joie* in Bali, which was more chic and popular among artists and foreigners until the more recent but no less popular, Ange Rafael, near the University.

“The rue de la joie, Deïdo, is simply special. It’s a place you cannot find everywhere. The immigration, people hanging out, the delicious grilled fish, so much fun. Deïdo is really a pleasant place, where there is a melting pot of people and where you don’t feel observed. When you are in Deïdo, you are part of the crowd, differently from what happens in other neighborhoods where it’s so easy to label people.” (V. Ndjhoya, personal communication, Douala, November 2013).

One of the most frequently stressed points is that nobody is a stranger in the *rues de la joie*. Everybody feels at ease and ethnic conflicts have no followers. Security is still an issue but more for foreigners than for locals. Almost every popular neighborhood has its own *rue de la joie* but some are only popular within the same neighborhood. In addition, Akwa has its own *ambiance*; it is the neighborhood where foreign sailors have always gone ashore and stopped, “*Akwa is the heart of prostitution*” suggests the writer, Lionel Manga (personal communication, Douala, December 2013). However, entertainment in Akwa comprises ambitious young people trying to enter exclusive, expensive and well-served clubs and discos. In Deïdo and Ange Rafael, the so-called ‘snack bars’ are very popular and free entry or very cheap clubs are considered more exclusive than bars, but less so than Akwa’s discos. While adults and old people meet to have a beer in bars, young university students prefer to meet and dance in snack bars. Contrarily to bars, snack bars open only at night and are more expensive and luxurious, as declared by Clement Totchak, a second-year university student living in the Zone Universitaire:

“Within the snack bar, there is luxury. The luxury is everything that young people love, such as furniture, leather chairs, giant and flat TV screens, as well as all kinds of services that are managed by women in the majority of cases. You can find differences also in the clothing style, which conforms to the luxury.” (Personal communication, Douala, November 2013).

The *ambiance de la joie* is seen by youngsters as the main entertainment offer of the city, gathering thousands of people; however, adults consider it a synonym for urban chaos, where bars, snack bars and discos create a noisy environment, characterized by violence, prostitution and alcohol.

Online Foreigners’ Representation

This narrative for Douala does not emerge preponderantly in the SR representations online users have for the city. According to foreigners, “*there is not so much to do, only go around and watch the chaotic life in the city*” (28 May 2013, on the forum topic “What to do with a few extra days in Douala”). Just one mention is made to the city being a place where “*you cannot be annoyed*” (28 May 2013, on the forum topic “What to do with a few extra days in Douala”) where numerous bars and restaurants exist and offer “*good and interesting African meals*” (28 April 2014, on the forum topic “Hotels in Douala”) or different kinds of typical drinks.

3.4.4.9 Social Inequalities and the Quest for Well-Being

Offline Locals’ Representation

The last theme emerging from the interviews is the description of the city as a place of injustice, corruption and social polarization between employed and unemployed people.

“The dynamic in Douala is the ‘trouble for life’, it’s the informality, it’s survival, is the research of daily sustenance.” (V. Ndoumbe, personal communication, Douala, December 2013).

Social inequalities begin with urban management and the public administration’s inability to run and supervise projects. According to Cyrille Sam Mbaka, the ‘first stone’ philosophy rules in politics in Douala:

“Everything for them is to start. It’s for this reason that the policy of the ‘first stone’ is not as good as the inauguration policy. This is because, when the ‘first stone’ is managed by certain Cameroonians, you can be sure that it will never end” (personal communication, Douala, December 2013).

This corrupt public system increases inhabitants’ poverty because it does not guarantee access to new jobs, essential needs (water, food and health) and public services (electricity, roads and security). Moreover, a widespread system of privileges and references is part of private life, allowing easier and faster access to information and services to some and excluding them to others.

These inequalities directly feed the so-called *Douala dream*. Different from the American dream of self-confidence and dedication, the Douala dream implies a future dominated by the god of money, where value is given to making money without effort and to success and belongings. According to many chiefs, this model is caused by the modernization of the city and the loss of ancestral values.

At the same time, inequalities increase the birth of organizations in the poorest neighborhoods. People participate in the so-called *reunions* simply to meet in a well-known place, out of the house and workplace, where drinking something is not mandatory for the possibility to stop and discuss. Additionally, people take part in organizations according to their interests, which can be related to neighborhood management, to the culture or ethnic group to which they belong or to their social status, such as students' organizations.

“They talk among themselves, they collect money (the so-called tontines) but they will never bring an action which allows (political ideas) to come out, and their parents tell them: ‘when you go there, above all, don’t start doing politics’. Because doing politics, means that soon the BIR [“Battaillon d’Intervention Rapid”, i.e. a police task force] can arrive.” (L. Manga, personal communication, Douala, December 2013).

All members are expected to pay a registration fee and then meet periodically and collect money to fulfil members' needs. They are real microcredit organisations, where the member receiving money on loan is forced to repay it and to lend a sum in turn to another member.

“The environment here is mutual help; people do not have much but they are pooling for something; there are still some forms of values. Regarding the so-called tontines, it’s not about cooperation, it is not the same thing; it is about sharing with the obligation to repay and if you don’t reimburse, they could kill you.” (F. Danjou, personal communication, Douala, December 2013).

Sometimes, organizations, student ones in particular, are just aimed at arranging parties, courses to support students or environmental awareness activities.

Online Foreigners' Representation

The social inequality theme does not emerge in the SR foreigners have of the city.

3.4.5 Discussion

3.4.5.1 Thematic Comparison between Locals and Foreigners' SR of Douala

The outcomes of this research highlight important alignments and misalignments between online and offline representations of Douala. The first misalignment refers to offline representations connected to the economic importance of the city are not linked to formally established businesses but with the city's dynamic job market and business possibilities. At the same time, being "cosmopolitan" is mainly connected, in offline local views, to the phenomenon of national and international migration because, since 1987, the number of people coming from other regions surpassed the autochthonous population. Any mention is made by online users in relation to immigration and demographic segmentation of the population. Foreigners mainly refer to this narrative in relation to the presence of international services, such as airport assistance, travel services or tourism facilities. However, the cosmopolitan treat of Douala is not reflected by its touristic offer. Only nine *things to do* in Douala are suggested on TripAdvisor, two of which do not present any comments and/or evidences of existence. Offline, a lack of infrastructures and tourism policies is highlighted, mirrored by a very scarce presence of *hospitality* practices (5.6%) within the whole online landscape (see Pucciarelli et al., 2014). From tourists' comments online, it seems the capacities of local structures to provide services with an international standard quality are rather reduced in a few neighborhoods.

The second misalignment concerns the themes of public administration and entertainment which are almost invisible in representation of the digital city. The social representation of foreigners presents a city lacking any kind of public service, where it is extremely difficult to circulate by car and very dangerous on foot. While the lack of public administration is not surprising in the light of the diffused representation of Douala's urban chaos, the gap between the online presence of entertainment activities – 0.6% – and the narratives of inhabitants is striking. Offline representations depict a city that present a

sparkling and young entertainment scene, the *ambience de la joie*. Bars, snack bars and nightclubs do not appear in online narratives, even if they are attended by young and more ‘tech savvy’ people.

Alignments in the offline and online SR refers to the theme of transportation, Transportation is an emerging theme, both online and offline. Offline representations underline how Douala’s urban chaos mostly results from a lack of public transport, the presence of *benskinieurs* and the absence of traffic regulation enforcement. From a foreigner's perspective, this is one of the main issues causing their limited movements within the city. Without a reliable taxi driver, they have difficulty moving from their hotel or neighborhood. This is also highly connected with the theme of security, which strongly emerged from foreigners' and locals’ narratives about the city but which is almost invisible from a first sight on digital Douala provided by website activities (see Pucciarelli et al., 2014). In locals and foreigners’ social representations, the security theme stems from the high level of criminality and violence within the city which generates difficulties and fears about circulating alone or walking at night. The urban chaos resulting from the presence of informal settlements, unhealthy environment and corruption also contribute to an increased perception of unsafety within the city, both online and offline.

Finally, an emerging theme is the representation of Douala as a cultural city. Although very few institutions in Douala are involved in promoting art and culture, they are very active in communicating their activities. Their voice is starting to have an impact on online representation of the city and the paths followed by foreigners within the city, which allow them to move safely to monuments and public art, as well as cultural initiatives and spaces.

3.4.5.2 Geographic Comparison between Local and Foreigners’ Representations of Douala

The maps below (Figure 26 and Figure 27) visually report the differences between locals and foreigners’ representations of Douala. They denote visible neighborhoods of the city (from light yellow with no landmark to dark green with more than 21), according to the number of times touristic landmarks have been reported by locals (Figure 26) or reviewed by foreigners (Figure 27). If viewed from a spatial perspective, the result is striking with the differences between maps mirroring the SR

locals and foreigners have on Douala. The online representation foreigners have of Douala is restricted to just 4 of 118 neighborhoods of the city (Figure 27). This uneven representation allows them to move throughout few relatively safe areas, considered by locals as “prestigious neighborhoods” (except for the neighborhood Deido). The map representing foreigners’ landmarks clearly shows a static gap and a shocking urban polarisation between the richest and poorest areas of the city.

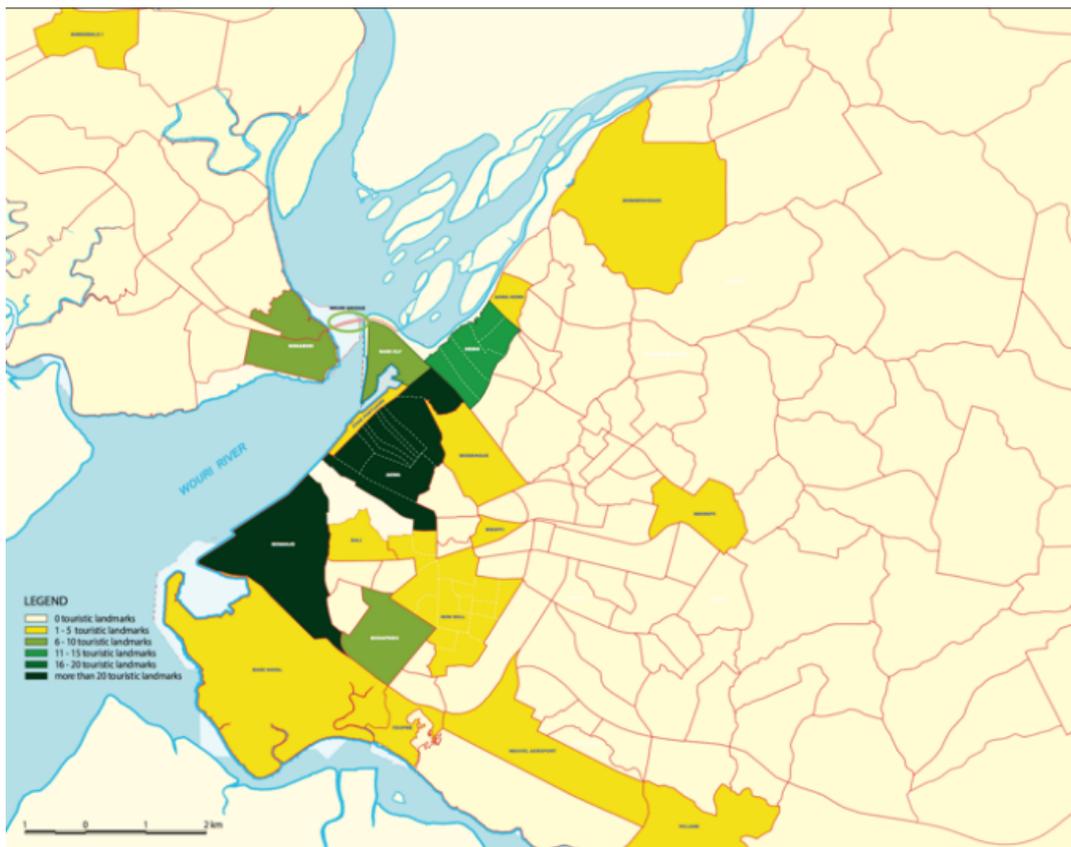


Figure 26 Map of touristic landmarks of Douala according to locals

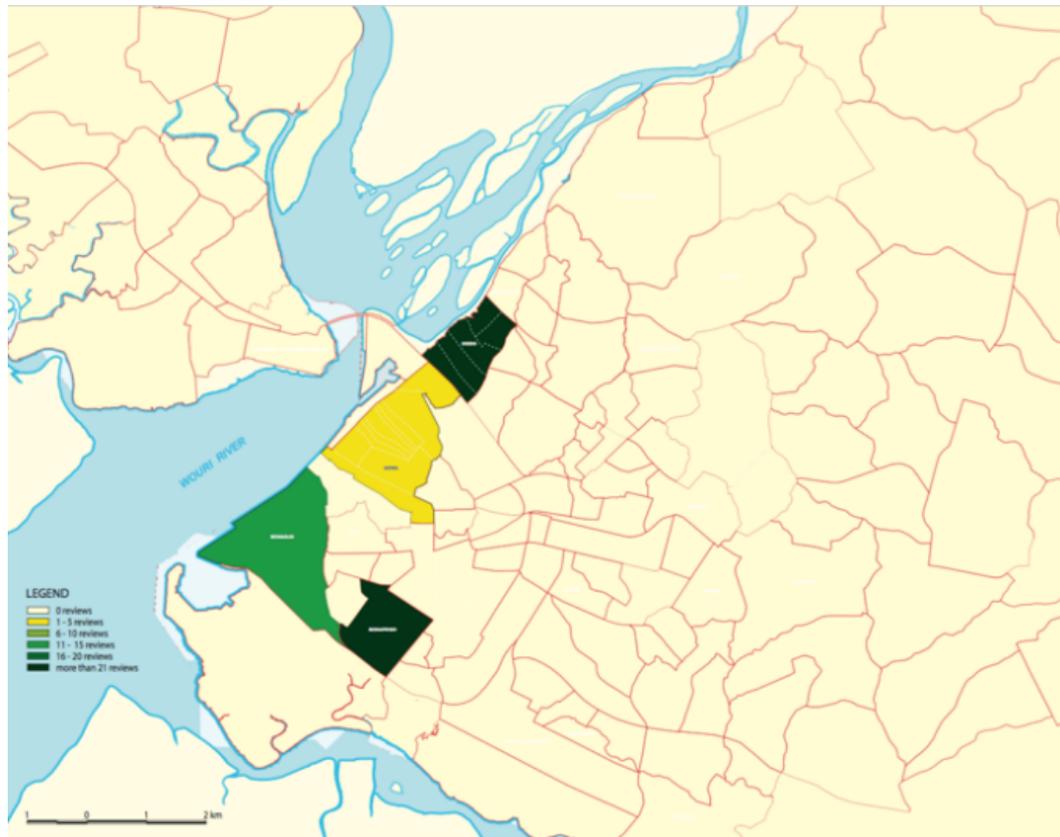


Figure 27 Map of touristic landmarks of Douala according to foreigners

According to locals, the most important places to visit in Douala are related to (in order of relevance): historical landmarks, natural landmarks, hospitality and entertainment landmarks and informal markets.

Historical landmarks: these are located in the coastal neighborhoods of Bonanjo and Akwa (represented in dark green on the Figure 26) but also within the traditional neighborhoods of Bonaberi (in light green on the west side of the city) and Bali (in yellow next to Bonanjo). Bonanjo is now the administrative center of the city and its touristic features are based on the presence of colonial buildings, green spaces, security issues and quietness (as well as the circulation of moto taxis being forbidden in this area); Akwa includes important religious and traditional landmarks, such as the Saint Pierre and Saint Paul Cathedral, the Dika Akwa Palace and the Temple du Centenaire. However, it is also suggested for shopping and entertainment, despite security issues often being recalled. The

neighborhoods of Bonaberi and Bali have also been noted for the presence of its chefferies and traditional landmarks. This local representation of the city confirms the narrative of Douala as a cultural city.

Natural landmarks: For locals, the attractiveness of Douala depends on its natural locations. More specifically, the Wouri River is at the center of the discourse and is definitely one of the most important landmarks for locals. The river and its surrounding landscapes include the area of the Wouri Bridge, the Naval Base, the beach of Deido and the Akwa Nord neighborhoods hosting different facilities that can provide relaxing and peaceful moments for visitors. The natural richness of the city is a completely new aspect emerging from the city's representation by locals, which is not reflected within the thematic narratives of the city.

Hospitality and entertainment landmarks: The *ambience de la joie* is identified by reporting different neighborhoods where it is possible to find excellent restaurants offering local and fresh food and/or sport installations and facilities. These landmarks include both peripheral neighborhoods, such as Youpwé and the Base Elf, where it is possible to eat fresh fish facing the river and the richest residential neighborhoods where security is guaranteed, such as Bonapriso and Bonamoussadi.

Informal markets: As reported by many locals, the biggest markets of Douala, which are located in the popular neighbourhoods of New Bell, Mboppi and Ndokoti, are important landmarks featuring the soul of the city that should be visited by people wishing to discover Douala.

Very differently, on the map representing foreigners' touristic landmarks, just a handful of landmarks suggested by locals are reported online on the "things to do forum" (9 in total, of which 7 were effectively visited and reviewed). Any mention is of touristic landmarks related to natural places, hospitality and entertainment activities and the major markets of New Bell and Mboppi. Even the historical and traditional landmarks of the city do not have prominence online because only two of them are reported, including the

Monuments aux Morts in the main square of Bonanjo and the Saint Pierre and Paul Cathedral in Akwa. Foreigners seem more attracted by the contemporary cultural scene of the city rather than its colonial or traditional past, including museums, art galleries and public art, rather than historical buildings and monuments.

It is important to mention the neighbourhood of Deido (represented in dark green in Figure 27 in the northern part of the city), where the monumental sculpture “La Nouvelle Liberté” is placed. Despite this area of the city being considered unsafe by foreigners, characterized by a lack of public services, difficult circulation and as the heart of the *ambiance de la joie*, the presence of public art installations makes the Rond-Point Deido one of the most visited and reviewed touristic landmarks by foreigners, who not only leave their safe zones but also contribute to communicating and shaping the digital image of this place that would otherwise be invisible online.

3.4.6 Conclusion

This study analyzes the hybrid space of the city of Douala, where different, complementary images of the city interweave. This is not just the digital and physical spaces where our study took place but also the visible and invisible ones, the formal and informal, the local and the international. All these images need to be read, as suggested by our interviewees, as a *millefeuille*, a thousand layers depicting an image of the city.

The analysis of SRs of Douala by locals allowed us to unveil the practices and cultural richness of the physical Douala, which are largely missing in the map of the digital city. People’s daily life, practices, ideas and values, such as their leisure activities, the informal economy and the feeling of locals being part of the cosmopolitan world do not emerge from the representation of the city transmitted online. Similarly, even overlapping narratives about Douala can, in fact, assume different meanings when read separately or compared with the practices that contribute to shape this image of the city. The different, sometimes converging, narratives of the city need to be read in a *complementary* way and understood according to the different perspectives and consumptions to which they refer.

Limitations of this study include the selection and use of the only available map of the city, a touristic one, as the point of reference for analysis of visible and invisible spaces. Whilst we think that more detailed representations would be given by employing an instrument showing all 118 neighborhoods of the city and more social groups, we believe the results of this analysis sheds light on interesting phenomena of a city that is only recently developing its online face.

We are, in fact, at an unripe, intermediate stage of “hybrid Douala”, where the virtual space seems still not to be affecting the way in which inhabitants experience the physical space. This African hybrid city seems to be at its early stage of existence. Its digital presence is nowadays mainly addressed to (and influencing) an international public that travels to Douala, rather than to locals, who might (not) access online information. The image of the digital city, therefore, reflects the gap between those who have access to ICTs and those who do not and might enclose the latter in the shadow of the “informal city” even further, leaving their voices underrepresented in global online discourses. The hybrid city seems to be co-created mostly for and by the interactions foreigners have with the digital city.

Finally, it is important to mention that the online and offline narrative of Douala as a cultural city is one of the most representative examples of how the hybrid city is in a process of becoming. The presence of art and culture throughout Douala generates new space for interactions between online and offline representation of the city, showing overlapping social narratives and practices around cultural place. Cultural and artistic initiatives have the main goal of providing the city and its territory with human and aesthetical values, increasing the livability of those places, and making them more pleasant and attractive. By doing so, they firstly address a local audience and, secondly, an international public, interested or not in its fruition. The physical and digital presence of cultural institutions does not only combine the interests and movements of foreigners with the ones of locals, but it also contributes to provide a different and enriched representation of the city.

As the spaces of the city start appearing online, the process of hybridization between the physical and the digital Douala is slowly taking place and offline and online narratives, currently rather separated, will possibly influence each other and communicate a different image of the city to global online narratives.

4. Conclusion

The main purpose of this work has been to understand the development of an African digital city and its relation with the physical city. In particular, it wanted to contribute to the research at the intersection of ICT4D, Internet studies and Urban studies:

- by offering to scholars, practitioners and policy makers an empirical case of an African digital city, the city of Douala in Cameroon, a geographic area where the phenomenon has been rather underexplored;
- by investigating the production process of an African digital city, through a spatial, chronological and representational analysis of the online presence of Douala's socio-economic activities. This study, in particular, contributes to ICT4D research providing an holistic view of the urban digital divide related to a Sub-Saharan city by observing the movement, the processes and the outcomes of an African digital city development, which goes beyond the static dualism between digital and social inclusion/exclusion;
- by contributing to the discourse about the hybrid city in Africa, exploring the actual stage of the hybrid Douala on the basis of the alignments and misalignments between the online representation of the digital Douala and the social representations emerging orally by locals.

The study was lead by three main research questions, while quantitative and qualitative analyses have been performed to address them. Outcomes have been presented in four articles, included in Chapter 4 of this work.

This final chapter summarizes the outcomes of the analysis following the three main research questions that guided the study, thus answering:

RQ1: What does access to information and knowledge mean in Douala? (Par. 4.1)

RQ2: How has been the digital Douala produced? (Par. 4.2)

RQ3: How is the online representation of Douala (mis)aligned with the physical one? (Par. 4.3)

Finally, practical implications, limitations and possible future developments of this research are discussed (Par. 4.4; 4.5; 4.6).

4.1 What does access to information and knowledge mean in Douala?

The results of this analysis have allowed to frame the context in which the digital city develops and to give a contribution to the research in the domain of ICT4D, Internet studies and Urban studies with an empirical case still unexplored, the city of Douala (Cameroon). This first phase of the research offers an in-depth analysis of the systems of access to information mediated and not by ICTs within an Sub-Saharan metropolis, the most developed economic and commercial city of Cameroon.

The context where the digital city develops is marked by a limited access to printed and digital information about the city of Douala and within the city itself. Printed information is challenged by the scarcity of most of the physical infrastructures as well as of content, human and social resources to enable its production and distribution. Access to digital information is challenged by the lack of regular electricity throughout the city, high cost of computers and Internet fees, low-bandwidth of Internet connection (512 k/s), poor digital content about Douala, a high computer illiteracy and a slow bureaucratic infrastructure.

At the same time, a widespread diffusion of mobile devices has been documented – in 2012 94% of respondents owned a mobile phone, a smartphone in the 60% of cases, used for leisure activities such as watching videos and listening to music, rather than accessing the internet (16.5%). The usage of mobile phone is supported by mobile companies offering free and customized internet solutions, by the affordable cost of devices coming

from the Asian market and by mobile services provided by telecentres to fulfill users' needs.

The context of Douala is characterized by four salient aspects:

- 1. The predominance of oral tradition over written tradition in accessing information about the city.** Douala's community holds a solid oral tradition of preserving and transmitting knowledge about the city. Oral and informal communication about the city are often not reported (or misaligned) with information on printed and digital media.
- 2. The interplay between information production and information access.** Studying the access to information has shed light that the term "access" had to be conceived in terms of production and distribution of information, and that they cannot be treated separately.
- 3. A leap from oral to digital communication and the gap in written media.** The analysis of challenges and tendencies in accessing resources has highlighted a well-defined trend to migrate from a predominantly oral tradition of communication to a digital one, bypassing the printed media step. Despite a still weak infrastructure the leap from oral to digital communication and the gap in written media can be highlighted by: a) investments in digital production of information, which take precedence over those in written media; b) local people's interest to access digital content over the Internet and using private connections as well as telecentres; c) the increasing diffusion and use of mobile phones in accessing content.
- 4. Private vs. public access.** The almost exclusive role of private institutions in supporting access to digital and printed information overrides the marginal interest and the few public policies in facilitating the production and distribution of contents about the city.

4.2 How is the digital Douala produced?

The digital Douala has been investigated 1) by mapping the online presence of 4629 formally registered businesses, private and public institutions (socio-economic activities) according to the category of activities and the neighborhoods they represent; and 2) by analyzing their emergence over the time in the last thirty years and in three selected periods (2007-2010-2013). The digital Douala is represented by the online presence of 12.2% of its socio-economic activities (of which 89.7% through a dedicated website and 10.3% on social media pages) and from 36 visible neighborhoods out of 118 (30.5%).

This analysis has adopted two different and complementary perspectives – a synchronic and diachronic one – in order to get a comprehensive representation of how the digital city is produced and how it is evolving. The synchronic view provides a static picture of the digital city as it existed in 2014; the diachronic view, instead, depicts the movement, the changing picture of the digital city in the making and the social transition of Douala toward becoming an information/knowledge society.

4.2.1 Synchronic view of the digital Douala

The synchronic view sheds light on the online representation of the digital city in a global perspective, highlighting the visible and invisible image of Douala. In the broader literature of internet studies, this synchronic view can be framed with the paradigm of the “spaces of flows” as conceived by Manuel Castells (1989). Within the field of ICT4D, **the emerging online representation of Douala mirrors a clear parallelism between digital and social inclusion/exclusion.** The urban digital divide in Douala is disarming: the image of the digital Douala unveils a specific case in which the imbalanced production and distribution of online information seems to contribute to increase rather than reduce the digital gap between those who have and those who have not access to ICTs (Graham 2014, Unwin 2015). The online visibility of Douala presents, indeed, an economic and commercial image which reflects the few richest, better served and connected areas of the

city. The digital invisibility, on the other hand, concerns the majority of the city, characterized by poverty and a difficult access to basic services (including electricity, water, paved roads).

4.2.2 Diachronic view of the digital Douala

The diachronic view builds on the synchronic conclusions and goes further: it analyses the relative presence, here named as “online saturation” of socio-economic activities within their own categories (i.e. the percentage of activities that are online within a given category) and neighborhoods (i.e. the percentage of activities that are online within a given area) and it conducts a temporal analysis based on the years of their “digital birth”. Results show that the digital history of Douala slowly developed from 1989 to 2004, presenting a sharp evolution in the following years, until reaching a peak of constant growth from 2009 to 2013. The evolution of the last years is mostly due to the increased use of Social Media (in particular Facebook) for the communication and promotion of business activities.

The adoption of an historical perspective in three selected periods (2007-2010-2013), together with the analysis of online saturation of business activities and their origin, sheds light on unexpected results:

1. **The online visibility of the most diffused categories within the city of Douala does not result in higher online saturation.** Only a small percentage of the categories which are reproducing the image of the city as an economic and commercial capital is online. It is worth noting that only 9% of the activities within the category “Retailers” are online, despite they are the most diffused within the physical Douala, as well as in 2013 they were the second most frequent category within the online landscape. In spite of their presence in the digital Douala, their online saturation is quite low and very similar to the least represented categories of “art and culture” (8.3%) and “entertainment” (6.5%). Similar considerations can be done for the categories “import-export” (9.6%) and “industrial production and distribution” (17.5%).

2. **The categories that have shown a significant online growth in the years 2007, 2010 and 2013 are exactly the categories with less physical presence in the city, and whose headquarter is just in Douala**, with few or no branches spread in the city. The category “Career” shows the highest level of online saturation: in 2013 27.5% of its activities is online, most of which are locally based (67.5%). In addition, a tendency to go online of the categories linked to educational, social, cultural and urban activities has been noticed. The online presence of the category “education”, “art and culture”, “entertainment” and “Urban Environment” has tripled, despite numerically their are less present within the city. These outcomes underline a positive evolution in the use of technology among Douala’s young inhabitants, who may use it to find a job, as well as to access educational and leisure contents.
3. **The higher the number of formal activities in a given area, the lower is the online saturation rate.** The online saturation map (Figure 28) changes a lot the digital landscape of Douala: the most visible areas are not represented anymore by the most prestigious coastal areas, but include mainly small inner neighbourhoods. It is worth noting that the two most visibles neighbourhoods (Akwa and Bonanjo) within the Digital Douala, just reach an online saturation level of 12.3% (Akwa) and 19.2% (Bonanjo), which is similar to many other peripheral and residential areas of the city. The rising areas – in terms of urbanization and industrialization – show a larger saturation of online activities: Bonamoussadi (25,9%) Bassa (23,4%) and Bonaberi (23%).

4.3 How is the digital representation of Douala (mis)aligned with the physical one?

The hybrid space of the city of Douala refers to the influence of the digital city over the physical one (Graham, 2008). It has been investigated through a thematic and geographic comparative analysis of locals' offline social representations (Moscovici 1988) in relation to the online representations of Douala given by foreigners and the online presence of socio-economic activities.

The analysis of offline locals' social representations allowed to identify nine emerging themes related to the city, as well as the most important touristic landmarks located across 20 different neighborhoods of the city. Differently, the analysis of online foreigners' social representations on TripAdvisor, reproduces just six of these themes and mentions only seven historical and cultural landmarks worth to be visited within just four neighborhoods.

The comparative analysis between locals' offline Social Representations and online representation of Douala (including also the digital picture of the city emerging from the online presence of socio-economic activities) has unveiled diverging narratives of the city which need to be read in a complementary way.

Thematic misalignments refer to: i) the narratives of Douala as a commercial, economic and cosmopolitan city, which do not find a clear correlation with the social representations foreigners have of Douala; ii) the gap between the sparkling and young entertainment scene described by locals – “the ambience de la joie” narrative – and the online absence of entertainment activities (0.6%), neither any reference emerging from the social representations produced by foreigners.

Thematic alignments between locals' and foreigners' the social representations refer to: i) insecurity and violence, which instead are almost invisible on the picture of the digital Douala emerging by the online representation of socio-economic activities (no security

companies, victims associations); ii) the urban chaos which mostly depends on a lack of public transport; iii) the representation of Douala as a cultural city. As it has been noticed also in the previous analysis of online saturation of socio-economic activities, although in Douala very few institutions are involved in promoting art and culture, they are very active in communicating their work online.

The geographic comparison between local and foreigners' representations of Douala sheds light on which areas are visited by foreigners: four neighborhoods out of 20 touristic ones suggested by locals (out of a total of 118 of the city). Mapping foreigners' landmarks and movements reproduce a picture mirroring the urban polarization between the richest and poorest areas of the city. This uneven representation allows them to move throughout few relatively safe areas: those prestigious neighborhoods located on coastal areas of the city, which are better served by public services and which represent almost the 50% of the digital Douala, according to the online presence of socio-economic activities. At the same time, this analysis reveals an interesting exception, which is the neighborhood of Deïdo, where a majestic 12 meters' public art installation is positioned in the middle of a busy and chaotic area. The presence of this installation and its relative description on TripAdvisor, makes foreigners move out of their safe areas to enter into a neighborhood that otherwise would not attract visits. The relation between the presence of public art installations within informal neighborhoods and foreigners' visits has been further analysed in the article "*A Journey through Public Art in Douala: Framing the Identity of New Bell Neighbourhood*", which is annexed to this research.

In conclusion, this phase of the research has contributed to Urban Studies by observing and reflecting on the existence and extension of hybrid spaces within an African city according to locals and foreigners' urban social representations. In this view, the hybrid Douala seems to be at an early stage of the existence, mirroring the experience of an international public that travels to Douala, rather than locals. At the same time the presence of art and culture throughout Douala generates new space of interactions between online

and offline representations of the city, showing overlapping of social narratives and practices around cultural places.

4.4 Practical implications

This research produced a set of structured data, descriptive resources, and maps that can serve the business sector, the non-profit sector and the civil society in increasing and improving their knowledge, experiences and practices in Douala. The dataset includes: the categorization of offline and online socio-economic activities in 20 macro categories of practices and 327 macro categories including the details of each activity (name, physical and digital addresses and contacts such as email, website and social media), their origin and IP address; nine thematic narratives of Douala, which describe a local view of the city largely underrepresented in the digital space; four maps linking data and narratives on a cartographic scale, generating, on the one hand, the visualization of socio-economic activities (and branches) within the neighborhoods, and on the other hand, the localization of touristic landmarks throughout the city according to local and foreigners.

The business sector may take advantage from the dataset and maps to trace where there is a concentration of activities in a given area, where there is minimum competition, and where their business may be expanded. In addition, the release of the dataset under open licenses CC0 can allow ICT business activities to implement their offers, for example by designing and developing interactive maps applications for tourism in Douala, which merge different sources of information to enhance visitors' accessibility and mobility in Douala. Maps and descriptive narratives can also serve international organization and NGOS concerned with development projects in order to get a first insights on the most isolated and poorly served neighborhoods of the city not only by the internet access but also by electricity, water, paved roads and so where there is more urgency to provide interventions. At the same time, maps and data can also be used to find out potential local partners which are active on the territory with whom to undertake new collaborations.

Finally, the local narratives of Douala can allow the wider international society to cultivate a new collective imagery of the city, which is not based exclusively on the content available online. Cities in Africa, and in general developing cities, have an enormous heritage, often intangible and handed down orally by locals, that hardly emerges online. The expectations of those who do not live or have never visited these places and base their imagery on online information only, may be distorted. Local narratives collected and systematized in this work may teach travelers to approach and explore the city with a different perspective, evaluating both its complexity and the multiplicity of cultural experiences that a city can offer.

4.5 Limits of the research

This research has some limitations summarized here below:

- the analysis of the francophone literature has not been included; that could have highlighted further researches and practices about digital cities in Africa;
- the analysis does not include the informal sector that play a major role in African cities. Therefore, by restricting the analysis to the formally registered activities, the image of the digital Douala has to be considered a partial one;
- the use of only available touristic map of Douala as a mean to select the areas of the city to explore, to organize the visits, and to conduct interviews. The touristic map is just a syntentis of the extension of the city, and local social representation of Douala may be richest and more detailed than those described.

4.6 Future developments

This research can be further developed along different paths:

- Extending the analysis of Douala development until now. From 2013 to 2019, the access to ICTs in Douala has most probably changed in the image of the digital city. This might have been due to the lowering of internet connection costs and

the widespread use of the internet on mobile devices even in the most peripheral areas of the city;

- Improving the analysis of online representation by taking into account user-generated contents from different sources. In particular, it would be interesting to look at the online representation of Douala produced by local's hosts who made available their apartment on Airbnb, the neighbourhoods of the city that are represented and the different range of prices according to the areas.
- Comparing the development of the digital Douala with that of the South African cities where other studies on the digital city have already been conducted.

Bibliography

- Alba, M. de. (2002). *Les représentations socio-spatiales de la ville de Mexico. Expérience urbaine, images collectives et médiatiques d'une métropole géante*. (PhD). Ecole des Hautes Etudes en Sciences Sociales., Paris, France.
- Alba, M. de. (2004). Mapas mentales de la Ciudad de México: Una aproximación psicosocial al estudio de las representaciones espaciales. Retrieved 7 October 2015, from Estudios Demográficos y Urbanos website: <http://www.redalyc.org/articulo.oa?id=31205503>
- Alba, M. de. (2011). Social Representations of Urban Spaces: A Comment on Mental Maps of Paris. *Papers on Social Representations*, 20(2), 29.1-29.14.
- Amnesty international. (2008, luglio 3). Document - Cameroun: Prison Breack: Amnesty International condemns use of excessive lethal force and calls for independent inquiry. Retrieved 29 May 2013, from Amnesty.org website: <http://www.amnesty.org/en/library/asset/AFR17/004/2008/en/7c0c0b56-4923-11dd-94d4-8d51f8ac221b/afr170042008eng.html>
- Araeen, R. (2010). *Art Beyond Art, Ecoaesthetics: A Manifesto for the 21st Century*. London: Third Text Publications.
- Armstrong, C., De Beer, J., & Kawooya, D. (2010). *Access to knowledge in Africa: The role of copyright*. Uct Pubns.
- Arruda, A., & Alba, M. de. (2007). *Espacios imaginarios y representaciones sociales: Aportes desde Latinoamérica*. Anthropos.
- Aurigi, A. (2000). Digital City or Urban Simulator? In T. Ishida & K. Isbister (A c. Di), *Digital Cities* (pagg. 33–44). Springer Berlin Heidelberg.
- Aurigi, A. (2005). Tensions in the Digital City. *Town and Country Planning*. <https://eprints.ncl.ac.uk/28324>
- Aurigi, A. & Graham, S. (1997). Virtual cities, social polarization, and the crisis in urban public space. *Journal of Urban Technology*, 4(1), 19–52.
- Babina, L., & Bell, M. D. (2008). *Douala in Translation: A View of the City and Its Creative Transformative Potentials*. Episode Publishers.
- Ben-Collins E. N., & Ihejirika W. C. (2018). Nigerian Political Parties and their Social Media Followership: Aftermath of 2015 General Elections. *Media and Communication Currents*, 2 (2), 39-58
- Bayat, A. (2003). The "street" and the politics of dissent in the Arab world. *Middle East Report*, 33(1; ISSU 226), 10–17.
- Bayat, A. (2013). *Life as politics: How ordinary people change the Middle East*. Stanford University Press.
- Beyes, T., & Steyaert, C. (2012). Spacing organization: non-representational theory and performing organizational space. *Organization*, 19(2).
- Blank, G., Graham, M., & Calvino, C. (2018). Local Geographies of Digital Inequality. *Social Science Computer Review*, 36(1), 82–102. <https://doi.org/10.1177/0894439317693332>

- Burch, S. (2006). The Information society–the knowledge society. In *Word Matters. Multicultural perspectives on information societies*. Alain Ambrosi, Valérie Peugeot and Daniel Pimienta.
- Carrillo, F. J. (2006). *Knowledge Cities: Approaches, Experiences and Perspectives*. Routledge.
- Castells, M. (1989). *The Informational City: Information Technology, Economic Restructuring, and the Urban-Regional Process*. Oxford: Basil Blackwell.
- Castells, M. (1991). *The Informational City: Information Technology, Economic Restructuring, and the Urban-Regional Process* (Reprint edizione). Oxford: Blackwell Pub.
- Castells, M. (1996). *The rise of the network society*. Cambridge, Massachusetts: Oxford, UK: Blackwell.
- Castells, M. (2001). *The Internet Galaxy: Reflections on the Internet, Business, and Society: Reflections on the Internet, Business and Society*. Oxford University Press, USA.
- Castells, M. (2003). *The Power of Identity: The Information Age: Economy, Society, and Culture Volume II*.
- Chandler, D. (1995). *Technological or media determinism*.
- Christie, M. (2004). Computer databases and Aboriginal knowledge. *International Journal of Learning in Social Contexts*, 1, 4–12.
- Cisler, S. (2000). Subtract the digital divide. *San Jose Mercury*, 15.
- Cocchia, A. (2014). Smart and Digital City: A Systematic Literature Review. In *Progress in IS. Smart City* (pagg. 13–43). https://doi.org/10.1007/978-3-319-06160-3_2
- Couclelis, H. (1996a). The Death of Distance. *Environment and Planning B: Planning and Design*, 23(4), 387–389. <https://doi.org/10.1068/b230387>
- Couclelis, H. (1996b). Towards an operational typology of geographic entities with ill-defined boundaries. *Geographic objects with indeterminate boundaries*, 45–55.
- Couclelis, H. (2004). The construction of the digital city. *Environment and Planning B: Planning and design*, 31(1), 5–19.
- Crang, M., Crang, P., & May, J. (1999). *Virtual geographies: Bodies, space and relations*. Psychology Press.
- De Rosa, A. S. (2012). *Social Representations in the 'Social Arena'*. Routledge.
- De Rosa, A. S., & Bocci, E. (2013). Place@-Branding and European Capitals: “City Visiting Cards” via. *Dynamics of Competitive Advantage and Consumer Perception in Social Marketing*, 126.
- Dijk, Johannes A. G. M. van, & Hacker, K. (2000). *The digital divide as a complex and dynamic phenomenon*. Presentato al 50th Annual Conference of the International Communication Association, Acapulco, 1-5 June 2000. <https://doi.org/10.1080/01972240309487>

- DiMaggio, P., & Hargittai, E. (2001). From the 'digital divide' to 'digital inequality': Studying Internet use as penetration increases. *Princeton: Center for Arts and Cultural Policy Studies, Woodrow Wilson School, Princeton University*, 4(1), 4–2.
- Dirks, S., & Keeling, M. (2009). A vision of smarter cities: How cities can lead the way into a prosperous and sustainable future. *IBM Institute for business Value*, 8.
- Dodge, M., & Kitchin, R. (2001). *Atlas of cyberspace* (Vol. 158). Addison-Wesley London.
- Domosh, M., Neumann, R. P., Price, P. L., & Jordan-Bychkov, T. G. (2011). *The Human Mosaic: A Cultural Approach to Human Geography*. W. H. Freeman.
- Evina Akam, & Honoré Mimche. (2009). Les mouvements migratoires au Cameroun. In *L'état du Cameroun: 2008* (Éditions Terroirs, pagg. 479–492). Fabien Eboussi Boulaga.
- Farrauto, L., & Ciuccarelli, P. (2010). *The image of the divided city through maps: The territory without territory*.
http://issuu.com/densitydesign/docs/2010_farrauto_ciuccarelli
- Fisher, P., & Unwin, D. (2003). *Virtual Reality in Geography*. CRC Press.
- Floridi, L. (2014). *The Fourth Revolution: How the Infosphere is Reshaping Human Reality*. OUP Oxford.
- Fonseca, C. (2010). The digital divide and the cognitive divide: Reflections on the challenge of human development in the digital age. *Information Technologies & International Development*, 6(SE), pp–25.
- Foth, M., Odendaal, N., & Hearn, G. N. (2007). *The view from everywhere: Towards an epistemology for urbanites*.
- Friederici, N., Ojanperä, S., & Graham, M. (2017). The Impact of Connectivity in Africa: Grand Visions and the Mirage of Inclusive Digital Development. *The Electronic Journal of Information Systems in Developing Countries*, 79(1), 1–20. <https://doi.org/10.1002/j.1681-4835.2017.tb00578.x>
- Gebremichael, M. D., & Jackson, J. W. (2006). Bridging the gap in Sub-Saharan Africa: A holistic look at information poverty and the region's digital divide. *Government Information Quarterly*, 23(2), 267–280.
<https://doi.org/10.1016/j.giq.2006.02.011>
- Gilberds, H., & Myers, M. (2012). Radio, ICT Convergence and Knowledge Brokerage: Lessons from Sub-Saharan Africa. *IDS Bulletin*, 43(5), 76–83.
- Gillwald, A. (2010). The poverty of ICT policy, research, and practice in Africa. *Information Technologies & International Development*, 6(SE), pp–79.
- Graham, M. (2008). Warped Geographies of Development: The Internet and Theories of Economic Development. *Geography Compass*, 2(3), 771–789.
<https://doi.org/10.1111/j.1749-8198.2008.00093.x>

- Graham, M. (2009). Mapping the Geographies of Wikipedia Content: <http://www.markgraham.space/blog/mapping-the-geographies-of-wikipedia-content>
- Graham, M. (2013). The Virtual Dimension. In *Global City Challenges: debating a concept, improving the practice* (M. Acuto and W. Steele, pagg. 117–139). London: Palgrave.
- Graham, M. (2014, September 7). Broadband affordability | [Geonet]. Retrieved 29 May 2019, from Geonet. Investigating the Changing Connectivities and Potentials of Sub-Saharan Africa's Knowledge Economy website: <https://geonet.oii.ox.ac.uk/blog/broadband-affordability-2/>
- Graham, M., & Zook, M. (2013). Augmented Realities and Uneven Geographies: Exploring the Geolinguistic Contours of the Web -. *Environment and Planning A: Economy and Space*, 45(1), 77–99.
- Graham, M., De Sabbata, S., & Zook, M. A. (2015). Towards a study of information geographies:(Im) mutable augmentations and a mapping of the geographies of information. *Geo: Geography and environment*, 2(1), 88–105.
- Graham, M., Hale, S. A., & Stephens, M. (2011). *Geographies of the world's knowledge* (Flick, C. M.,). London: Convoco! Edition.
- Graham, M., Hogan, B., Straumann, R. K., & Medhat, A. (2014). Uneven Geographies of User-Generated Information: Patterns of Increasing Informational Poverty. *Annals of the Association of American Geographers.*, 104(4), 746–764.
- Graham, S. (1998). The end of geography or the explosion of place? Conceptualizing space, place and information technology. *Progress in Human Geography*, 22(2), 165–185. <https://doi.org/10.1191/030913298671334137>
- Graham, S. (2002). Bridging Urban Digital Divides? Urban Polarisation and Information and Communications Technologies (ICTs). *Urban Studies*, 39(1), 33–56. <https://doi.org/10.1080/00420980220099050>
- Graham, S., & Marvin, S. (1996). *Telecommunications and the city: Electronic spaces, urban places*. Routledge.
- Graham, S., & Marvin, S. (2002). *Splintering urbanism: Networked infrastructures, technological mobilities and the urban condition*. Routledge.
- Gravari-Barbas, M., & Graburn, N. (2012). Tourist imaginaries. *Via . Tourism Review*, (1). <http://journals.openedition.org/viatourism/1180>
- Green, B. N., Johnson, C. D., & Adams, A. (2006). Writing narrative literature reviews for peer-reviewed journals: Secrets of the trade. *Journal of Chiropractic Medicine*, 5(3), 101–117. [https://doi.org/10.1016/S0899-3467\(07\)60142-6](https://doi.org/10.1016/S0899-3467(07)60142-6)
- Green, E. (2013, September 9). Mapping the «Geography» of the Internet. Retrieved 12 May 2019, from The Atlantic website: <https://www.theatlantic.com/technology/archive/2013/09/mapping-the-geography-of-the-internet/279434/>

- Gumpert, G., & Drucker, S. (2003). Ubiquitous Technology in the Media Age and the Ideal of Sustainability. *Explorations in Media Ecology*, 2(1), 1–14.
- Haas, V. (2001). *Mémoires, identités et représentations socio-spatiales d'une ville, le cas de Vichy: Étude du poids de l'histoire politique et touristique dans la construction de l'image de la ville par ses habitants*. Atelier national de Reproduction des Thèses.
- Haas, V. (2004). Les cartes cognitives: Un outil pour étudier la ville sous ses dimensions socio-historiques et affectives. *Bulletin de psychologie*, 474, 621–633.
- Harold Wentworth, & Stuart Berg Flexner. (1975). Rap. In *Dictionary of American Slang* (2nd edition).
- Heeks, R. (2002). i-development not e-development: Special issue on ICTs and development. *Journal of International Development*, 14(1), 1–11.
<https://doi.org/10.1002/jid.861>
- Heeks, R. (2005). e-Government as a Carrier of Context. *Journal of Public Policy*, 25(1), 51–74.
- Heeks, R. (2008). ICT4D 2.0: The Next Phase of Applying ICT for International Development. *Computer*, 41(6), 26–33. <https://doi.org/10.1109/MC.2008.192>
- Heeks, R. (2009). The ICT4D 2.0 Manifesto: Where Next for ICTs and International Development? Retrieved 7 August 2018 from Development Informatics Working Paper. Manchester: Centre for Development Informatics; 2009. Working Paper No. 42. website:
<https://www.escholar.manchester.ac.uk/jrul/item/?pid=uk-ac-man-scw:86518>
- Hilbert, M. (2014). Technological information inequality as an incessantly moving target: The redistribution of information and communication capacities between 1986 and 2010. *Journal of the Association for Information Science and Technology*, 65(4), 821–835.
- ICT Facts and Figures – The world in 2015. (s.d.). Retrieved 28 November 2015 from ITU website: <http://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx>
- ICU, A. P. (2012). *Making Douala 2007-2013*. International Architecture Biennale Rotterdam.
- IDA, & IMF. (2000, May 23). *Cameroun. Preliminary Document on the Enhanced Initiative for Heavily Indebted Poor Countries*. Retrieved from:
<http://siteresources.worldbank.org/INTDEBTDEPT/PreliminaryDocuments/20224154/Cameroon-Preliminary.pdf>
- IFC-Douala. (2011). Médiathèque Douala [Culture Français au Cameroun]. Retrieved 28 May 2013 from Institut Français Cameroun website:
<http://www.ifcameroun.com/mediatheque-douala.html>
- Internet World Stats. (2015). Internet Usage Statistics for Africa. Retrieved 20 November 2015, from Internet World Stats website:
<http://www.internetworldstats.com/stats1.htm>

- Ishida, T. (1999). Understanding digital cities. *Kyoto Workshop on Digital Cities*, 7–17. Springer.
- Ishida, T. (2002). Digital city Kyoto. Social information infrastructure for everyday life. *Communications of the ACM*, 45(7), 76–81.
- ITU. (2003). WSIS: Plan of Action. Retrieved 27 July 2013, from World Summit on the Information Society website:
<http://www.itu.int/wsis/docs/geneva/official/poa.html>
- ITU. (2015). Statistics. Retrieved 28 November 2015, from ITU website:
<https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>
- Jodelet, D. (1982). Les représentations socio-spatiales de la ville. *Conceptions de l'espace*, 145–177.
- Jodelet, D. (2010). La memoria de los lugares urbanos. *Alteridades*, 20(39), 81–89.
- Jodelet, D., & Haas, V. (2007). *Place de l'expérience vécue dans le processus de formation des représentations sociales*.
- Jodelet, D., & Milgram, S. (1977). *Cartes mentales et images sociales de Paris*.
- John, A. (2013, agosto 29). Confusing a Country for a Continent: How We Talk About Africa. Retrieved 3 February 2015, from The Wire website:
<http://www.theatlanticwire.com/global/2013/08/confusing-country-continent-how-we-talk-about-africa/68870/>
- Jones III, J. P. (2000). The street politics of Jackie Smith. *A Companion to the City*, 448.
- Kapczynski, A. (2008). The access to knowledge mobilization and the new politics of intellectual property. *The Yale Law Journal*, 804–885.
- Kitchin, R. (2014). The real-time city? Big data and smart urbanism. *GeoJournal*, 79(1), 1–14.
- Kitchin, R. M. (1998). Towards geographies of cyberspace. *Progress in human geography*, 22(3), 385–406.
- Klein, H. K., & Kleinman, D. L. (2002). The social construction of technology: Structural considerations. *Science, Technology, & Human Values*, 27(1), 28–52.
- Kleine, D., & Unwin, T. (2009). Technological Revolution, Evolution and New Dependencies: What's new about ict4d? *Third World Quarterly*, 30(5), 1045–1067. <https://doi.org/10.1080/01436590902959339>
- Konings, P. (1996). The post-colonial state and economic and political reforms in Cameroun. In *Liberalization in the developing world. Institutional and economic changes in Latin America, Africa and Asia* (Routledge, pagg. 244–265). London: Alex E. Fernandez Jiliberto and André Mommen.
- Laszlo, J. (1997). Narrative organisation of social representations. *Papers on social representations*, 6(2), 155–172.
- Loe, M. F., & Meutchehé Ngomsi, A. C. (2004). *Diagnostic de la delinquance urbaine de Douala. Villes Plus Sûres*.

- Loe, M. F., Meutchehé Ngomsi, A. C., & Nken Hibock, M. L. (2007). *Plan d'Action Strategique de Lutte contre la Delinquance Urbaine à Douala*. UN-HABITAT, PNUD, CUD.
- Lor, P. J., & Britz, J. (2010). To Access Is Not to Know: A Critical Reflection on A2K and the Role of Libraries with Special Reference to Sub-Saharan Africa. *Journal of Information Science*, 36(5), 655–667.
<https://doi.org/10.1177/0165551510382071>
- Lorini, M. R., Van Zyl, I., & Chigona, W. (2014). ICTs for inclusive communities: A critical discourse analysis. *8th International Development Informatics Association Conference*, 78–94.
- Mainka, A., Khveshchanka, S., & Stock, W. G. (2011). Dimensions of informational city research. *Digital cities 7—Real world experiences*.
- Malaquais, D. (2005). Villes flux: Imaginaires de l'urbain en Afrique aujourd'hui. *Politique Africaine*, 100(4), 15–37.
- Malaquais, D. (2009). Blood Money: A Douala Chronicle. *Chimurenga Magazine*.
- Malcolm, J., & others. (2010). *Access to knowledge (A2K): A guide for everyone*. Consumers International.
- Malecki, E. J. (2002). The economic geography of the Internet's infrastructure. *Economic geography*, 78(4), 399–424.
- Marchand, D., & Weiss, K. (2009). Représentations sociales du confort dans le train : Vers une conceptualisation de la notion de confort social. *Les Cahiers Internationaux de Psychologie Sociale, Numéro 84(4)*, 107–124.
- Martin, B. D. (2004). *The theater is in the street: Politics and performance in sixties America*. Univ of Massachusetts Press.
- MBA, R. T. K. (2007). *2007 Cameroon Telecommunications Sector Performance Review*.
- McConnaughey, J. W., Sloan, T., & Nila, C. A. (1995). *Falling through the net: A survey of the "have nots" in rural and urban America*. National Telecommunications and Information Administration, Department of Commerce.
- Merolla, D. (2012). Reflections on the Project African Oral Literatures, New Media, and Technologies: Challenges for Research and Documentation. *The Global South*, 5(2), 154–162.
- Michaud, P., & Tcheremenska, A. (2003). Montreal knowledge city. *Report prepared for the Montreal Knowledge City Advisory Committee*.
- Mitchell, W. J. (1996). *City of bits: Space, place, and the infobahn*. MIT press.
- Mitchell, W. J. (1999). *e-topia: "Urban life, Jim—but not as we know it"*. MIT press.
- Mitchell, W. J. (2005). E-topia: Information and communication technologies and the transformation of urban life. *The Network Society From Knowledge to Policy*, 325.
- Moscovici, S. (1961). La psychanalyse, son image et son public. *Paris, PUF*.

- Moscovici, S. (1988). Notes towards a description of social representations. *European journal of social psychology*, 18(3), 211–250.
- Nam, T., & Pardo, T. A. (2011). Conceptualizing smart city with dimensions of technology, people, and institutions. *Proceedings of the 12th annual international digital government research conference: digital government innovation in challenging times*, 282–291. ACM.
- National Geographic - Roper Public Affairs. (2006). *Final Report. Geographic Literacy Study*.
- Ndongfack, M. N. (2007). *Strategy for implementing the basic education sector ICT polici in Cameroun 2007-2012*. Ministry of Basic Education in Cameroun (MINEDUB).
- Ngonga, H. (2010). *Efficacité comparée de l'Enseignement public et privé au Cameroun* (Université de Bourgogne). Retrieved from <http://halshs.archives-ouvertes.fr/tel-00554325/>
- Nicolas Kayser-Bril. (2014, gennaio 24). Africa is not a country. Retrieved 3 Febraryr 2015, from the Guardian website: <http://www.theguardian.com/world/2014/jan/24/africa-clinton>
- Njoh, A. J. (2007). Planning in the Cameroons and Togoland. In *Planning Power: Town Planning and Social Control in Colonial Africa* (pagg. 127–144). Routledge.
- Norris, P. (2003). *Digital divide: Civic engagement, information poverty, and the Internet worldwide* (Vol. 40). Retrieved from <http://www.tandfonline.com/doi/pdf/10.1080/0810902032000118249>
- Nwaerendu, N. G., & Thompson, G. (1987). The Use of Educational Radio in Developing Countries: Lessons from the Past. *The Journal of Distance Education / Revue de l'Éducation à Distance*, 2(2), 43–54.
- Nyamnjoh, F. B. (1996). Africa and the information superhighway: Silent majorities in search of a footpath. *Africa Media Review*, 10(2). Retrieved from <http://archive.lib.msu.edu/DMC/African%20Journals/pdfs/africa%20media%20review/vol10no2/jamr010002002.pdf>
- Nyamnjoh, F. B. (1999). Africa and the information superhighway: The need for mitigated euphoria. *Ecquid Novi*, 20(1), 31–49.
- Obijiofor, L. (1998). Africa's dilemma in the transition to the new information and communication technologies. *Futures*, 30(5), 453–462.
- Odendaal, N. (2002). ICTs in development—who benefits? Use of geographic information systems on the Cato Manor Development project, South Africa. *Journal of International Development*, 14(1), 89–100. <https://doi.org/10.1002/jid.867>
- Odendaal, N. (2003). Information and communication technology and local governance: Understanding the difference between cities in developed and emerging economies. *Computers, Environment and Urban Systems*, 27(6), 585–607.

- Odendaal, N. (2006). Towards the digital city in South Africa: Issues and constraints. *Journal of Urban Technology*, 13(3), 29–48.
- Odendaal, N. (2011a). *Information and communication technology and urban transformation in South African cities* (PhD Thesis).
- Odendaal, N. (2011b). The spaces between: ICT and marginalization in the South African city. *Proceedings of the 5th International Conference on Communities and Technologies*, 150–158. ACM.
- Okigbo, C. (1995). National images in the age of the information superhighway: African perspectives. *Africa Media Review*, 9, 105–121.
- Ong, W. J. (2002). *Orality and literacy: The technologizing of the word*. Theatre Arts Books.
- Pape-Thoma, B. (2010, luglio 5). Ifrikiya, une maison d'édition camerounaise ouverte sur le continent [Journal]. Retrieved 28 May 2013, from afrik.com website: <http://www.afrik.com/article20259.html>
- Paradiso, M., Claval, P., Pagnini, M. P., & Scaini, M. (2006). *Geography of the information society: a new culture of hybrid spaces?* Retrieved from <http://www.openstarts.units.it/dspace/handle/10077/847>
- Philémon, J., & Foondé, M. (2011). *Douala. Toponymes, histoire et culture* (éditions ifrikiya).
- Pickles, J. (2012). *A History of Spaces : Cartographic Reason, Mapping and the Geo-Coded World*. <https://doi.org/10.4324/9780203351437>
- Pinch, T. J., & Bijker, W. E. (1984). The Social Construction of Facts and Artefacts: Or How the Sociology of Science and the Sociology of Technology might Benefit Each Other. *Social Studies of Science*, 14(3), 399–441. <https://doi.org/10.1177/030631284014003004>
- Pucciarelli, M. (2014). *Douala* [Final Report]. Lugano: SUPSI.
- Pucciarelli, M., & Cantoni, L. (2012). Mobile access to knowledge. In *Mobile Science & Learning* (pagg. 71–77). ICTP—The Abdus Salam International Centre for Theoretical Physics, Trieste (Italy): Enrique Canessa & Marco Zennaro.
- Pucciarelli, M., & Santanera, G. (2013, October 22). *Addressing the public. Art and Safety in Douala*. Paper presented at the 1st CECAS (Centre for Cultural and African Studies) International Conference on Culture and Conflict Resolution., Kumasi, Ghana.
- Pucciarelli, M., Cantoni, L., & Kalbaska, N. (2016). The Digital Birth of an African City: An Exploratory Study on the City of Douala (Cameroon). *Proceedings of the 9th International Conference on Theory and Practice of Electronic Governance*, 223–229. <https://doi.org/10.1145/2910019.2910086>
- Pucciarelli, M., Sabiescu, A., & Cantoni, L. (2013). What do we know about Douala? Access to information with and about the largest Cameroonian city. *Proceedings of the 7th International Development Informatics Association*

- (IDIA) Conference, 167–184. Bangkok, Thailand: J. Steyn & A. G. Van der Vyver.
- Pucciarelli, M., Vannini, S., & Cantoni, L. (2014). Mapping the digital Douala: lights and shadows of an African City. *Proceedings of CIRN 2014 Community Informatics Conference: Challenges and Solutions*. Presentato al Monash Centre, Prato Italy. Monash Centre, Prato Italy.
- Pucciarelli, M. & Vannini, S. (2018). Douala as a “hybrid space”: Comparing online and offline representations of a sub-Saharan city. *Semiotica*, 2018(223), pp. 219-250. DOI:10.1515/sem-2017-0017
- Ratti, C. (2009, October 2). Digital Cities: «sense-able» urban design. Retrieved 9 February 2019, from WIRED website: <https://www.wired.co.uk/article/digital-cities-sense-able-urban-design>
- Reporters Without Borders. (2013, giugno 13). Are Douala’s judges colluding with local big shots to silence journalists?, available at: Reporters without borders. For freedom of information website: <http://www.refworld.org/docid/51baff0b4.html> [accessed 29 July 2013].
- Rikou, E. (1997). *Parcours des lieux urbains: Construction sociale et subjective de l’expérience urbaine à partir des récits de vie de jeunes habitants d’Athènes*.
- Sassen, S. (1991). The global city. *New York*.
- Schech, S. (2002). Wired for change: The links between ICTs and development discourses. *Journal of International Development*, 14(1), 13–23. <https://doi.org/10.1002/jid.870>
- Schler, L. (2008). *The Strangers of New Bell: Immigration, Public Space and Community in Colonial Douala, Cameroon, 1914-1960*. UNISA Press.
- Schuler, D. (2001). Digital cities and digital citizens. *Kyoto Workshop on Digital Cities*, 71–85. Springer.
- Schuppan, T. (2009). E-Government in developing countries: Experiences from sub-Saharan Africa. *Government Information Quarterly*, 26(1), 118–127.
- Seraphine, G. (2000). La société civile derrière la communauté? Associations et tontines à Douala. In *Collection Economie et développement. Le désarroi camerounais: l’épreuve de l’économie-monde* (pagg. 193–215). Paris: Karthala.
- Séraphine, G. (2000). *Vivre à Douala. L’imaginaire et l’action dans une ville africaine en crise*.
- Serra, A. (2000). Next Generation Community Networking: Futures for Digital Cities. In T. Ishida & K. Isbister (A c. Di), *Digital Cities* (pagg. 45–57). Springer Berlin Heidelberg.
- Shaver, L., & Rizk, N. (2010). *Access to Knowledge in Egypt: New Research on Intellectual Property, Innovation and Development*. Available at: http://papers.ssrn.com/Sol3/papers.cfm?abstract_id=1729370

- Silva, A. de S. e. (2006). From Cyber to Hybrid Mobile Technologies as Interfaces of Hybrid Spaces. *Space and Culture*, 9(3), 261–278.
<https://doi.org/10.1177/1206331206289022>
- Simone, A. M. (2005). «Reaching Larger World» Negotiating the Complexities of Social Connectedness in Douala. *Politique Africaine*, 2005/4(100), 38–53.
<https://doi.org/10.3917/polaf.100.0038>
- Simone, A. M. (2006). Pirate towns: Reworking social and symbolic infrastructures in Johannesburg and Douala. *Urban Studies*, 43(2), 357.
- Simone, A. M. (2008a). Broken Links, Changing Speeds, Spatial Multiples: Rewiring Douala. Available at: <http://eprints.gold.ac.uk/2825/> [accessed 31 May 2012]
- Simone, A. M. (2008b). Practices of Convertibility in Inner City Johannesburg and Douala. Available at: <http://eprints.gold.ac.uk/2815/> [accessed 31 May 2012]
- Souter, D. (2010). *Towards inclusive knowledge societies: A review of UNESCO's action in implementing the WSIS outcomes*. UNESCO Paris.
- Souter, D. (2014). *Building inclusive knowledge societies: A review of UNESCO's action in implementing the WSIS outcomes*. UNESCO.
- Square, Z. P. (2014). Africa Is Not a Country. *Time*. Available at: <http://time.com/12990/africa-is-not-a-country/>
- Stock, W. G. (2011). Informational cities: Analysis and construction of cities in the knowledge society - Semantic Scholar. *Journal of the Association for Information Science & Technology*, 62(5), 963–986.
- Sween, J., & Clignet, R. (1969). Urban Unemployment as a Determinant of Political Unrest: The Case Study of Douala Cameroon. *Canadian Journal of African Studies/Revue Canadienne des Études Africaines*, 3(2), 463–487.
- The World Bank. (2007). World Development Indicators: Poverty rates at national poverty lines [Statistic]. Available at: World Bank website: <http://wdi.worldbank.org/table/2.7> [accessed 24 July 2013]
- Trading Economics. (2016). Urban population (% of total) in Cameroon. Available at: Trading Economics website: <http://www> [accessed 18 January 2013]
- Turnbull, D. (1997). Reframing science and other local knowledge traditions. *Futures*, 29(6), 551–562.
- UN General Assembly. (2000). United Nations Millennium Declaration. *resolution adopted, 18*.
- UN, D. (2018). *2018 revision of world urbanization prospects*. United Nations Department of Economic and Social Affairs.
- UNDP. (2014). 2014 Human Development Report (HDI). Available at [accessed 18 January 2016] UNDP website: <http://www.undp.org/content/undp/en/home/presscenter/events/2014/july/HDR2014.html>
- Unwin, T. (2009). *ICT4D information and communication technology for development*. (2009). Cambridge, UK: Cambridge University Press.

- Unwin, T. (2015). The dialectics of development. In *Handbook of Communication Science: Communication and technology* (Lorenzo Cantoni & James Danowsky). Berlin: Mouton de Gruyter.
- Van den Besselaar, P., Melis, I., & Beckers, D. (2000). Digital Cities: Organization, Content, and Use. In T. Ishida & K. Isbister (A c. Di), *Digital Cities* (pagg. 18–32). Springer Berlin Heidelberg.
- Van Dijk, Jan A. G. M. (2005). *The Deepening Divide: Inequality in the Information Society*. SAGE Publications.
- Van Zyl, I. (2013). *Technology encounters and the symbolic narrative* (Doctoral dissertation, Università della Svizzera italiana - USI).
- Vannini, S., Pucciarelli, M., & Rega, I. (2013, August 21). *Formal and Informal Learning Practices in Community Multimedia Centres in Mozambique*. Paper presented at the Annual Conference of the Swiss Society for Research in Education, Lugano, Switzerland.
- Vannini, S., Rega, I., & Cantoni, L. (2015). Information and communication flows through Community Multimedia Centers: Perspectives from Mozambican communities. *Information Technology for Development*, 21(1), 85–98.
- Warf, B. (2001). Segueways into cyberspace: multiple geographies of the digital divide. *Environment and Planning B: Planning and Design*, 28, 3–19. <https://doi.org/10.1068/b2691>
- Warf, B. (2012). *Global Geographies of the Internet*. Springer Science & Business Media.
- Warschauer, M. (2002). Reconceptualizing the digital divide. *First Monday*, 7(7).
- Warschauer, M. (2004). *Technology and social inclusion: Rethinking the digital divide*.
- Webster, F. (2007). *Theories of the information society*.
- Willis, K. S., & Aurigi, A. (2017). *Digital and smart cities*. Routledge.
- Wilson, M. I. (2001). Location, location, location: The geography of the dot com problem. *Environment and Planning B: Planning and Design*, 28(1), 59–71.
- World Bank. (2013). *Atlas of Global Development*. <https://doi.org/10.1596/978-0-8213-9757-2>
- World Bank. (2014). Cameroon - Data.
- WSIS, W. S. on the I. S. (2003). *From the Information Society To Knowledge Societies*. Presentato al Toward Knowledge Societies, Geneve, Switzerland.
- Yale Law School. (2008). *Information Society Project*. Presented at the Access to knowledge Third meeting held in Geneve.
- Yigitcanlar, T. (2010). Informational city. In *Encyclopedia of Urban Studies* (pg. 1–3). Sage Publications, Inc.
- Yu, L. (2006). Understanding information inequality: Making sense of the literature of the information and digital divides. *Journal of Librarianship and Information Science*, 38(4), 229–252.

- Yu, L. (2011). The divided views of the information and digital divides: A call for integrative theories of information inequality. *Journal of Information Science*, 37(6), 660–679.
- Zook, M. (2006). The geographies of the Internet. *Annual review of information science and technology*, 40(1), 53–78.
- Zook, M. A. (2000). The Web of Production: The Economic Geography of Commercial Internet Content Production in the United States. *Environment and Planning A*, 32(3), 411–426. <https://doi.org/10.1068/a32124>
- Zook, M. A. (2003). Underground globalization: Mapping the space of flows of the Internet adult industry. *Environment and Planning A*, 35(7), 1261–1286.
- Zook, M. A., & Graham, M. (2007a). Mapping DigiPlace: Geocoded Internet data and the representation of place. *Environment and Planning B: Planning and Design*, 34(3), 466–482. <https://doi.org/10.1068/b3311>
- Zook, M. A., & Graham, M. (2007b). The creative reconstruction of the Internet: Google and the privatization of cyberspace and DigiPlace. *Geoforum*, 38(6), 1322–1343. <https://doi.org/10.1016/j.geoforum.2007.05.004>

Annexes

Douala Flow

“Douala Flow” is a sound-video installation by Roberto Paci Dalò which draws inspiration from this scientific research, in particular the existing discrepancy between oral knowledge and digital information.



Using artist's word:

“‘Douala Flow’ is based on Douala's maps which are linked to voices and sounds from radio stations in Douala. The work celebrates today's living city through an immersion into Douala's present life. Soundwise are used broadcastings from Douala's radio stations in order to create an aural environment made out of today's sounds processed and recomposed. The video is made out of dynamic maps created through data analysis related to particle systems and cloud points.”

The work is available online <http://www.doualafLOW.info> and it has been presented in 2017 in two exhibitions, in Basel (Switzerland) and Douala (Cameroon).

Basel, Switzerland
Making Douala 2007-2017
Ausstellungsraum Klingental
BaselScreenshow,
Douala, Cameroun

7 December 2017
Salon Urbain de Douala 2017,
Ndogpassi, Douala

Credits

artist: Roberto Paci Dalò
artistical collaboration: Chiara Somajni
visual programming: Federico Magli
audio mastering: Andrea Felli / Farmhouse Rimini
scientific research: Marta Pucciarelli
special thanks to: Andrea Santicchia, Stefano Spada, Caroline Ngouegni
producer: Iolanda Pensa
production: SUPSI

17 mins, video, B&W, stereo sound, 1.87:1

A journey through public art in Douala: framing the identity of New Bell neighborhood

Marta Pucciarelli and Lorenzo Cantoni

Ref. Pucciarelli, M. and Cantoni, L. (2017). *A Journey through Public Art in Douala: Framing the Identity of New Bell Neighbourhood*. In Skinner, J. and Jolliffe, L. (eds.), *Murals and Tourism: Heritage, Politics and Identity*, pp. 147-164, Routledge

Me voici donc à Douala. Douala, océan de bonheur immense. Douala, ville improbable, du magnifique tiers-monde. Douala, avec ses hauts et ses bas. [So here I am in Douala. Douala, ocean of an immense happiness. Douala, improbable city, of magnificent third-world. Douala, with its with its ups and downs]
Oho Bambe, 2014

Introduction

We have to admit that we barely visit an African city for cultural or artistic purposes, unless we are (or feel like) critics, researchers, curators, anthropologists or experts in art with a specific interest in the African art production. Compared to what happens to others developing countries, the African cities' artistic sphere is often ignored and moved to the background. Going to Berlin without visiting the Wall or to Venice without considering the dates of its biennial festival limits our knowledge about the city immediately, not only from the artistic and cultural point of view, but also from that political and social ecosystem which these kinds of events represent. Even if we are not art experts, we do need to experience such an important area or event, but this feeling of being included or excluded from the city is not considered when we think about developing countries.

Cities like Douala, Dakar, Johannesburg or Luanda, for example, have a huge contemporary art production, both in public art and in the organisation of international events, starting from the '90s (the Biennial of Dakar is in its 12th edition, while the Triennial of Luanda and the SUD – Salon Urbain de Douala have around 10 years experience). In spite of this, communication at an international level is lacking, except for few experts, and these festivals have no impact on people's perception of the African reality.

This does not happen just because it is hard to find information concerning these countries on the Internet (Douala shows more than 300 pictures on Wikipedia), but because such information has very low impact on the collective unconscious.

Thinking about an African city from the point of view of contemporary art produces a change in the perception that people have of reality in cultural, geographical, economic and social terms and this means leaving the stereotypes which make us

think about a poor, rural and static Africa. In artistic terms, the African unconscious is still deeply linked to masks, wooden sculptures, rituals or traditional ceremonies. In spite of this, the artistic and cultural landscape has shown a striking growth in the last 20 years, especially around the expanding metropolis. Douala, for example, has experienced an impressive growth in the production of site-specific public art installations (including around 40 works such as monumental, architectural, murals and small scale installations) and in the organization of international event (the Triennial SUD – Salon Urban de Douala).

This chapter examines one of these installation: ‘Les Mots Écrits de New Bell’, a series of six murals produced for the SUD 2010 by the artist and poet Hervé Yamguen, who lives and works in the district of New Bell, the largest popular settlement of the centre of Douala. Les Mots Écrits de New Bell are fragments of texts extracted from songs by two local rappers, Picsou and Moctomoflar, that highlight social and safety issues affecting the districts. This study is based on several sources: a field-trip done by its first author and a survey of locals aimed at exploring their understanding of Douala’s public art installation; interviews with the commissioner (the president of doual’art), artist and rappers who produced the murals; and reports from tourist guides. The chapter is organized as follows. First of all, it provides an overview on Douala, its neighbourhoods and dynamic environment; then it focuses on New Bell, to present and discuss the murals, and their role and interpretations according to different stakeholders – this chapter’s authors, visitors and inhabitants.

Framing Douala and its neighbourhoods

Douala is considered the economic capital of Cameroun and the most populated city of the country. It is usually defined by inhabitants as a cosmopolitan city, constantly growing and attracting every year thousands of national and international young people looking to emerge, economically and socially, within the metropolis. The ‘dreamt Douala’ (Simone, 2005) offers a wide spectrum of job opportunities, a dynamic lifestyle, and freedom from rooted traditions. Its harbour is indeed the largest of central Africa, strategically placed between the mouth of the Wouri River and the Atlantic Ocean. However, it doesn’t produce enough employment for its 3 million inhabitants (while the last census dates back to 2005, this is the most likely estimate for 2015), and often immigrants’ expectations remain unsatisfied (Séraphin, 2000; Sween & Clignet, 1969).

Tourism, especially business tourism, is playing a key role in the city. Douala offers hospitality solutions for the two classes of tourists it attracts: top level hotels addressed to international business tourists and low-medium hostels for missionaries and adventure tourists stopping-off in Douala before moving to the inner Cameroonian’s regions. In both cases, hotels, hostels and restaurants are concentrated within the four costal and most prestigious neighborhoods: Bonapriso, Bali, Bonanjo, and Akwa. These areas constitute respectively the residential

(Bonapriso and Bali), administrative and commercial centres of the modern/western-style Douala inhabited by the richest class of the city.

The flourishing economy around the harbour has attracted many new inhabitants who can't afford to live near to the rich dockland but instead live in the popular neighbourhoods spontaneously grown around it. After the economic boom of the 1960s, Douala is continuously extending horizontally, with 118 neighbourhoods divided into six districts (Evina Akam & Honoré Mimche, 2009). Despite many social, economic and political problems, people in Douala do not like revolutions, after having experienced the dramatic consequences of failing revolutions (such as the *ghost cities* in 1991¹, the *Commandement Opérationnel*² in 2000, and the *Emeutes de la faim* in 2008³) (Malaquais, 2009). The community prefers to count on the 'genuinely endogenous strategy for change' (Bayat, 2013). In particular 'reunions', regular meetings held by associations have been legalized since the 1991 (Seraphine, 2000). They can have different goals (religious, developmental, educational). Often the street is the place where these associations gather to discuss and to take popular decisions to face specific problems: this phenomenon has been labelled 'street politics' (Bayat, 2003; Jones III, 2000; Martin, 2004).

The cultural boom

Since 1991 several cultural institutions and a collective of artists have operated in the urban space of Douala. First of all, doual'art has to be mentioned: it is the oldest art centre of Douala, addressing its work to the urban environment in order 'to provide the city with human identity'⁴. Doual'art, besides hosting an exhibition space, is a hub of experimentation for public art, inviting artists from all over the nation and the world to reflect on the city and to produce permanent or ephemeral public art installations. Since 2007, doual'art has been organizing the SUD – Salon Urban de Douala – a triennial contemporary urban festival in which permanent and ephemeral art installations are presented and offered to the city. Other important cultural institutions in the city are the MAM gallery, an exhibition space founded by Marem Malong Meslin Samb in 1996; ArtBakery, an art centre located in Bonendale, a

¹ The *Villes mortes* ('Ghost cities') is the denomination of the historical period prior to the first multiparty election in Cameroon in 1991, characterized by a slaughter of the population, including arrests, violence, and tortures to the exponents of the opposition party.

² The *Commandement Opérationnel* ('Operation command'), is a special paramilitary body instituted by the government of Cameroon the 20 January 2000 to fight insecurity and city banditry in Douala. The result was a second butchery, a legalized violence against the population including a thousand people fallen victim of extra-judicial killing, and an unknown number of people disappeared (Malaquais 2009).

³ The so-called *Emeutes de la faim* ('Hunger riots') are violent social movements organized by citizens of Douala in 2008 asking for a balance in the price of bread as a consequence of the strong inflation of the CFA franc and the diffuse unemployment rate. During these periods several thefts, rackets, armed violence, and burning shop were an everyday issue. Government repressed the manifestations with the army

⁴ Personal conversation with Marilyn Douala Manga Bell, President of doual'art, 8 January 2013.

village outside Douala usually known as the artists' village; and the Cercle Kapsiki, a group of five Cameroonian artists in Douala who gathered as a formal group in 1998 to set up the K-FACTORY, a contemporary art space in the district of New Bell. After numerous cultural and artistic initiatives – started by Doual'art in 1992 by promoting Art Venture, the first mural installation of the city (Babina & Bell, 2008) – SUD 2010 promoted several public artworks, among them Les Mots Écrits de New Bell by Hervé Yamguen: a series of six murals and lighting installations located around the district of New Bell Ngangué. These installations showcase written messages coming from the lyrics of songs by two local rappers.

The cultural experience of visiting murals

Today, Douala's murals represent the main touristic offer of the city: we can define it as alternative cultural experience and they are recommended to the few visitors who arrive in the city for business reasons, for a school trip or thanks to a Doual'art invitation. It is no coincidence that the president of Doual'art has a socio-economic education. In fact, she caught the 'human nature' of a city where beauty is hardly considered and not supported by the public authority and she was able to transform not only the artwork but the whole production project in an artistic and cultural proposal. These socio-politic artworks are set in public spaces and clearly refer to the urban metamorphosis, which includes problems and hopes linked to Douala's nowadays life.

The power and the impression of the murals and of the artworks in public spaces do not depend only on the holiday package offered to visitors, which allows them to explore areas where they would never go alone, but also on the production process of the artwork: an artistic and cultural experience which first of all involves the locals, who experience it everyday as first addressees and beneficiaries. Even if the artworks have a different goal, a sequence of urban transformations have followed this effective production. That is the exceptional case of Douala: the urban and social impact of art becomes an essential part of the visit and makes tourists understand the artworks.

Consistent with Rasheed Araeen's post-colonial studies claiming to rewrite history (Araeen, 2010), the production of artworks, which are textual in this case, in public spaces allows to write a real time story of a city. Involving the community in the process means offering the locals an instrument to tell their own social wars and to express their fears and hopes through contemporary art. It is not the description of a past conflict, this is the present, the everyday life's story told through rap music, murals, light installations, big and small sculptures, sometimes using agonizing words, sometimes showing lines full of hope.

Moreover, Douala's public administration intervention struggles to fight against this cultural system and, as we already know, it has silenced the insurrections generated by the locals' dissatisfaction. According to the inhabitants, the cultural institutions and the visitors, the real meaning of these artworks goes beyond the aesthetic of the

city, showing clear political and social messages. On the other side, the public administration considers them as a mere urban decoration, which could be more or less likeable, that the authorities have made available to the city without taking on responsibility of them. Even if the artworks can be considered as permanent, their deterioration is fast and it is not only due to the use, but also to the extremely damp weather during the arid season (90% of humidity in the air) and to the exposure to the bad weather during the rainy season.

In few words, doual'art represents the only institution which provides maintenance to limit the artworks' deterioration, while the locals themselves handle the urban maintenance, in particular in New Bell, by taking care of the spaces where the artworks are set, by demanding the public administration intervention (concerning, for example, the garbage collection around the murals or the realisation of new streets) and even by paying the electricity in order to allow the installations to work.

The exceptional case of New Bell

The district of New Bell in Douala represents one of the most exceptional cases where art participates directly to the citizens' life, assuming their political and social conditions and, at the same time, modifying the community's life through new forms of urban management. Set close to Bonapriso, the most fashionable residential area of the city, New Bell is the typical *kwatt* of Douala: an open air slum where 'you're going to walk and fall down in the mud, you're going to cross dirty rivulets to go to the sub district, you're going to enter people's homes to go to yours'⁵. During the era of German colonization (1884 to 1916), the indigenous citizens were segregated in New Bell and isolated from Western settlements by a green area about one kilometre long in order to prevent any form of infection. After the French took over in 1916, the district became the main focal point for immigration of non-native people coming both from other regions of Cameroon and from abroad, especially from Nigeria, Ghana and Ivory Coast (Njoh, 2007; Schler, 2008). Today, the area's extension (including a total of 32 neighbourhoods) together with its population density have turned New Bell into one of the six administrative districts of the city.

Being historically the foreigners' district, New Bell has been completely excluded from any form of control and regulation, producing a seriously unhealthy and unsafe environment. In New Bell, sewers and gutters are open, used as garbage dumps, causing floods during seasonal rains. In addition, public fountains have been closed down and the community supplies water from shallow wells that are full of insects which cause infection and disease. At the same time: the widespread poverty and unemployment; the presence of the central jail and of the market of Douala – which are respectively the worst and the biggest of Cameroon (Amnesty international, 2008; Loe, Meutchehé Ngomsi, & Nken Hiboock, 2007); the huge concentration of night clubs; the absence of a public lighting system of a police station and any form

⁵ Personal conversation with Junior Ndalle, journalist living and working in Douala, 19 December 2012.

of social control, are all factors which contribute to increase the risk of aggressions and the diffusion of criminality through the area.

In the district of New Bell, there is no centre. There is not a square, or a public place devoted to entertainment, relaxation or civil discourse and the democratic exchange of ideas: it does not exist and it is even hard to imagine. In New Bell, as well as throughout the city of Douala, the concept of public space includes the idea of *shared space*: an area which is not private, which does not belong to anyone and, for this reason, anyone can take possession of in a completely free and anarchical way. The centre of New Bell is historically created by its streets where both commercial and not commercial activities developed following the Douala's immigrant communities' lifestyle and/or their spirit of survival (Simone, 2006, 2008b, 2008a). New Bell's life is not concentric, but it's a flux (Malaquais, 2005): it does not develop around a centre but it expands inside a widespread and permeable network of physical and social intersections that follow the branches of paved streets as well as the entrances corresponding with the blocks of the neighbourhoods and with the so called *mapans*. *Mapans* are a network of narrow streets connecting roads with the simple houses right inside and dividing buildings in blocks where people can pass only one after the other.

As an immigrant area, the district has a negative reputation. And yet, its lively art and cultural scene stimulates new interests, approaches and aesthetic visions of slum dwellers. From the 2000s, New Bell has become a theatre of art and cultural activities promoted by local and international institutions. Between 2001 and 2002, Cercle Kapsiki in collaboration with Scu2⁶, proposed Scenographie Urbaine ('Urban scenography'), an itinerant festival devoted to urban art. This event was an exceptional success, so much so that it has been replayed in Alexandrie, Kinshasa, Johannesburg, Paris, Dakar. The triumph of *Scenographie Urbaine* is due to a special characteristic of the play: artists from all over the world were hosted by dwellers in their houses and got inspired by the sharing of living spaces for their art projects, so that several urban art installations – both permanent and ephemeral – were produced during the three weeks. The festival concluded with a fashion show that was also a resounding success reaching a wide audience, reaching both locals and people coming from the wealthiest areas of the city⁷. Following this exceptional event, the *Cinema du Kwatt* (2005-2006) was the second event achieving a relevant success involving the inhabitants of the districts and of the city. The goal of the shows was to invite people to reflect on the value of their popular culture, contemporary and decolonized, through the viewing of documentaries by Jean Rouch, certainly the most popular theorist of the visual anthropology. This was accompanied by works produced by African artists and intellectuals including Goddy Leye. At the start, the

⁶ scu2 is a collective of two scenographers, Jean-Christophe Lanquetin et François Duconseille

⁷ Personal conversation with Hervé Yamguen and Hervé Youmbi artists and organizers of Scenographies Urbaines, 9 January 2013.

shows took place in Rue Napoleon, in New Bell Nangué, but soon they had been moved out to the football field at the crossroads of New Bell Aviation and later to the CBC Babylon school courtyard. In addition to open air shows, theater shows (like *Allah n'est pas obligé* by Amadou Kouroum) and movies strongly related with the Cameroonian background (such as *Les Saignantes* by Jean-Pierre Bekolo) were all staged. Not long after they had started, the emotional charge and the intellectual value of these events – which took place in a district that was barely accessible at that time – started to attract not only a middle-class audience but also international promoters and financiers. The Institut Français

(<http://www.ifcameroun.com/programmation-culturelle.html>) and the Goethe Institut between them have funded the initiative to allow them to include international guests and troupes, and thereby maintaining free access to the events.

This kind of activity allowed New Bell's inhabitants to overcome their troubled daily routines and to face afresh the external world, to reflect on their past and the forthcoming future, to develop new interests and so – accordingly to an organizer's words – 'renewing the people's way of living'⁸. Moreover, this initiative allowed the inhabitants of the district to have an active role in the promotion of the city's cultural life, and to welcome people coming from different neighbourhoods and social classes, giving them the possibility to discover the liveliness of a district historically considered to be dangerous. Together with Cercle Kapsiki's work, doual'art selected New Bell as a privileged neighbourhood to host permanent art installations. Since the first edition of the SUD – Salon Urbain de Douala in 2007, New Bell developed a local pride in the presence of public artworks realized by internationally renowned artists. Among them there are two monuments and several other installations: the *Njé Mo Yé* by Koko Komengé, considered to be the *father* of contemporary Cameroonian artists; and the *Colonne Pascal* by Marthine Tayou, one of the most famous African artist of the world. This is in addition to *New Walk Ways*, a 500 meters long installation by Kamiel Vershuren, a Rotterdam-based artist; and two mural projects including *Oasis* by Tracey Rose (South Africa) enclosed in the walls of the CBC Babylon School, and *Les Mots Écrits* by Hervé Yamguen, artist, poet and member of the Cercle Kapsiki living in New Bell.

Les Mots Écrits de New Bell

The SUD2010 edition dedicated to the theme of water, allowed the artist Hervé Yamguen to work on a pressing issue concerning his district. *Les Mots Écrits de New Bell* is a work composed by six wall installations which show segments of text extracted from the songs of two New Bell's rappers employed by the artist. It represents the words on specific building's facades, using materials which are deeply linked to the context and to the audience. By doing so, *Les Mots Écrits de New Bell* describes the unhealthy situation in which the district is forced to live. The lack of an

⁸ Ibid.

access to drinking water does not mean that there is no water in New Bell. Rivulets of polluted water overwhelmed by garbage cross New Bell and often define the borders between blocks. The songs that inspired *Les Mots Écrits* tell how pure and clean water reflects the population's wish to feel well, to live happily – a happiness which today is in decline because water pollution causes diseases and suffering and raise infant mortality rates. New Bell's rappers compare water with a thief: it is an element which escapes from the inhabitants in spite of its proximity and abundance. Artworks, which became part of the inhabitants' everyday life, converse with this public 'reflection' on their condition, their thoughts and deepest sensations, troubles and fears. On the corner of Entrée Source of New Bell Ngangué two murals show two lines: '*Se sentir bien*' (Fig. 1) and '*La vie saine, la joie de se sentir bien, l'envie de vivre de bonheur*' (Fig. 2). The texts literally mean 'feeling good' in the first case and 'The healthy life', 'The joy of feeling good', 'The desire to live happily' in the second.



Figure 1, *Les Mots Écrits* de New Bell – Entrée Source, Hervé Yamguen (2010)



Figure 2 Les Mots Écrits de New Bell – Entrée Source, Hervé Yamguen (2010)

The choice of the place and of the material is never random. They are placed at the entrance of the sub-district where in the past there was a public fountain that was then closed by the local administration. A big amount of waste dominated the landscape of the Entrée Source and poured out in the drainage canal which follows the perimeter of the street a half meter away from the wall where the artworks were installed. In this scenery, small phrases patterned on an iron tube lie on a mesh made by a light blue wall and four squared mirrors. The colour selected for the work changes completely the look of the street, bringing a breath of fresh air to the place. It catches the pedestrians' attention, inviting them to engage fully with the meaning of 'feeling good' and the joy of conducting a happy and healthy life. The use of mirrors is obviously linked to introspection and to the observation of the surrounding environment: it invites the observer to change their own views, to wonder about the quality of life in a proactive way, producing a subtle and intimate impact at a personal level. Les Mots Écrits also shows the troubles that characterize the familial environment such as the fears parents have about their sons who live in an uncertain society which does not assure a rosy and encouraging future. On the one hand, New Bell's sons and young people rebel but, on the other hand, they try to be positive and to trust in a society which is going to change, mobilizing on the tiny streets of the

neighbourhood, as reported in an artwork⁹, attempting to build their future and to establish themselves. At the same time, they are worried about how to reassure their parents about their ability to be independent and to survive in a society that is hostile to their future. Referring to this, the artwork set outside the CBC Babylon School says: *Après le temps mort vient le temps vif. Comme un coup de foudre. Ne pleure pas maman. Tous les yeux de la ville pleuvent sur moi. Tranquille papa on ne panique pas* [After the dead times, there are living times. Like a thunderbolt. Do not cry mom. All eyes of the city are raining down on me. Be calm, dad, do not panic] (Fig. 3). Ceramic – which in Douala is a synonym of hygiene – was used as the first material with the choice of the mosaic as a channel of communication: flying swallows drawn by the text, together with the selection of pink and light blue as main colours, are all elements which refer to the essential need for self-awareness in the school’s pupils who want to grow up and build their future in a healthy, transparent and encouraging environment.



Figure 3 Les Mots Écrits – CBC Babylon School, Hervé Yamguen (2010)

⁹ The mural text says ‘Dans les eaux sales du quartier, dans ma ruelle ma jeunesse rebelle’. [In dirty waters of the neighborhood in my tiny steets my rebellious youth]

This need is also narrated by the other artworks which show a rebellious, lively and dynamic youth who ask for a city finally cleansed and free from its rubbish, another synonym for its corruption, instability and illnesses. In this regard a mural shows the pidgin text ‘wash ma live, lave mon âme, wash mes ways, lave mon kwatt’ [wash my live, wash my soul, wash my ways, wash my neighbourhood]. The pursuit of happiness is the *leitmotif* of Mots Écrits, an incitement to reflect, to fulfil personal growth and to react in spite of the dirty water of the district (*les eaux sales du quartier*) and the ‘*mousitques*’ that cause malaria and from which people have to protect themselves in order to spend a safe and pleasant night (‘*nuit de bonheur*’, Fig.4).



Figure 4 Les Mots Écrits – La joie de Ndogmabi, Hervé Yamguen (2010)

Listening to the authors

‘Energie à Douala...énergie pour nous même...la vie est belle à Douala!’ [Energy in Douala ... energy for ourselves ... life is beautiful in Douala!]

These are the words chosen by Sadrake, the most famous Cameroonian rapper who lives in Germany, to spur the young people of his city while introducing his concert during the SUD 2013: ‘*tout le monde se plaindre de qui va nous sauver, il faut pas se negliger, on a tout à Douala!*’ [everybody complains about what will save us, we

should not neglect, everything is present in Douala] (Sadraque, 2013). Sadraque gave of his time and energies to actively contribute to the production of the album *Wash mes ways* by Picsou and Moctomoflar, the two rappers from New Bell. The album was commissioned by the artist Hervé Yamguen who extracted the lyrics for his artwork *Les Mots Écrits de New Bell*. It featured two rappers and five songs whose rhymes adopt a common ground language often using the local pidgin dialect that combines words with a specific posture, to an intention or to an interpretation. The artist and poet Hervé Yamguen gathered correctly the socio-cultural value of this work, shaping it in a new language, the language of visual art. That is why he involved the two rappers in his project, allowing them to tell their own reality. Rap is characterized by a vocal expressiveness which is rooted in the ghetto and, by its nature, criticizes and contests society 'in an open and frank manner' (Harold Wentworth & Stuart Berg Flexner, 1975). According to Yamguen, a good artist is a good citizen¹⁰. The idea of citizenship is really important in his work and his art is inspired by the district's lifestyle. For this reason, the artist must have an active role in the place where he lives and has to be a good citizen to be an effective example for the inhabitants. This is an important role assumed by the artist, in particular in a neighbourhood like New Bell where corruption is a consequence of the struggle for existence prevails on the social sensitivity. The art value is, first of all, a human value. The artist is never external from his work and artworks have to be the representation of the ethical space where the artist lives. Yamguen, who is living in New Bell as well, believes that 'art has to feed the aptitude towards life, towards community life'¹¹.

The participation of two local rappers was essential to the development of the project that was two years in the making. They organized together several performances and concerts in the district to allow the inhabitants to familiarize themselves with the project, its actors and with an ever growing and ever more varied audience. Slowly, locals started to feel involved in the event so that they made the facades of their houses available for hosting public art installations. Eventually it reached the stage that the artist felt embarrassed when he had to choose between so many offers. Dwellers started to feel proud to give a concrete contribution to the artistic project, increasing their self-esteem and their feeling valued at the same time. The places chosen by the artist to install his artworks are mainly well-known passageways, popular with the inhabitants: the specific intention was to introduce the district's reality to an international audience and to make the inhabitants think about how to have a better everyday life. *Les Mots Écrits de New Bell* was officially presented to an audience composed of inhabitants, government stakeholders, and national and international visitors in December 2010 during the SUD – Salon Urbain de Douala. At that occasion, a concert of the two local rappers was organized in the CBC

¹⁰ Hervé Yamguen, Personal conversaton, 19 November 2013

¹¹ Ibid.

Babylon School's courtyard, a gathering with an estimated thousand of local and international visitors.

Tourism in New Bell

In a city like Douala, where a city map is hard to find, tourism intended as a leisure experience is quite limited. Travel agencies mainly deal with flight tickets for business or migration, car hiring, accommodation services, airport assistance and travel insurance. Only in a few cases do they take care of tourist trips both to Cameroon and in Douala. Their mission is to draw the tourists' attention to the risks they can face within the city, providing information as to how to avoid them: for example, do not go around during the night, do not show your wallet in public places, do not leave the wealthy districts (such as Bonanjo, Bonapriso, Akwa), be always accompanied, catch only *à depot taxis* – better if reserved by the hotel – and do not even talk with the locals: sometimes communication could be difficult and, in some cases, aggressive. Even if this last advice could seem overstated, the others are good suggestions that an inexperienced tourist should consider to have a safe stay in Douala. When visitors decide to have a guided tour of the city, travel agencies turn to doual'art. In fact, travel agencies do not have tour guides and doual'art is the only tourism or cultural reference point for the city which can guide visitors to discover Douala. Together with their public artworks production and with the organization of SUD, doual'art invested a lot in tourism through the creation of a city map (the only one available), providing specific training for bilingual and expert tour guides, and proposing tours that go beyond the most wealthy areas, the only popular ones with Western visitors.

With reference to a survey realized in New Bell which sampled a group of 100 inhabitants, it is not only the tourists' flow that has grown considerably as a consequence of the installation of public artworks, but it is also constant (they suggest between three and five tourists per month) and, in addition to the peak of the flow reached during the SUD festival, 75% of the interviewees believed that tourists are safe in the district.

Beyond this data, which refers to the individual perceptions of inhabitants, it is important to show that doual'art registered 77 guided tours for a total of 487 paying visitors in one year and half (from May 2011 to December 2013). This is three times the level suggested by locals. Half of the visitors (49%) came from Europe (mainly from France, Belgium and Germany), while the other half (45%) consists of Cameroonian visitors, both from Douala and from the rest of the country. Within the latter statistic, half of the Cameroonian tourists are composed of groups of students on school and university trips coming from the only high school of Art of Cameroon (300km far from Douala) and from the University of Yaoundé. The remaining 6% comes from the rest of the world which includes ten African countries, the USA, and China. The extraordinary nature of the tourism in a district like New Bell is not limited to artworks, whose contemplation by a foreigner results as fascinating as

introspective: the arrangement of an artwork in New Bell becomes a chance to look around and to visit a district that a person would barely enter alone. Moreover, artworks interact not only with the environment but also with the inhabitants and with the owners of the buildings that host them. In this way, the tourist's experience in New Bell gives the possibility to observe the artwork giving an interpretation based on the personal cultural background but it also allows one to deepen his knowledge through a direct dialogue with the actors involved in its production – sometimes visiting the atelier of the artist or discussing with the owners of buildings where artworks are arranged, together with local neighbours. Public art spurs the visitor to play an active role, to enrich their experience by discovering New Bell's *mapans* far and wide and to understand how, inexplicably, art succeeds gently in having such a strong impact on locals and on the urban transformation of the district.

Impact on locals

In New Bell, Yamguen's artworks have become part not only of the environment, improving it, but also part of people's mentality. They represent a real cause for cultural and educational reflection linked to the idea of beauty. Moreover, they allow the inhabitants to have a local and aesthetic reference point that they can imitate and transform as they like. Artworks are not elements which just beautify and decorate the district, rather, they become reflective of local aesthetic values that slowly and deeply transform the neighbourhood. In this case, they are still transforming the image of New Bell: one example is that homeowners have begun to paint their house walls blue after being inspired by the installations. As one teacher of the CBC Babylon School said, what really matters is that this kind of action '*Ça réveille. Ça réveille des grandes personnes, comme ça réveille des petits enfants*' [*It wakes. It wakes grownups as it wakes small children*]¹². The qualitative, personal and intimate impact that these artworks generated on people is clear also considering the meaning that dwellers give to them. According to inhabitants artworks express not only beauty, but also innovation, education, reality and uniqueness. Some people¹³ think that Yamguen's installations contributed to the requalification of the district: 'It makes the neighbourhood shine' ('*Celà fait briller le quartier!*'); 'It's the aesthetic to the service of society' ('*C'est l'esthétique au service de la société*'). Others think that artworks have made New Bell more modern – 'For our neighbourhood, this means opening to modernity, it is a rebirth!' ('*C'est l'ouverture de notre quartier à la modernité, c'est une renaissance!*') – modifying its external perception. 'It is the originality of a district considered as wild!' ('*C'est l'originalité d'un quartier jugé sauvage!*'), or even 'For me it represents the difference, as I do not see it everywhere!' ('*Pour moi cela représente la différence, comme je ne vois pas celà par tout!*'). Other inhabitants believe that installations have allowed them to disclose frankly the

¹² Personal conversation with teacher David from the CBC Babylon School 11 December 2012.

¹³ Quotations from the survey

conditions of the district – ‘It’s another vision of our realities in terms of a shout of alarm’ (‘Une autre vision de nos réalités en terme de cris d’alarme’). But, at the same time, they represent a turning point: ‘It is the young people’s desire for awareness’ (‘C’est le désir de conscientisation des jeunes’).

In New Bell, art works did not revolutionize the environment and people’s life, they rather influenced the citizens’ capability to adapt themselves daily to the environment in innovative ways. Space metamorphosis represents the model on which people shape their lives. The director of the CBC Babylon School, where mural interventions were installed inside and outside, was inspired to plant flowers in order to improve the environment surrounding the school. She also put up signage in order to avoid people throwing garbage on the ground. The owner of the bar hosting the lighting installation ‘La nuit le bohneur c’est dans les moustiquaires’ modifies the facade of his bar every year with new murals and is committed to pay electricity costs personally in order to maintain the installation on all night long, in a context where the electricity costs affect significantly the monthly cash outflow. Those kind of private activities (the school and the bar) have experienced a huge impact in terms of economic revenues. Since the installation of *Les Mots Écrits* outside the school, the number of students enrolled has doubled (passing from 200 students to 400 in 2012). The school has further invested the new income from the educational offer by introducing the Anglophone session, employing new teachers and funding a new wooden building. On the other hand, thanks to the earnings due to the increasing clientele, the bar owner could enlarge the surface of his bar, tile the floor and exchange old wood tables with plastic ones, more practical to move and to clean. Such examples show how people’s sensibility towards urban space and artistic experience has changed: dwellers are no more extraneous with regard to the installations placed in the district but, on the contrary, they strongly demand them and ask for a renovation of art works and their surrounding space.

Conclusion

The presence of public art installations in the form of murals in the neighbourhood of New Bell contributes not only to define and reflect on the identity of the district, but also to increase the urban mobility of inhabitants and foreigners in and across the city of Douala. This mobility allows and makes sense to a process of city discovery, enhancing the cultural understanding of local and foreigners. From the locals’ point of view, the role and the presence of artists into the district reveal to be really important to open young people to new experiences and new interests, and to prompt them to react. Experimenting the aesthetic of the ‘ephemeral’, they get in touch with the environment and they are inspired by it to react to its challenges, artistically or not, by questioning their own behaviour. Furthermore, the presence of public art enhances the inhabitants’ possibility to expand their social and international networks: in Douala, expanding networks are a means to increase trust in other people, to improve self-esteem and to contribute to building individual identity.

From a foreigner's or tourist's point of view, the visit to public art installations in New Bell becomes something more than a guided tour of the city: it is rather an intense cultural experience reflecting the reality of a part of a city. New Bell, considered as one of the most dangerous district of Douala, has slightly changed its negative attitude to a positive one thanks to the presence of public art in the form of murals. Tourists demand to visit the neighbourhood and to discover not only its public art, but also its *mapans* and its bars. They wish to visit to artists' ateliers as well. The character of being an immigrant district with murals has become an opportunity for New Bell, a factor that allows foreign visitors to feel welcomed by inhabitants, rather than rejected, even if what the neighbourhood can offer is still limited.

References

- Amnesty international. 2008. 'Document - Cameroun: Prison Breack: Amnesty International Condemns Use of Excessive Lethal Force and Calls for Indipendent Inquiry.' *Amnesty.org*. July 3.
- Araeen, Rasheed. 2010. *Art Beyond Art, Ecoaesthetics: A Manifesto for the 21st Century*. London: Third Text Publications.
- Babina, Lucia, and Marilyn Douala Bell. 2008. *Douala in Translation: A View of the City and Its Creative Transformative Potentials*. Episode Publishers.
- Bayat, Asef. 2003. 'The' Street' and the Politics of Dissent in the Arab World.' *Middle East Report* 33 (1; ISSU 226): 10–17.
- . 2013. *Life as Politics: How Ordinary People Change the Middle East*. Stanford University Press.
- Evina Akam, and Honoré Mimche. 2009. 'Les Mouvements Migratoires Au Cameroun.' In *L'état Du Cameroun: 2008*, Éditions Terroirs, 479–92. Fabien Eboussi Boulaga.
- Harold Wentworth, and Stuart Berg Flexner. 1975. 'Rap.' *Dictionary of American Slang*.
- Jones III, John Paul. 2000. 'The Street Politics of Jackie Smith.' *A Companion to the City*, 448.
- Loe, Mamert Florent, Albert Claude Meutchehé Ngomsi, and Marie Louise Nken Hibock. 2007. 'Plan d'Action Strategique de Lutte contre la Delinquance Urbaine à Douala.' UN-HABITAT, PNUD, CUD.
- Malaquais, Dominique. 2005. 'Villes Flux: Imaginaires de L'urbain En Afrique

- Aujourd'hui.' *Politique Africaine* 100 (4): 15–37.
- . 2009. 'Blood Money: A Douala Chronicle.' *Chimurenga Magazine*.
- Martin, Bradford D. 2004. *The Theater Is in the Street: Politics and Performance in Sixties America*. Univ of Massachusetts Press.
- Njoh, Ambe J. 2007. 'Planning in the Cameroons and Togoland.' In *Planning Power: Town Planning and Social Control in Colonial Africa*, 127–44. Routledge.
- Oho Bambi, Marc Alexandre. 2014. *Les chant des possibles*. La Cheminante.
- Schler, Lynn. 2008. *The Strangers of New Bell: Immigration, Public Space and Community in Colonial Douala, Cameroon, 1914-1960*. UNISA Press.
- Seraphine, Gilles. 2000. 'La Société Civile Derrière La Communauté? Associations et Tontines À Douala.' In *Le Désarroi Camerounais: L'épreuve de L'économie-Monde*, 193–215. Collection Economie et Développement. Paris: Karthala.
- Séraphin, Gilles. 2000. *Vivre À Douala. L'imaginaire et L'action Dans Une Ville Africaine En Crise*.
- Simone, A. M. 2005. "'Reaching Larger World' Negotiating the Complexities of Social Connectedness in Douala.' *Politique Africaine* 2005/4 (100): 38–53. doi:10.3917/polaf.100.0038.
- . 2006. 'Pirate Towns: Reworking Social and Symbolic Infrastructures in Johannesburg and Douala.' *Urban Studies* 43 (2): 357.
- . 2008a. 'Broken Links, Changing Speeds, Spatial Multiples: Rewiring Douala.' <http://eprints.gold.ac.uk/2825/>.
- . 2008b. 'Practices of Convertibility in Inner City Johannesburg and Douala.' <http://eprints.gold.ac.uk/2815/>.
- Sween, J., and R. Clignet. 1969. 'Urban Unemployment as a Determinant of Political Unrest: The Case Study of Douala Cameroon.' *Canadian Journal of African Studies/Revue Canadienne Des Études Africaines* 3 (2): 463–87.

List of interviews

Interviews first ethnographic fieldwork:

- 05.12.12 Blaise Etoa: Orange sponsor and event manager
- 08.12.12 Jean Marie Ndoutou: chief of the neighborhood of Ndogpassi
- 11.12.12 Hervé Youmbi: artist
- 11.12.12 Didier Schaub: ex. artistic director of doual'art
- 11.12.12 Mr David: teacher of the CBC Babylon school
- 12.12.12 Thomas: active member of the community in Bessengué
- 12.12.12 Chief of the block 5 Babylon New Bell neighborhood
- 13.13.12 School director CBC Babylon
- 14.12.12 Moctomoflar: musician New Bell
- 14.12.12 Simon de Gaulle: lawyer, and visitor guide of doual'art
- 14.12.12 Ndoumbe Ebenezer: president of the Communauté Développement Bessengué -Akwa (CDBA)
- 17.12.12 Salifou Lindou: artist
- 18.12.12 Koko Komegné: artist
- 19.12.12 Marilyn Douala Bell: President of doual'art
- 19.12.12 Picsou: musician New Bell
- 19.12.12 Junior: journalist
- 19.12.12 Marem Malong: president Gallerie MAM
- 20.12.12 Hervé Yamguen: artist
- 20.12.12 Caroline Ngouegni: cultural mediator of doual'art
- 20.12.12 Franc Danjou: real estate manager and restaurant owner
- 21.12.12 Guy Bolivar: artistic director Gallerie Mam and MTN foundation
- 03.01.13 Koko Komegné: artist
- 03.01.13 Jean Yango: municipality of Douala (CUD), director of investment planning and sustainable development studies
- 03.01.13 Daniel Doualla: PhD student in international right, doual'art guide
- 04.01.13 Joseph Francis Sumegné: artist
- 04.01.13 Victor Njehoya: ex Doual'art web master
- 07.01.13 Yves Happi: Orange Marketing manager
- 08.01.13 Yves Makongo: assistant director doual'art/geographer
- 08.01.13 Marilyn Douala Bell: president of doual'art (2nd interview)
- 09.01.13 Ginette Daleu: artist
- 09.01.13 Monica Laisin: MTN employee
- 11.01.13 Paulin Tchuenbou: ex assistant director doual'art
- 14.01.13 Nya Mbenga: municipality of Douala (CUD), department of urban disorder control
- 15.01.13 Lucas Grandin: artist
- 15.01.13 Bar owner New Bell

15.01.13 Mauro Lugaresi: architect
17.01.13 Lionel Manga: essay writer and cultural producer
21.01.13 Nana Sounou: municipality of Douala (CUD), director of administration, human resources and logistics
21.01.13 Adrien Kouomou Monting: journalist of the Liquid journal

Interviews second ethnographic fieldwork:

15.11.13 Simon de Gaulle: lawyer, and visitor guide of doual'art (Bessengué)
15.11.13 Mr. Alexandre: former member of the community in Bessengué
16.11.13 Mfonkou Ousmanoli: chief of the Bamboun ethnic group (Bessengué)
16.11.13 Thomas: active member of the community in Bessengué
16.11.12 Epanya Francois: active member of the community in Bali
16.11.13 Caroline Ngouegni: cultural mediator and tourist guide
18.11.13 Ancient of *Bepanda* and his wife
20.11.13 Dominique Viard: owner of the hotel Meridien
20.11.13 Marilyn Douala Bell: president of doual'art
22.11.13 Nicolas Eyidi: artist/photographer (Deido)
22.11.13 Tanga Samuel Bismark: former member of the community in Bonamouti (Deido)
22.11.13 Nalova Asonganyi: director of the tourist agency ELTA group, *Akwa*
23.11.13 Pouth Simon: chief of the neighbourhood *Nylon*
23.11.13 Tchakoution Antoine: chief of Block 1 of the neighbourhood *Oyack III*
23.11.13 Victor Njehoya: ex Doual'art web master
24.11.13 Jean Marie Ndoutou: chief of the neighbourhood of *Ndogpassi*
27.11.13 Valere Epée: professor of linguistic and important member of the Sawa traditions
27.11.13 Tanga Jean Baptiste: mechanic, active member of the community in *Bepanda*
27.11.13 Nyambi Ebweya Guillaude: professor of history
27.11.13 MmeDora: former member of the community in *Camp Yabassi*
28.11.13 Eitel Tak'a Manga: ministry of finances
28.11.13 Cyrille Sam Mbaka: politician and owner of the restaurant "la chaumiere" (Bonapriso)
28.11.13 Fokou Etienne: chief of the neighbourhood *Brazaville*
29.11.13 Totchak Clement: university student (Zone Universitaire)
29.11.13 Jean Yango: Municipality of Douala (CUD). Director of investment planning and sustainable development studies
02.12.12 Mr. Paul: former member of the community in *Cité Sic*
05.12.12 Ndoumbe Vincent: cultural producer (Bonapriso)
09.12.13 Madengue Joseph: chief of the neighbourhood *Akwa Nord I*
09.12.13 Yetchang Edward: chief of the neighbourhood *New Deido*
09.12.13 Lionel Manga: essay writer and cultural producer

10.12.13 Fopoussi Tchoumou Blaise Pascal: chief of the block Bobongo II, neighbourhood *Village*
10.12.13 Chief of the Beti native group of the neighbourhood *Nkololoun*
12.12.13 David Monkam: public employee at the municipality of Douala (CUD)
12.12.13 Songue Francis: active member of the community in *Ndokoti*
13.12.13 Mathias Ngamo: journalist of *Le Jour*
13.12.13 Tchokote Raphael: former member of the community in *Zone Universitaire*
17.12.12 Franc Danjou: real estate manager and restaurant owner
17.12.13 Nlepe Nlepe: former member of the community in *Youpwé*
17.12.13 Moukoury Moulema Robert: chief of the neighbourhood *New Bell Ngangue*

Focus group with public employees at the Municipality of Douala, who manage the city's website (www.douala-city.org):

Mirelle and Daniel: institutional communication

Alice: public relations

Charles: cooperation specialist

Roosvelt and Cedric: multimedia graphic designers: Roosvelt

Questionnaire

Title: Questionnaire sur la sécurité urbaine autour des œuvres d'art public

Données général							
1	Quel âge as-tu ?	<input type="radio"/> 10-15	<input type="radio"/> 16-24	<input type="radio"/> 25-34	<input type="radio"/> 35-49	Plus de 50	
2	Tu es (sexe)	<input type="radio"/> femme		<input type="radio"/> homme			
3	Précises le quartier (et bloc) où tu vis						
4	Quel est ta profession principal?						
5	Tu sors de ton quartier						
	<input type="radio"/> Tous les jours	<input type="radio"/> 2/3 fois par semaine	<input type="radio"/> 1 fois par semaine	<input type="radio"/> 2/3 fois par mois	<input type="radio"/> Moins d'une fois par mois		
Données sur les télécommunications							
6	Tu as un téléphone mobile ?						
7	Est-ce un téléphone mobile multimédia ?						
8	Tu utilises ton téléphone mobile pour :						
	<input type="radio"/> téléphoner	<input type="radio"/> Envoyer SMS	<input type="radio"/> Ecouter radio	<input type="radio"/> Faire des photos			
	<input type="radio"/> Regarder le télé	<input type="radio"/> Aller sur internet	<input type="radio"/> Stocker la musique	<input type="radio"/> Stocker les vidéos			
	<input type="radio"/> Envoyer argent		<input type="radio"/> Autre (précisez quoi)				
Données sur l'impact des œuvres d'art public							
9	Aimes-tu les œuvres d'art public ou interventions artistiques présentes dans ton quartier ?					Oui	Non
10	Tu connais le nom et l'auteur de ces installations ?					Oui	Non
11	Qu' est-ce que l'œuvre signifie pour toi ?						
12	Tu connais d' autres œuvres d'art public dans la ville ? Si oui, lesquelles ?						
13	Tu te sens fière des œuvres d'art public installé dans ton quartier?					Oui	Non
14	Perçois-tu les œuvres d'art public ou installations artistiques comme des points de repère sûrs dans ton quartier ?					Oui	Non
15	Penses-tu que les œuvres d'art public ou installations artistiques ont contribué à améliorer l'entretien de ton quartier (nettoyage, couverture des caniveaux, etc.) ?					Oui	Non
16	Penses-tu que le flux des touristes/étrangers qui passent par ton quartier a augmenté depuis que les installations artistiques ont été créées ?					Oui	Non
17	Est-ce que le passage des touristes/étrangers est régulière dans ton quartier					Oui	Non

18	Combien de touristes passent pendant un mois dans ton quartier?	1-2	3-5	5-10	+10
19	Penses-tu que les touristes sont en sécurité dans ton quartier?			Oui	Non
20	Penses-tu que la criminalité (es. agression) de ton quartier a diminué depuis que les installations artistiques ont été créées?			Oui	Non
21	Quels sont les crimes les plus fréquents dans ton quartier (prière d'en indiquer au moins deux) ?				
22	As-tu été victime d'une action de criminalité dans ton quartier pendant les derniers 20 ans? Si oui, combien de fois ?			Oui	Non
23	Et après l'installations des art public ? Si oui, combien de fois ?			Oui	Non
24	Pendant quels moments de la journée tu ne te sens pas en toute sécurité en marchant à proximité des installations artistiques ?				
25	Penses-tu que les œuvres d'art public ou installations artistiques ont permis d'améliorer l'image de ton quartier dans la ville?			Oui	Non
26	Penses-tu que les artistes contribuent à l'amélioration de ton quartier? <input type="radio"/> Pas du tout <input type="radio"/> Peu <input type="radio"/> Assez <input type="radio"/> tout à fait				
27	Est-ce que les installations artistiques sont devenues un espace de rencontre pour les habitants du quartier ?			Oui	Non
28	Quelles sont les activités les plus développées autour des œuvres d'art public par les habitants ? <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>				
29	Quels types d'habitants généralement fréquentent cet espace ? <input type="radio"/> Enfants <input type="radio"/> Jeunes <input type="radio"/> Femmes <input type="radio"/> hommes				
30	Penses-tu que après l'installation des œuvres d'art public les petit commerces ont augmenté dans ton quartier?			Oui	Non
31	Tu te sens en sécurité dans ton quartier ? <input type="radio"/> Pas du tout en sécurité <input type="radio"/> Pas en sécurité <input type="radio"/> Assez en sécurité <input type="radio"/> Complètement en sécurité				
32	Est-qu' il existe un groupe d'auto-défense dans ton bloc ou quartier ?			Oui	Non
33	As-tu des propositions à faire pour améliorer la sécurité dans ton quartier ?				