

RETHINKING DIGITAL INEQUALITIES:
THE EXPERIENCE OF THE MARGINALIZED IN
COMMUNITY TECHNOLOGY CENTERS

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Submitted to the faculty of the University Graduate School
in partial fulfillment of the requirements for the degree
Doctor of Philosophy
in the School of Informatics and Computing
Indiana University
August 2015

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July 24, 2015

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David Nemer

This dissertation is dedicated to every resident of Favelas.

David Nemer

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Information and communication technologies (ICTs) have emerged as symbols of modernity in the developing world, and currently policy makers and popular press perceived them as bridges to promote social and digital equalities. However, scholars have regularly demonstrated that digital inclusion projects have often failed to meet expectations related to human development objectives. Some postulate that the problem may not be entirely one of project failure, but rather of our limited understanding of the value that technology provides. Hence, this dissertation emphasizes the socio-cultural aspects of digital inclusion projects aimed at favela residents and attempts to understand ICTs aspects and practices from their perspective.

Favelas, urban slums in Brazil, are considered marginalized areas due to the absence of State social and physical investments. As a consequence of this, such areas lack proper infrastructure, sanitation and road systems and provide their residents, the marginalized, with a low quality of life. Favela residents are deprived not only of proper services for their basic needs, such as health and education, but

also of access to technology and Internet. Most of them rely on community technology centers (CTCs) to access ICTs. Based on an over eight-month ethnography in the favelas of Vitória, Brazil, this dissertation focuses on the motivations, engagements, and adoption of ICTs by favela residents in CTCs. It asks the following questions: (1) What is their experience using CTCs? (2) How does their experience inform the ways we should think about what constitutes empowerment and disempowerment vis-à-vis ICTs? It argues that theoretical positions stemming from technology utilitarianism need expanding, because mundane and non-instrumental practices observed in the favelas shed light on the importance of technology in a variety of dimensions within people's lives. Encompassing such practices contributes to a broader comprehension of the engagements and strategies that help shape the daily use of technology by people who suffer the consequences of being poor and marginalized.

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1 Introduction and Background

Favelas, urban slums in Brazil, are considered marginalized areas due to the absence of state social and physical investments; as a consequence of this, such areas lack proper infrastructure, sanitation and road systems and provide their residents, the marginalized, with a low quality of life.¹ The marginalized are deprived not only of proper services for their basic needs, such as health and education, but also of access to technology and Internet.

The Federal government has a long history of attempts to promote Information and Communication Technology (ICT) agendas with the intent to digitally include the socially marginalized. According to the government, digital inclusion means to spread and improve physical technology, such as computers and infrastructure, in order to give people from lower classes access to the information society, hoping they would also achieve social inclusion (see Decree 6.948/2009). Thus, such attempts have not been successful because the government's focus has been mostly on issues around physical access, and not acknowledging social factors related to the social and context settings. ICTs are socio-technical systems that should not be approached by privileging the technological or material explanation ahead of the social, or vice versa. They are a web-like arrangement of people, social norms,

¹“Marginalized” is a term that favela residents use to refer to themselves. The informants I interviewed in this study also used the term in order to describe their life condition (poor and forgotten by the government due to the lack of proper basic need services), and social location in society (discrimination and segregation by members of upper classes). Government agencies, such as IBGE, also refer to them as marginalized in reports.

technological artifacts, rules and practices (Kling, 2007; Sawyer & Tyworth, 2006). The way that people use ICTs is complex and related to various aspects of human experiences. Thus approaching issues such as the digital inclusion with simplistic solutions, like the provisions of computers, and generalizing about their use, suppress the nuanced usage and experiences in specific contexts.

In Brazil, social inequalities, which are based on income and access to basic need services, such as education and health, are mapped to and amplified by the differences of technology use, hence the term I use in this dissertation is digital inequalities. Although the marginalized populations are also deprived from constant access to ICTs, they still manage to adapt and appropriate the available ICTs according to their needs and beliefs. As claimed by Neri (2012), only 25% of the Brazilians in lower classes, such as favela residents, are connected to the online world, and most of them rely on community technology centers (CTCs), such as Telecenters and LAN Houses, to be connected. These centers are responsible for providing Internet access to 63% of the marginalized population (CGI.br, 2012).

Previously in the literature, the marginalized have been perceived as mere users and consumers of online services; however, due to their growing experience with ICTs and the affordances of the Web 2.0, there is an urge in the literature to see them as agents, active producers and innovators (Rangaswamy & Nair, 2012). Thus, this dissertation expands the literature by bringing to light the meaningful and innovative ways that favela residents use ICTs. Also, due to the relative novelty of CTCs and ICTs use in marginalized areas in Brazil, little substantive research and

theoretical literature exists on the experiences of their users and how such experience may inform the ways we think about empowerment in relation to ICTs.

1.1 Research Questions

This dissertation is an ethnographic examination of CTCs and the ways that ICTs can afford empowerment among users in such centers. It attempts to approach ICTs from the perspective of favela residents in order to offer a different window for understanding technological use, political processes, social tensions and cultural values, especially of those experiencing digital inequalities. Based on fieldwork over eight months in the neighboring favelas of Bairro da Penha, Gurigica, Itararé and São Benedito located in the city of Vitória, Brazil, this dissertation focuses on the motivations, engagements, and adoption of ICTs by marginalized people and asks the following questions: (1) What is their experience using CTCs? (2) How does their experience inform the ways we should think about what constitutes empowerment and disempowerment vis-à-vis ICTs? This dissertation emphasizes the socio-cultural aspects of ICT practices among marginalized people and attempts to understand such aspects and practices from their perspective. It argues that theoretical positions stemming from technology utilitarianism need expanding because mundane and non-instrumental practices observed in the favelas shed light on the importance of technology in a variety of dimensions within people's lives. Encompassing such practices contributes to a broader comprehension of the engagements and strategies that help shape the daily use of ICTs by marginalized people.

1.2 Brazilian Social and Digital Inequalities

Brazil is the largest country in both South America and the Latin American region. It is the world's fifth largest country, both by geographical area and by population with approximately 190 million inhabitants. Although the country is currently the 7th largest economy in the world - with a gross domestic product (GPD) worth 2.2 trillions of U.S. dollars - Brazil also ranks high in the charts of income inequality; It occupies the 12th place with 16% of its population living under the national poverty line (World Bank, 2014). Brazil inherited a highly stratified society from the colonial system, which still persists nowadays. The country's population is organized in five social classes – A, B, C (C1, C2), D and E, which is based solely on people's wealth and income (Vaitsman & O'Dougherty, 2003). Table 1 summarizes the Brazil's social classes based on household monthly income and population's percentage.

Social Class	Average of Household Monthly Income ²	Population's Percentage
A	US\$7800	4.10%
B	US\$4000	30.40%
C1	US\$1199	26.30%
C2	US\$665	23.20%
D	US\$499	15.20%
E	US\$380	0.80%

Table 1: Brazilian population according to income and percentage (SAE, 2014)

² The average of household monthly income was converted from Brazilian Reais to American Dollars. The exchange rate used was 1 U.S. Dollars to 2.25 Brazilian Reais.

The families in classes C2, D and E are considered poor and inhabit the slums and marginalized areas in Brazil. They are not only deprived of proper services for their basic needs, such as health, education and basic sanitation, but also of access to technology and Internet. In terms of Internet access, Brazil is currently the 63rd country: only 33% of its population has access to the Internet at home, just below the world's average of 33.49% and countries such as Uruguay, Chile, Russia, Serbia and Bahrain. While 75% of the upper social classes (A, B and C1) are connected to the Internet, only 25% of the lower classes (C2, D and E) have access to the online world (Neri, 2012). Also, approximately 31.45% of the Brazilians don't know how to access to the Internet (IBGE, 2010).

Due to such disparity, policymakers have attempted to overcome the digital inequalities in Brazil by providing the poor classes with physical access to technology. According to Almeida (2010), the government was hoping to accelerate the entry of the poor population into the information society so they could benefit from accessing e-Government services, gain skills, and be more competitive in the job market. As stated by Albernaz (2012): *"the most common connotation of the term "digital inclusion" was economic: with at least basic computer and Internet skills, it was believed, people living on society's "margins" would be more likely to find work (or higher-paying work), helping to break the cycle of poverty. [...] There was a false idea that if you put enough computers and poor people in a room together, the problem would be solved."* Thus, it was stipulated by the Federal Law #9.998 from August 17th, 2000, that the government had to create a fund to increase the access of the marginalized to ICTs. The law was mainly concerned with the purchase of

computers and connecting them to the Internet. Such policy refers to viewpoints that consider ICTs as the most important driver of the increase in digital inclusion and societal prosperity, enabling the global use of new communication technologies that will eventually lead to a massive social and economic transformation.

In 2005 the Brazilian government invested over US\$400 million in various programs, equipment, infrastructure and tools to afford the poor access to technology. The government was mostly concerned about lowering the price of computers and pushing them into people's homes (Rebelo, 2005), instead of providing not only acquisition programs, but also social and educational programs that would lead to appropriation of the technology. Such strategies were not working because the targeted people were not using the technology in the ways expected by the state officials, which was to increase employment among the poor population, and promote skills such as content creation. Because of the past failures, Brazil is currently trying to face the issues of the digital inequalities with approaches that are less technological deterministic and more focused on individuals and communities.

The government is currently promoting digital inclusion by spreading CTCs such as LAN Houses and State supported Telecenters. LAN Houses are privately owned establishments where, like a cybercafé, people can pay to use a computer with Internet access and a local area network (LAN). According to the Internet Steering Committee in Brazil, LAN Houses are responsible for almost 50% of the internet access in Brazil and in poor areas they are responsible for 82% of the access (C. A. Teixeira, 2009). Although LAN Houses are privately owned business,

the government is attempting to provide several credit lines and loans with low interest rates in order to promote and spread the number of facilities, especially in the marginalized areas where they are typically implemented – I describe a short history of the Telecenters and LAN houses later in this chapter. As opposed to LAN Houses, where customers have to pay for service, Telecenters are facilities where the general public can access computers for free. The computers are equipped with a variety of open source, and sometimes proprietary, software and are connected to the Internet. Some Telecenters offer computer lectures and workshops as an attempt to fulfill individual and community educational needs. The government, NGOs, and the private sector typically own Telecenters.

As claimed by Albernaz (2012) *“for nearly a decade, non-governmental organizations in Brazil and throughout the rest of Latin America (of which the Committee for Democracy in Information Technology, or CDI, is best known) have been establishing free or low-cost computer skill courses in impoverished areas inside Telecenters. Although studies have shown that those who do find better jobs after completing these courses are rare, the exposure to computers and the Internet that would not have been available to participants otherwise has been a major act of digital inclusion in itself. It has also clearly produced benefits that are more difficult to measure, such as increased self-esteem among participants. The current thinking behind digital inclusion projects has shifted away from the “computer school” model. [...] “The term “digital inclusion” has also been taken to imply social or civic participation. At a time when local and national governments throughout the world have websites through which citizens can communicate with representatives (possibly*

concerning issues that they have read about on the Internet) and even file taxes, those without access have been excluded again, even if only by matter of convenience that the Internet affords.”

Empirical studies have shown that the most frequently visited sites in CTCs in low-income communities pertain to social networking sites, games, sports and entertainment (Horst, 2011; Nemer, 2015; Quiroga & Larvie, 2000). Such appropriation of technology goes beyond the expected use, which would benefit factors like education, social relationships and employment. These findings invite us to think about alternative and non-instrumental use of technology as means to empowerment and development and not just a shallow acknowledgement of people's desire for entertainment or meaningless use. Understanding the contextualized and real meaning of such use entails a thoughtful and studied approach to the way people choose to live.

1.3 Telecenters

Telecenters are nonprofit public spaces where the general public can access computers and other digital technologies, such as digital cameras, for free. The ICTs are usually equipped with a variety of open source, and sometimes closed source, software and are connected to the Internet. Some Telecenters offer computer lectures and workshop to the community with an intent to promote the appropriation of the technology in order to fulfill the individual and community needs. Telecenter units are maintained and supported by government agencies, NGOs, and the private sector and have been piloted and implemented across the

globe. Telecenters have been hailed as the solution to development problems around the world because of their ability to provide the poor population access to ICTs (Gomez & Hunt, 1999). However, CTCs have been struggling to find an appropriate method to measure their benefits to the community and thus justify the allocation of funding in order to stay business (Gurstein, 2011; Meddie, 2007).

Telecenters *“have a considerable potential for alleviating digital inequalities in remote, rural and otherwise disadvantaged communities. They can be especially useful in helping developing countries and rural areas take advantage of the information economy, access education, government information, healthcare and other services, and develop socially and economically”* (Oestmann & Dymond, 2001). They have their origins in *“Europe’s telecottage and Electronic Village Halls, originally in Denmark, and CTCs in the United States, both of which emerged in the 1980s as a result of advances in computing. At a time when computers were available but not yet a common household good, public access to computers emerged as a solution”* (United Nations, 2010).

“Telecenters have gained prominence as the primary instruments for bringing the benefits of ICTs to poor communities where the technological infrastructure was inadequate and the costs of individual access to these technologies were relatively high. They provide opportunities for access to information by overcoming the barriers of location and distance from main technological centers, and by facilitating access to information and communication, they have the potential to foster social cohesion and interaction” (Young, Ridley, & Ridley, 2001).

According to Telecentre.org (2015), the estimated number of Telecenters worldwide is 500,000 units, serving upwards of 1 billion users on a regular basis. Although users may be charged a nominal amount for Internet access, Telecenter by definition is “*driven out of both a social and economic concern, rather than just being an Internet café [...] Such centers provide a multitude of add-on benefits such as vocational training, e-services and meeting facilities — eventually becoming part of the community fabric*” (Jones, 2013).

In Brazil, the Federal Government has been financing and supporting Telecenters to overcome the disparities in ICTs access. According to the *Observatório Nacional de Inclusão Digital* (National Observatory for Digital Inclusion, which is referred to as its acronym ONID), Telecenters have been implemented by 20 governmental agencies in 5564 cities, covering 19 states (out of 26 states and 1 federal district). The agencies partnered with public and private universities, as well as NGOs, institutes and foundations in order to maintain and run the centers (Mori, 2012). The first Telecenters were implemented in 2000 as part of the project *Rede Jovem* (Youth Network) in São Paulo. They were idealized by the partnership between the NGO *Comunidade Solidária* (Community and Solidarity) and the Ministry of Science and Technology. *Rede Jovem* was able to partner with institutes from the private sector and spread its units to 8 states. In the last decade, due to the relative success of *Rede Jovem* more than 23 projects aimed at implementing Telecenters came to life. Projects such as *Rede Telecentro* (Telecenter Network) and *Rede Jovem* were able to financially maintain themselves and expand their units due to partnerships with private and financial institutions (Mori, 2012). However, most

of the projects that relied their funding and management on the Federal Government, such as *FUST Bibliotecas* and *Casa Brasil*, failed to meet expectations, manage resources and implement programs to alleviate the digital inequalities.

The project *Casa Brasil* was an attempt to bring together and coordinate the digital inclusion initiatives of the Federal Government in 2004. The initial idea was to deploy 1,000 Telecenter units in the communities with low-income households (Cruvinel, 2004). Each unit would consist of modules with Telecenters aimed at producing and disseminating cultural content on digital media and community radio, popularization of science through laboratory activities, recycling programs, reading rooms and multifunctional auditoriums. *Casa Brasil* was also envisioned as a way to promote access to e-Government services, offered by the three branches of power, in order to promote civil participation (Mori, 2012).

In 2005, Casa Brasil partnered with *Conselho Nacional de Desenvolvimento Científico e Tecnológico* (National Council for Scientific and Technological Development, which is referred to as its acronym CNPq) to implement the first 90 units. The program offered the equipment (with free software), furniture, physical space and fellowships to hire local Inclusion Agents.³ Each unit would be maintained and managed by a council constituted by local residents and government personnel. According to CNPq (2005) these centers were designed to be a space with free and unrestricted access for the community, with the intention to operate as centers for technological improvement, science, culture and leisure. CNPq planned to start the

³ Inclusion Agents are the people responsible for taking care of each Telecenter, promoting computer related workshop and classes and help the users.

project *Casa Brasil* by deploying 90 units, however only 76 units were actually opened. The project never got close to deploying 1,000 units, as planned initially; instead units were closing their doors: in 2010, only 56 *Casas* were operating. In 2009, due to its failing start, the Ministry of Technology and Culture took over the control of the project and attempted to revive it by creating the *Rede de Extensão Universitária para Inclusão Digital* (Network of University Extension for Digital Inclusion, which is referred to as its acronym REID) (Brandão, 2010). REID did not go forward as planned by the Government and *Casa Brasil* units continued to cease their operations. Some *Casas* were able to keep their doors opened by receiving grants from other projects like *Telecentros.BR*, which was the case of one of the Telecenters studied in this dissertation.

Telecentros.BR was established by the decree no. 6,991, of October 27, 2009 under the coordination of the Ministry of Science and Technology and Ministry of Communications and Planning. The program was established as the national program to promote digital inclusion in communities, with the goal to spread Telecenters throughout the country. In order to monitor and evaluate these Telecenters, the Federal Government and the *Instituto de Pesquisas e Projetos Sociais e Tecnológicos* (Institute of Research and Social and Technological Projects, which is referred to as its acronym IPSO) created ONID. Its main activity was to collect, organize and provide information about the digital inclusion initiatives taken inside the Telecenters. The information was presented to stakeholders and the civil society in order to provide a map of digital inclusion in Brazil. The information was based on the record of all existing Telecenters in the country and was aimed at providing a

complete picture of the activities in the centers and creating a network of communication between the various initiatives for digital inclusion in Brazil.

In 2009, the Federal ministries held a call for applications in order to give out “technology kits” (which consisted of 12 desktop computers, one server and one printer), fellowships for local Inclusion Agents and training from a network of five regional centers, in order to support up to 8,000 Telecenters – new or operating units. The call was opened to public and nonprofit private institutions to submit their applications, under the condition that such institutions would be responsible for the articulation of inclusion activities, maintenance, guidance and continuous monitoring of the Telecenter. The government selected 57 applications, supporting a total of 9,514 Telecenters throughout the country. The approved applicants were a total of ten federal public agencies, five state governments and 26 cities, twelve non-governmental organizations, three universities and one institution of technical education. Some pre-existing Telecenter initiatives also joined the *Telecentros.BR*, such as *Rede Telecentro*. The program also created the National Training Network for Digital Inclusion, led by one national, two state and five regional centers. These centers consisted of universities, civil society organizations and the Ministry of Planning, and they were responsible for offering the training courses to the fellows Inclusion Agent.

The city government of Vitória was one of the cities selected by *Telecentros.BR* and received the kits to deploy 13 Telecenters, including reviving the one from *Casa Brasil* in Itararé. Although the center in Itararé was known as *Casa Brasil*, it only worked as a Telecenter and did not offer any of the services originally

planned to be provided by *Casa Brasil* units. The Telecenters under the *Telcentros.BR* project have not been thoroughly explored in the literature; in fact, the studies available have analyzed the CTCs based on policies, official documents, data from ONID and interviews of managers in the federal agencies (see Alvarez & Peixoto, 2011; Costa, 2013; Mori, 2012). This dissertation expands the literature by adopting an ethnographic approach to the CTCs and highlighting the nuanced use of ICTs in Telecenters as well as in LAN houses.

1.4 LAN houses

The term *LAN* stands for local area network, and the name *LAN house* is used directly in Portuguese without translation to denote for-profit technology centers. The concept of LAN houses originated in South Korea in 1996, as “PC bangs.” It was first brought to Brazil in 1998 by the Brazilian-South Korean Sunami Chun. Chun was the director of Monkey, the first chain of LAN houses in Brazil, which had its first unit in São Paulo. In 2003, it had 50 operating units in 7 Brazilian states and one in Mexico (Pereira, 2007). At that time, broadband Internet in Brazilian homes was expensive, rare and low quality, which motivated the quick spread of the LAN houses in urban and rich neighborhoods. They became entertainment centers and places to socialize for teenagers from classes A and B who spent most of the time playing networked computer games. One game in particular helped the LAN houses become a phenomenon: “Counter-Strike.” The game was released as a free addition to “Half-Life,” and instead of placing players in the role of space marines fighting demons with plasma bazookas, the game was inspired by realistic battles between

terrorists and police. This realistic approach, coupled with the need for strategy and teamwork helped the game grow in popularity very quickly. As it was designed to be played by multiple simultaneous players, it was a good match for the LAN houses. Also, another reason for its popularity in Brazil was that players could choose Favela Maps, where one team would play as cops and the other would play as drug lords.

Monkey LAN houses gradually closed their doors and had its last unit ceasing operations in 2010. Over the years, LAN houses became a rarity in the more affluent areas and were shutting down due to two main reasons: users were able to afford Internet in their homes because broadband was becoming cheaper, and the Brazilian government, at federal and state levels, was passing several bills that attempted to keep young users away from such facilities. For example, RJ state bill 4.782/2006 prohibited LAN houses within 1 kilometer from any school and bill 3.437/2004 required every underage user to have a special authorization signed by their parents. Such bills were designed under the assumption that the users were ditching school and spending long and late hours in the LAN houses playing games. Such assumptions were reinforced by the complaints from affluent families and amplified by reports in the media. Based on my findings, described in Chapters 4, 5, and 6, it is hard to believe that those LAN house users were only playing games, taking that these centers are important social technical spaces that go beyond ICT use. Also, until 2010, LAN houses belonged to the category of “gambling houses” in the Brazilian legislation, this category included places such as bingo and slot machine establishments that were often related to tax evasion, thus contributing to the harmful rhetoric surrounding LAN houses (Sartorelli, 2010).

Around 2004, LAN houses gained great popularity in the poorest areas of Brazil, especially in the favelas – slums located in urban areas (Lemos & Martini, 2010). Since favela residents were not able to afford personal computers and telecommunication companies did not provide them with adequate Internet infrastructure, LAN houses became the communities' main gateway to the online world. According to CDI LAN (2011), 32 million low-income Brazilians are users of the 107,000 LAN houses scattered around the country. With their proliferation in the poor communities and favelas, the Brazilian government saw in the LAN house phenomenon a way to promote the digital and social inclusion of the marginalized. Politicians, who once perceived such facilities as “bad guys” in richer neighborhoods, are currently trying to revoke past bills, such as the aforementioned RJ 4.782/2006, in order to promote the spread of more LAN houses in poor areas. Therefore, the need for nuanced and situated understanding of the role of technology in order to promote realistic and effective policies. LAN houses, as described before, were perceived as the reason why children ditched schools, however, as I show in this dissertation, these CTCs were fundamental places for the favela residents' safety, education, and communication.

In the favelas, entrepreneurial locals see the LAN house as a business opportunity since Internet access is still an issue for the residents. LAN houses charge rates that vary between US\$1.00 to \$2.00 for each hour accessing the computer, Internet or playing console games. The customers are mostly youngsters who use the facility to socialize and play computer games such as Counter-Strike and FIFA (Lemos & Martini, 2010).

LAN houses are places where locals socialize; game players often yell at each other and Internet users walk around reading others' screens. The computers are arranged side by side without partitions between them, unlike *cybercafés* that are targeted for private and discreet Internet access rather than online gaming. They are also different from the Telecenters, which are places intended for silent, individual computer use without disturbing others. LAN houses have become the main place for updating and checking social networking sites, such as Facebook, playing games and socializing, and this has transformed these spaces into a hotbed of activity for youth and others (Pereira, 2007; Silva & Gushiken, 2011).

Horst (2011), who studied LAN houses in São Paulo, Brazil, observed that “this face-to-face socialization surrounding new media use, coupled with the sociotechnical support provided by many of the LAN house owners and workers, has led many to characterize the social and digital inclusion provided in these spaces as The LAN Revolution” (p. 446). The growing use of LAN houses sheds light on the debate regarding the role of the State and market in the dissemination of digital technologies. On the one hand, following the critical theories of communication (e.g., Gabler, 1999; Gonçalves, 2007), there are those who deny the LAN house as a digital inclusion space. They believe that only centers managed and maintained by the State, such as Telecenters, are effective because their goal is not to be profitable but to promote the technology appropriation and democratization. On the other hand, there are those who believe that, given the ineffectiveness of governments, LAN houses promote the true digital inclusion and community

wellness in Brazil since Telecenters are few in number and are tied to government policies rather than local needs (Carvalho, 2009; Pereira, 2007).

This debate demonstrates the important role that LAN houses play, especially in low-income communities, and although they face several issues that affect their business negatively in such communities - lack of proper infrastructure, curfew set by the drug cartel and inefficient public policies - they still remain vital to the community as the main gateway to entry for the marginalized in the digital world (Nemer, Gross, & True, 2013). LAN Houses serve important functions to the people such as providing a safe location from drug cartels, informal learning, social relationship maintenance and providing technological access. These socio-technological spaces have come to have a far greater meaning ascribed to them than the quantifiable advances often associated with technology, such as the number of people that are able to access ICTs through these CTCs. This dissertation sheds light on people's experiences in LAN houses with an attempt to broaden our view of different ways that technology and Internet is used, and perhaps thereby facilitate the development of more appropriate policies and technologies for this population.

1.5 Framework: Empowerment as Alleviating Sources of Unfreedom

Scholars have regularly demonstrated how Information and Communication Technologies for Development (ICT4D) projects have often failed to meet expectations related to human development objectives (Gomez & Pather, 2012; Marais, 2011; Sey & Fellows, 2009; Toyama, 2010). CTCs have been given particular scrutiny, as evidence of their impacts is often ambiguous (Sey & Fellows, 2009).

Unfortunately, there is no consensus about how technology could better be deployed to serve marginalized people in particular. Some researchers focus on sustainability, scalability and evaluation (e.g. Heeks, 2008; Marais, 2011) while maintaining a faith in the transformative power of ICT without necessarily treating the specific perspectives of marginalized people (e.g. Gomez & Pather, 2012; Heeks, 2008). Others deny technology as a source for transformation, instead insisting that it can only magnify existing structures; this indicates that marginalized people may indeed require separate attention and strategies (e.g. Kleine, 2013; Toyama, 2011; Van Dijk, 2005). Such lack of consensus suggests that the field is undergoing a reassessment of its own core assumptions about the nature and benefits of technology.

Gomez and Pather (2012) suggest provocatively that ICT4D research may be too narrowly focused on economic returns of technology, citing examples of the disenchantment that has resulted in the last decade from technology's failure to consistently deliver anticipated monetary benefit to the disadvantaged. They postulate that the problem may not be entirely one of project failure, but rather of our limited understanding of the value that technology provides. Sen (2001) acknowledges that economic growth plays an important, but not exclusive, role in development, and assessing "intangible" impacts also contributes to offering a base for a holistic understanding of human well-being. Among the different "intangible" impacts, Gomez and Pather (2012) enumerate "empowerment, self-esteem, and sense of self-worth, at the individual level, and social cohesion and strengthening of social fabric, at the collective level" (p. 10). Even though ICT4D scholars deal with

issues that are socially and technologically complex and draw from various disciplines to study them, it is rare to find practitioners and theorists who go beyond the deterministic and utilitarian approach of how ICTs can lead to socioeconomic development (Rangaswamy & Cutrell, 2012). Policymakers and key players in Brazil are among such practitioners who take a reductionist presumption that ICTs will drive the development of economic and social structures by providing access to job opportunities, enhanced education, political sphere and services that the marginalized would not have access to otherwise. Simple measures are usually used to influence public opinion so that lay people can relate to them. Policymakers also need to justify allocation of resources, which is easier to do when they can create quantifiable benchmarks (Barzilai-Nahon, 2006).

ICT4D is a field with a plurality of perspectives and worldviews that could tackle issues such as digital inequalities through multiple fronts, not just by proposing technological solutions. Unfortunately, scholars who are far away from the field tend to define issues and solutions in paternalistic terms. They tend to think solely about needs, and not what the poor themselves actually want and how they would incorporate ICTs into their lives (Heeks, 2008). Overall, research in technology is usually told from the vantage point of the Western world and tends to operate out of top-down, ethnocentric and technocentric approaches that contribute even more to the marginalization of those who already suffer from inequalities (Harding, 2011). Thus, bringing ethnography as an episteme into ICT4D should help uncover and foster non-Western and nonconventional modes of knowing, which may manifest the creativity embodied in the notion of “hybrid cultures” of

resistance, combining “traditional” and “modern” elements in new and promising ways (Escobar, 1995).

In Sen’s (2009) view, it is impossible to have a neutral concept of who and what is a “person,” without considering a normative or moral dimension that relates to key values such as nature of freedom, happiness or social well-being. Nonetheless, utilitarian theory, which has a strong relevance in economics, has by and large removed the moral aspect from consideration (Stillman & Denison, 2014). Excluding normative values and non-economic aspects of the quality of human life from any consideration of the theory of well-being is a severe conceptual mistake (Johnstone, 2007). Daniel Miller (2003) challenges utilitarian and economic models since they are operated by centers of power in order to manage information at scale as means to regulate colonial enterprise, and, operating through them, serve to reorganize the world in ways that make it suitable with such models. Sen (2009, p. 225) is also critical of the magnification on the “economic criteria of advancement, reflected in the mass of readily produced statistics” as the main focus of measuring human well-being. In order to develop a balanced approach to the problem of well-being, it is critical that we approach a theory of human capability that takes into consideration key factors of well-being such as health, civic participation, education, freedom from oppression, violence and absence of gender-based discrimination (Stillman & Denison, 2014).

According to Sen (2009), development is a process of expanding the strength of freedom in the individuals’ everyday lives. From a capabilities approach, “development of individuals and communities is about the ability to recognize and

access an opportunity, make a choice, and then allow this decision to make a life-enhancing difference” (Rangaswamy & Cutrell, 2012, p. 52). Sen suggests ontologically focusing on human well-being and methodologically focusing on capabilities. Such approach offers a way of thinking which focuses on the marginalized while recognizing their own agency. For the ICT4D literature, it suggests looking at ICTs as multipurpose technologies, which could empower marginalized individuals to attain development outcomes of their own choice (Kleine, 2010).

Finally, this dissertation analyzes ICTs as social artifacts and as tools that afford empowerment. It foresees empowerment as realizing human agency, which I define as the ability and freedom of people to mobilize themselves toward a quality of life they value and wish for. Thus, based on Sen’s theory, empowerment requires alleviating sources of unfreedom such as social deprivation, censorship, tyranny, poverty and lack of state investments. The goal of this dissertation is to enrich the understanding of human agency as freedom in the empowerment process and how the use of ICTs, especially in CTCs, can be a means to reaching that goal. Also, by expanding the understanding of the use of digital technologies in the favelas, this dissertation intends to shed light on the significant social and technical issues facing digital inequalities and Latin America. The outcomes from this research in the favelas of Vitória can likely inform practical and theoretical work on ICT4D in Brazil and elsewhere.

1.6 Looking Ahead

This dissertation is structured as follows:

Chapter 2 lays out the research design and methodology for this study. I describe the two phases of my fieldwork and how I applied the ethnographic methods in the favelas.

Chapter 3 focuses on the field where the ethnography took place. I analyze the historical, geographical and social context of Vitória and the favelas Bairro da Penha, Itararé, Gurigica and São Benedito. It pays particular attention to the legacies of social and racial stratification, wealth accumulation and how the city of Vitória was addressing local digital inequalities. I also tell the history of these favelas which has not been told in the literature.

Chapter 4 sheds light on how CTCs, Telecenters and LAN houses, in the favelas, contributed in alleviating the unfreedoms and promoting human agency of their users. I argue that CTCs go beyond the use of ICTs and provide to marginalized communities with a key sociotechnical space and place. I bring technical and social aspects, such as gender, drug cartel activities, and the implications of being poor, which affect the experiences of favela residents in the CTCs.

Chapter 5 revolves around the issues that favela residents experienced with physical digital technology, or infrastructure, in the CTCs. It highlights how their contexts – being poor and living in marginalized areas – contributed in shaping the unique and mundane ways they interacted with infrastructure. I bring several cases, from mobile phones to keyboards, to illustrate such experiences.

Chapter 6 focuses on the use of social media that was specific to the context of the favela residents. The key findings presented in the chapter relate specifically to how use of social media was routine in everyday life in order to support the chapter's main argument: the use of social media can afford a pathway to empowerment and human agency.

Chapter 7 provides a summary of this dissertation's main argument and provides two tables that link the ways that the use of ICTs in CTCs afforded empowerment and disempowerment to the informants. I also provide several policy and design recommendations aimed at alleviating digital inequalities. Finally, I conclude this dissertation with some final considerations.

2 Methodology

This dissertation is an ethnographic study of the use of technology in CTCs made by favela residents in Vitória. Ethnography is not only a rigorous methodology but also an *episteme*, as defined by Hakken (1999), it is a way of knowing, and hence it is well suited to documenting social and cultural practices. It provides a descriptive narrative of what happens in the field, as well as an analytic or a theoretical approach of the people studied. Ethnography gives an understanding of the relationship between power and thinking presented thoroughly through the principles of thick description (Carspecken, 2013). Thick description aims to not only explain human behavior, but also its context, such that the human behavior becomes meaningful to outsiders.

Due to the nature and context of where this ethnography took place – in marginalized favelas of Brazil – this dissertation appropriates the tone and ethical responsibility found in a specific group within ethnography, which is called critical ethnography (see Carspecken, 2013; N. K. Denzin, 2001; Gordon, Holland, & Lahelma, 2001; Madison, 2012). Critical ethnography is grounded in critical theories that assume that society is structured by class and status among others that maintain the oppression of marginalized groups. It has the ethical responsibility to address processes of unfairness or injustice, such as the ones lived by favela residents, and to uncover the hidden texts and experiences of the oppressed. Critical ethnography is conventional ethnography with a political purpose (Thomas, 1993),

it uses the same methods, such as interviews, observations, field notes, surveys, and focus groups, and can create opportunities for increased awareness through in-depth interviews with participants serving as an intervention in creating awareness and demand change (Gordon et al., 2001). Conducting ethnography through the lens of critical ethnography guided me to always put the favela residents at the center of the research and to posit that people themselves define what lives they value, which resulted in a plurality of views. Such approach allowed me to situate technology appropriation and use by the informants in their daily lives within rich socio-technical dynamics that played out in the favelas' CTCs. It also pushed me to conduct the research with a sense and commitment based on principles of human freedom and wellbeing and, hence, a compassion for the suffering of living beings.

Putting favela residents in the center and focusing on their experience in the CTCs fit well with the theoretical framework of this dissertation, described in Chapter 1, which avoids overly quantitative approaches since they risks treating people and cultures as abstract concepts, statistical figures (Escobar, 1995) and understands that the role played by ICTs in people's lives is complex and related to diverse aspects of human experience, some of which often go unnoticed when nuanced experiences are not explored or when the focus is only the economic significance of ICTs (Kleine, 2007). This dissertation was framed in a development paradigm that sought to go beyond economic growth and required an in-depth comprehension of the everyday life of the favela residents and CTC users. Thus, since one of the goals of this dissertation is to inform technology designers and

policymakers, I needed to understand the local policies and technology use in the context of the field.

In this chapter, I present in details how and when the ethnography was conducted in the favelas of Vitória. I layout the methods for data collection and analysis, and explain the choice of the case study. In the next section, I present my *positionality* in order to be transparent and explore the ways in which my involvement with this study influenced, informed, and acted upon this research. As suggested by Noblit et al. (2004) “critical ethnographers must explicitly consider how their own acts of studying and representing people and situations are acts of domination even as critical ethnographers reveal the same in what they study.” (p. 3). Hence, in every section of this chapter, there is a reflection upon my choices in order to explain and describe how the events came to look like that. In addition, I avoided calling the people that participated in this study as “my informants” or “my subjects,” and instead addressed them as “the informants” or “the subject.” This way, as suggested by Linda Tuhiwai Smith (2012), the researcher respects the informants as thinking individuals by not claiming ownership of their ways of knowing, their imagery, and things they create.

2.1 Reflexivity and Positionality: Telling the Untold Story

Since the beginning of growth on the edges of Brazilian cities, outsiders have perceived favelas as sites of violence, drug trafficking, where their residents are

favelados: uncivilized, poor, low educated and culturally sterile (Alves & Evanson, 2011).⁴ Unfortunately, as I was growing up in Vitória, I was also part of the large group of outsiders that believed that the city's main source of evil came from the favelas. Along with the strong classism in Vitória, the prejudice was heavily reinforced by media reports, in which favelas were mostly showing up on police blotters. For example, street crimes, such as pickpocketing and robbery, are most of the time committed by those who face poverty, and in order to hide from the police they run to marginalized areas, such as favelas. Sometimes they are from a favela, but sometimes they are not, but the main issue is that the rhetoric embedded in media reports and people's conversations, as far as my experience goes, generalizes everyone in favelas as criminals.

In essence, the environment I was immersed in did not have many nice things to say about favelas, whether it was a conversation with family or friends, news reports, soap operas or the government discourse. Despite all the bad reputation, there was something about favelas that would always get my attention, I remember watching documentaries about Brazilian soccer players, since they usually came from poor communities, just so I could see a less derogatory view of the favelas. My (private) school friends used to say that I had a *forbidden fruit syndrome* or a fetish with the unknown, to explain my fascination with favelas. Due to the environment we were in, it seemed to be easier for them to say that I had a

⁴ People that belong to places that are culturally sterile do not have belief system, knowledge, art, morals, law, custom and any other capabilities and habits.

fetish or obsession for favelas than to realize that these places also had value and deserved respect. One way that helped me grow beyond this was that I played volleyball for a club called Álvares Cabral, also in Vitória. The club prepared athletes for professional volleyball clubs in Brazil, and they drafted players from all over the state of Espírito Santo, regardless of their class status. Thus, I had the opportunity to play and become friends with people from favelas, who showed me their communities around. Having such personal contact with favelas made my interest grow bigger, I began to read more, engage in conversations with favela residents and participate in programs that could provide me with a fairer sense of the favelas. For example, during my college times studying Computer Science, I helped to develop two digital inclusion programs, in which I taught computer basics to several favela residents. Instead of coming with a top-down teaching approach, I took the programs as a way to learn about their life experiences as I was instructing them.

As I was getting more acquainted with the favelas throughout the years, I realized that something was wrong. There was another side of the story that most people outside the favelas were not giving the deserved attention. Favelas could still be a violent place, due to drug cartel activities, but their residents were not culturally sterile, or uncivilized. Quite the contrary, they were savvy and *fully humans*;⁵ there was as much to be learned from them as they could learn from those in other classes. My interest in the favelas and telling the “untold side of the story” stayed latent until I started my PhD. During my doctoral training, I learned the

⁵ See Freire, 1970/2000, p. 55.

methods and literature that afforded me to pursue this research and appropriately address this issue.

During the time of this study, I lived in my residence, where I was raised. It was proximate to the research site, which was just 20 minutes walking or 1 mile away from Itararé. It was located in an upper class neighborhood, in spite of the proximity to the favela, I was unfamiliar with the area of study. However, this created a useful distance that, when combined with the empathy of my approach, allowed me to see beyond what would be considered mundane or uninteresting at the site. Whilst I studied in private schools in Brazil that followed western educational models, I was still surrounded and influenced by the local practices and situated knowledge, which goes beyond Western standards such as playing *pelada* (a specific Brazilian kind of pickup soccer) in the streets, going to rehearsals of Samba schools, and participating in *Capoeira* circles (a Brazilian martial art that combines elements of dance, acrobatics, and music, which was developed by Africans in Brazil). I was aware of the differences of power and status that my background would bring: male and upper class. Collins (1986) refers to this approach as “the outsider within” positioning of research; sometimes when in the field or when sitting in on research meeting it could feel as inside-out or outside-in research. However, in order to alleviate the barriers that such differences may have caused, I approached the informants as what Rubin and Rubin (2011) referred to as “conversational partners:” listened to the informants with an open heart and mind, and kind reception to what they had expressed and told me. My motivation was not to judge them, but rather to understand them. Such attitude is perceived as being

fully engaged with the art of listening sympathetically, in which the researcher is actively thinking about what is being expressed and deeply engaged in mind. This dynamic avoided the rigid back and forth replay of question-answer-question that ethnographers conventionally tend to conduct (Madison, 2012).

Being inside the favela, at first, seemed to be an issue for different groups of people. My family was worried and not pleased with the timing of my fieldwork (due to the intense drug war that was happening then), some of my friends thought I was insane for risking my life “to teach poor people how to use computers,” and some informants did not like another person doing “research” in there. As I observed, the word “research” stirred up silence, conjured up bad memories and caused distrust. Favela residents mentioned being approached by previous researchers as “guinea pigs,” which implicated an excess of classism, rude questions, and condescending power. The research, instead of benefitting them, reported outcomes, which classified and represented their life experiences according to the researcher’s perspective; The favela residents did not identify with how their “stories” were being told and felt, once more, exploited. Smith (2012) claims that many researchers may see the benefits of their particular research projects as serving mankind, but they become oblivious to their practices and harm caused to indigenous communities by framing outcomes from the vantage point of the West.

As suggested by Smith (2012), critical and post-colonial researchers have the ethical obligation to represent marginalized communities according to their terms, respecting their history, values and beliefs. Representation has consequences: “how

people are represented is how they are treated” (Hall, 1997). Hence, along with informing designers and policymakers, it is my responsibility to “resist domestication” by using the resources, skills, and privileges available to make accessible – to penetrate the borders and break through the confines in defense of – the voices and provide a fair and empowering account of favela residents, whose stories are retrained and out of reach (Madison, 2012). Telling the “untold side of story” through the lenses of the marginalized, who have been suffering the consequences of marginalization and exploitation, would promote their recognition of human beings who deserve respect and recognition for their values, and beliefs.

2.2 Choice of Case Study

Favelas, as described in Chapter 1, are sites where residents do not have access to proper health care, education, and infrastructure, however, as I show in this dissertation, they are technological ecologies, even though the availability of ICTs is not as steady and constant as in wealthier areas. The social and economic situation experienced by favela residents highly influence the ways they use ICTs, making favelas an unique case for this dissertation, which focuses on the intersection of social and digital inequality, and technology use. I bring my observations of the case of technology use in favela’s CTCs in order to challenge and construct upon the theoretical framework described in Chapter 1. According to Burawoy (1991), the extended case method (case study) is “the most appropriate way of using participant observation to (re)construct theories of advanced capitalism” (p. 271).

According to the World Bank, in 2012, Brazil was the 7th wealthiest economy in the world and 1st in Latin America based on its gross domestic product (GDP). However, despite its impressive GDP of US\$2.253 trillion, Brazil was a nation known by its high social and digital inequalities (IBGE, 2013). Brazil was the 63rd country in Internet access: only 33% of its population had access to the Internet at home, just below the world's average of 33.49% and countries such as Uruguay, Chile, Russia, Serbia and Bahrain (Neri, 2012). While 75% of the upper social classes were connected to the Internet, only 20% of the lower classes had access to the online world. Also, approximately 31.45% of Brazilians did not know how to access the Internet (IBGE, 2010). Since 2010, the country was attempting to alleviate the consequences of such inequalities by promoting the spread of CTCs, such as LAN houses and Telecenters, in marginalized areas like favelas. These statistics tell us that residents in marginalized areas do use ICTs, although not in abundance, and the favelas help us see the consequences of the appropriation of ICTs on the daily lives of people because it is used in contextualized and situated ways aimed to empower the local residents. Therefore, favelas in Brazil were chosen as a case study for research into the effects of digitalization in an environment accustomed to social and digital inequalities.

A local case study in Vitória was selected as part of the overall methodology in order to research a specific context (Delgado & Gutiérrez, 1995) and as a useful way to approach a multi faceted phenomenon (Lamnek, 1988). In Brazil, almost every urban center, or "*cidade grande*," has several favelas as part of the city. However, Rio de Janeiro (RJ) and São Paulo (SP) are the cities that receive most of

the attention in terms of academic research, NGO social programs and governmental assistance. The overemphasis on RJ and SP pushes the marginalized, in cities that are not usually associated with favelas, like Vitória, deeper into the shadows of the peripheries, muting their struggles and needs. Hence, focusing on Vitória helps to highlighting and addressing the issues of understudied areas, as well as amplifying the voices of its favela residents.

In focusing on cities, such as Vitoria, outside those traditionally considered part of the global ambit, such as New Delhi, I wish to draw attention to the fact that these in-between regions—regions such as China’s Pearl River delta, or mid-tier Indian cities such as Kanpur and Ludhiana—are where most of the world’s population is expected to live in the coming years.⁶ Looking at how life is lived in these areas—and the forms of work and technological assemblage that characterize the production of everyday life in these areas—will allow us some frames through which to understand both the cities of the future and the means by which conditions of increasing precarity and uncertainty are handled in the present.

Also, I was born and raised in Vitória, which put me ahead in exploring the field since I was already familiar with the local culture, social practices, and political system. I was also acquainted with key people in the political sphere and city government, which made my access to people responsible for local digital inclusion policies an easier process. Hence the time spent in conducting the fieldwork, focused mostly on knowing the neighboring favelas of Gurigica, São Benedito, Itararé and

⁶ Davis, Mike. *Planet of Slums*, p.9. New York: Verso, 2006.

Bairro da Penha. Another factor that contributed to choosing Vitória was that the City government had a network of 20 Telecenters in operation in the city's marginalized areas, including 2 in the area where the favelas were located. The favelas were also served by other CTCs, such as LAN houses, which made them a good fit for this research. Vitória and the neighboring favelas are described in details in Chapter 3.

2.3 Fieldwork Phases

This research took place over 8 months in two phases: phase 1 between June and July of 2012, and phase 2 between April and October of 2013. In phase 1, I conducted an ethnographic exploratory study of the field with the intent of understanding the problem space of digital inequalities and inclusion in Vitória and Brazil. According to Shields (2013), exploratory studies are conducted for a problem in a preliminary stage that has not been clearly defined. It often occurs before the researcher knows enough to make conceptual distinctions or posit an explanatory relationship. It "seeks to find out how people get along in the setting under question, what meanings they give to their actions, and what issues concern them. The goal is to learn 'what is going on here?' and to investigate social phenomena without explicit expectations." (Russell K. Schutt, "Investigating the Social World," 5th ed.). Thus, it helped me to gain access to the favelas, get familiar with the social practices there, analyze and make the selection of CTCs, start conversations with LAN house owners, Telecenter employees and politicians. In phase 1, I studied 3 LAN houses (Life Games e LAN house, in Bairro da Penha, Guetto LAN house in Gurigica, Gyga

Point LAN house, in Itararé) and 2 Telecenters (Itararé and São Benedito) in the favelas of Vitória, and 1 Telecenter at Parque Moscoso.

The preliminary findings from phase 1 helped designing phase 2 by shaping the research questions of this dissertation, determining the methods for data collection, and defining the specific field to be studied. During phase 1, I was able to gain access to the neighboring favelas – which is something hard to do since drug cartels usually disapprove outsiders in their territory. The drug cartel did not show any opposition to my presence in the favelas, but they did not allow me to carry my camera and voice recorder, which I explain later in this chapter. I also did not ask any drug cartel member permission to enter the favelas, I only discussed this issue with community leaders who informed I would not have a problem, as mentioned by Pedrinho, 37 years old, Gurigica’s community leader:

“[you] will be fine. Just do what you need to do. Don’t try to buy drugs or interview them, and they will not mess with you. I will spread the word in the neighborhood that you are here doing research that will help us.”

The access to these specific favelas was crucial to this research because they fit well with what I was looking for: marginalized areas with Telecenters and LAN houses. Not every favela or poor area in Vitória counts on these CTCs.

In phase 2, I focused on the ethnographic study of the marginalized areas, which were the neighboring favelas of Gurigica, São Benedito, Itararé and Bairro da Penha. Hence, the Telecenter at Parque Moscoso, which was located in downtown Vitória, was not considered for this phase. All of the respondents from phase 1 were

revisited in phase 2, except for the Parque Moscoso's Inclusion Agent and the owner of Gyga Point LAN house, who decided to close down the CTC so he could focus on his Information System bachelor's degree; the other CTCs remained in constant operation throughout the period of this study. During the research no new policies or laws related to digital inclusion and the CTCs were enacted. The main technological differences I observed between phase 1 and 2 was the increased adoption of Facebook and smartphones in phase 2. In phase 1, based on my observations and conversations with CTC users, no one had a Facebook account:

"Face what? I don't know what you are talking about, I use Orkut." (Gabriela, 29 years old)

Differently than Facebook, the informants knew about smartphones but could not afford to purchase them, and they did not feel motivated to buy one since cell phone coverage in the favelas were not good, as mentioned by one of the residents:

"It [smartphone] is too expensive. Why would I spend all of I savings on it? I won't be able to use it anyways... can't get any [signal] bars here [São Benedito]." (Paulo, 35 years old)

Although smartphones were present in the CTCs during phase 2, the residents still faced the same issues with infrastructure and cell phone coverage, which I discuss in details in Chapter 5.

2.4 Data Collection

In this research, data counted as any representation of the experiences of favela residents in CTCs: from the struggle of living in violent and marginalized favelas to the residents' use of social media. Data was based on my own notes and logs, as well as surveys, photographs, public records, and government documents – In the following, I detail each method of data collection.

Collecting data was not an easy task for me in the favelas. Walking around with a notebook and a pen was something that favela residents were not used to see in their everyday life; in fact, the only ones that asked questions about peoples' lives in the favelas were either cops or members of the drug cartel, and people feared both groups since they did not trust either. Hence, in order to gain their trust and get their insights I had to first start *hanging out* every day in the favelas without any tools of data collection, engage in chitchats and small talks, and most importantly, exchange personal information and experiences, because this way the residents felt that I was not using them as “information repositories” but rather, I cared about them as human beings and about their issues. In addition, as an ethnographer, I had the responsibility to explain my presence in the informants' lives (Madison, 2012), hence before any first contact, I presented myself, explained what I was doing there and why, the goals of the study and potential benefits and risks.

The favela residents appreciated my openness and slowly became used to my presence there, as mentioned by Gabriel, 17 years old:

“You are like one of us because you care about our situation... actually, your attitude is better than the attitude of some here because you care and you try to help. You will always be welcome here. You are easy to talk to... you listen to everyone and makes us feel good. This is a rare thing to find in people nowadays.”

After the 3 first weeks of fieldwork (phase 2), I thought it was appropriate to bring my notebook and pen to the field since people were aware of whom I was and comfortable with my research. Although I was not carrying any documentation tools during the first 3 weeks, I was still writing a summary of my days in the favelas when I returned home at the end of the day.

Once I started collecting data in the field by visiting the CTCs, I used a wide variety of methods, which is detailed in the following, in order to assure rigor and trustworthiness in the data gathered. Thus, this approach allowed for a systematic analysis, by triangulation of the results from the different research methods applied. Triangulation in this research involved bringing my notes, interviews, photographs, and documents together to produce understanding and to corroborate different set of findings, presented in Chapters 3, 4, 5 and 6. It also allowed for possible thick descriptions, enriched data, and the examination of a phenomenon from more than one perspective (N. Denzin & Lincoln, 2011). Since the beginning, the richness of the data collected could have taken an uncountable number of different leads and hence

had to be continually balanced with the notion of “optimal ignorance” (Chambers, 1993).⁷

Most of my interactions with the informants in the CTCs happened in front of a computer. As a way to gain their trust and return the favor – of sharing their life experiences with me, I instructed them on how to use the computer, smartphones Internet, and other applications. However, sharing information was not a condition for me to help them. I approached them by bringing examples and cases related to their context. As suggested by Freire (2000), people are more motivated to learn when they study subjects that relate to their everyday life experiences.

2.4.1 Primary Data

The primary data was the information collected specifically for the purpose of this dissertation. The ethnographic methods used were: participant observation, semi-structured interviews, and focus groups in the CTCs.

2.4.1.1 Participant Observation

Participant observation took place mainly inside the CTCs, but I also conducted the method in places outside the centers, such as streets, public places, shops, Inclusion Agent’s monthly meetings, and homes of the informants – all located inside the favelas. Participant observation in the sense of an in-depth ethnographic approach (Geertz, 1973) for me meant playing computer games or

⁷ According to Chambers (1993), optimal ignorance means only getting the information that is really needed.

PlayStation with the teenagers, drinking a *cafézinho* (small coffee) with an informant, eating *bolo de fubá* (cornmeal cake) at a family's house, and helping the CTC users with their questions related to technology use and the Internet. During these interactions I observed how the intersections of social and digital inequalities played out; for example, the lack of formal education and illiteracy affected the engagement of several favela residents with ICTs in CTCs; they wanted to be part of Facebook but were unmotivated to struggle with their literacy capacity, as mentioned by Armando, 19 years old, who went to Life Games e LAN house to print utility bills:

“All of my friends are on Face [Facebook], it's all they talk about. I wish I knew how to get on there. It's not easy for me to just sit on the computer and get on Face. It takes ages for me to read something on the screen and type something on this crazy thing [keyboard]... I also have a short lunch break and can't stay here long. I'm poor and I'm the only provider in the house, so I have to work all day long.”

In Chapter 6, I describe with more details how illiterate users navigated on the Web, especially on Facebook.

During both phases of the study, I visited the neighboring favelas 5 to 6 days a week, basing my schedule around the specific centers of my research: Telecenters that did not open during the weekends and the LAN Houses that were closed on Sundays. I visited two centers per day, and then changed CTCs in the following week. This weekly CTCs swap happened until the end of the fieldwork; this way I

optimized the time in each CTC, which allowed me to see, for example, the same informants in different CTCs, and informants using CTCs for different purposes in different times of the day:

“When I have to do something quickly, I come here [Ghetto LAN house] because is right next to my house... specially in the mornings, because I have to return home and fix lunch for my children. But in the afternoons, when my children are at school and I have more free time, I go to the Telecenter.” (Laila, 29 years old)

During participation observation I wrote down my observations in my notebook, and at the end of the day, I typed my considerations and reflections on my personal laptop. As Flick (2006) proposes, field notes and reflections can be perceived as memos in the sense of grounded theory; they gave me an idea of emerging findings and codes as I was conducting my fieldwork, such as Facebook use and struggle when using the keyboard, which guided my investigation in these specific emerging findings / codes.

2.4.1.2 Interviews

Interviewing is a hallmark experience of ethnography. Ethnographic interviews open realms of meaning that allows the researcher to see interviewees not as “an object” but “as a subject with agency, history, and his or her own idiosyncratic command of a story” (Madison, 2012, p. 28). Madison proposes three ways of ethnographic interview: topical review, personal narrative and oral history,

which were all employed in this study. Topical interviewing was a way to prompt the interviewee's experiences and critique about the CTCs, personal narrative granted the interviewees the opportunity to express their views and impressions on the dynamics I observed in the CTCs, and oral history helped me understanding the history of the favelas, which is usually oppressed and left untold in history books and archives. Oral history performances do not work as objective evidence, nor are they solely fable history. Instead, they provide one moment of history and how that moment is remembered through a particular subjectivity. These three ways of interviewing complemented my comprehension of the specific dynamics that were observed in the CTC and favelas, allowing me to document such dynamics in a more reflective way from the perspectives of the interviewees. The interviews were conducted with three different groups.

The main group of interviewees (group 1) was the CTC users; 14 in-depth and semi-structured and 9 follow-up interviews were conducted in each center, with a total of 56 users. I did not follow a systematic sampling method, however I attempted to keep the same number of interviewees in each center, which were frequent users of the CTCs, and balance of gender. The selected users visited the CTCs at least twice a week, 30 were female and 26 male, and their age varied from 14 to 60 years old. The interviews took place at the CTCs and were conducted during the first two months of phase 2 with different users. The follow-up interviews took place in the last month of the same phase; follow-up interviews allowed discussions of the ways that their life situations and views changed over the months.

The secondary group comprised of those who watched over the CTCs and helped the users: they were 3 Telecenter Inclusion Agents (1 from São Benedito, male and 29 years old, and 2 from Itararé, 1 male and 23 years old from phase 1, and 1 female and 24 years old from phase 2; there was a change of Agents in between the phases), and 3 LAN house owners: the owner of Life Games e LAN house, who was male and 38 years old, the owner of Guetto LAN house, female and 27, and the owner of Gyga Point LAN house, male and 26.⁸ The Inclusion Agents and LAN house owners were all residents of the favelas.

The third group was comprised of 4 bureaucrats and Telecenter manager: The sub-secretary of labor and income,⁹ who was male and 42 years old, the Telecenter manager, who worked for the City of Vitória but inside the Telecenter of Itararé, she was 38 years old, and two CDI managers, who were both females and 35 and 37 years old. The Telecenter manager was the only one that worked inside the favelas, and none of the members of this group were residents of the slums.

The interviews lasted between 35 and 60 minutes per interview, they were conducted in Portuguese and recorded. Before interviewing the informants, I handed over a written consent, which explained what was the interview for, how the information provided by them were going to be used, and their right to refuse to be interviewed. I read the consent with each informant and made myself available

⁸ The owner of Gyga Point LAN house participated in phase 1 only.

⁹ The Secretariat of Labor and Income was the division within the City of Vitória that was responsible to manage and provide the budget to the Telecenters.

for any questions. When the informants agreed to be interviewed, we both signed the written consent. For illiterate informants, I read the consent to them and they provided a verbal consent, which was audio recorded. For underage informants, I followed the same process and also got the consent from their parents or legal guardians. The informants matched the Institutional Review Board's (IRB) categories of "marginalized populations" and "vulnerable populations," hence, in order to protect their anonymity and to avoid exposing the informants to risk, I changed their names to common Brazilian names, and provided minimal personal information, such as their gender and age.¹⁰ None of the informants approached refused or were reluctant to participate in the interviews.

It is important to note that informal and small conversations were happening with CTC users most of the time during the participant observation. These conversations were an efficient way to quickly crosscheck information gathered during the interviews and to keep me engaged with the informants. The informants from group 2 and 3 were interviewed once in the first month of phase 1, and one follow-up interview was conducted with each one during the first month of phase 2. While the informants from group 1 were interviewed just on phase 2. In addition, I was in constant interaction with the Telecenter manager, Inclusion Agents, and LAN house owners, thus I did not need to carry more formal interviews with them since I was asking questions and clarifications on the spot during our conversations.

¹⁰ This research was IRB approved and has the protocol number IRB-IUB 1304011173. The IRB documents and informed consents are described in the Appendices.

2.4.1.2.1 Audio Recording

The interviews were audio recorded and every interviewee was offered confidentiality and provided informed consent. The interviews in phase 1 were recorded using my personal phone, Nokia E51, which did not perform the task well. The recordings were faulty and breaking up a few times, which required extra time and effort to transcribe them. For this reason, I purchased a voice recorder for phase 2 of this study. In phase 2, the first 21 interviews were conducted with CTC users and recorded using a Tascam DR-05 audio-recorder; with the remaining interviews in the favelas I used the Google Glass. I changed recording devices in response to demands from members of the drug cartel who were uncomfortable with the Tascam DR-05's resemblance to a Taser, and did not want the device in their territory, asking me to "put the audio-recorder away." The Google Glass, however, did not seem to be a problem to the drug cartel members because they did not approach me anymore regarding taking photos, and the device seemed to be unknown, not only to them but to every informant, as mentioned by Renato, 19 years old:

"What are you wearing? Did you hurt your eye? [...] so you need this special lens?"

In Chapter 3, I describe in much detail how the drug cartels were part of the favelas. I gathered information about the drug cartel activities, such as shootouts and how they watched the favela residents, from the conversations I had with the informants and from my own observations while I was in the favelas. I did not ask the

informants about cartel members' detailed and personal information because I was afraid to put them in danger. Also, when a drug cartel member approached me I kept our conversations to a minimum and just followed their orders.

The popular press and some scholars have raised serious concerns about the Google Glass for being “too invasive” in our day-to-day life (Klepik, 2013). In the USA, the use of the device has been banned in casinos, movie theaters and while driving. Some Google Glass users have even been labeled as *Glassholes* for their creepy or rude use of the device (Schuster, 2014).¹¹ However, in my case, I did not use the device in a way that would make the people around me uncomfortable. The times I was wearing it, I made sure to explain everyone what the Glass was and what I was doing with it. The informants whom I interviewed using the Google Glass actually appreciated me wearing the device. Those who experienced both devices, Glass and Tascam, in their interviews and follow-up interviews, preferred to be interviewed with the Google Glass since the interviewee was constantly noticing the recording tool, as mentioned by Geraldo, 39 years old:

“I can see this GOGLE thing [Google Glass] on your face, all the time and I know you are recording me. I remember the first time you interviewed me with that weird recorder [Tascam DR-05], you left it on the table and during our conversation, I forgot it was there recording us.”

¹¹ *Glasshole* is term used in the American popular press to define someone who uses the Google Glass in impolite ways. This term was not used in the favelas nor in Brazil.

Before the interviews, the recording tool, either Glass or Tascam, was presented and demonstrated to the interviewees so they could have a fair understanding of the tools and their functionalities. As I described before, they did not find the Glass invasive since, before using it, I would inform everyone in the room what I was doing with it; in other words, I avoided being a “*Glasshole*.”

2.4.1.3 Focus Groups

During phase 2 of the fieldwork, 2 focus groups were conducted with CTC users to put before them some preliminary findings and to discuss their experience with technology. The focus groups took place in the last month of the fieldwork and were hosted in the Telecenter of Itararé and Life Games e LAN House. 4 people, 2 males and 2 females, formed each group and they were asked reflexive questions as suggested by Seidman (2013). This approach was intended to promote a friendly conversation based on their opinions and experiences on how technology affected their lives. I moderated each meeting, which lasted about 60 minutes, and recorded the audio. The meetings were conducted during lunchtime, since it was the only free time the participants could find. As an incentive, I brought food to be served during the meeting and gave each participant one voucher worth 1 hour of computer or video game use in the centers. I had agreed with the Telecenter Manager and Inclusion Agent that the voucher would allow the participants to use a computer for 2 hours, instead of the usual free 1-hour access, and for the LAN houses I bought 1-hour access for each participant, which was worth R\$4,00 (\$2.00) each hour.

In the focus groups, I reserved the first 20 minutes to ask the participants questions that I did not ask the informants during the conversations and interviews: *“What could be improved in the CTC?”; “What would you do if the CTC closed down?”; “How does the CTC help you and the community?”*. In the remaining 40 minutes I conducted a discussion about the computer keyboard, which I discuss in details in Chapter 5. I selected this topic because I observed that CTC users were struggling with the QWERTY keyboard and they found it frustrating and upsetting, as mentioned by Rosana, 47 years old.

“I’m trying to learn how to use this thing [computer] but it doesn’t make sense, I waste so much time to write [type] something because I can’t find the right letters [keys]. It gets in the way of learning this thing [computer], I feel angry and unmotivated. But that’s OK because when I find the damn letter [key] I don’t push it, I punch it!”

The focus group allowed me to deeply understand their complaints and ideas regarding the keyboard. During the meetings, I observed that users were discouraged to make improvements not because of lack of will, but lack of technological expertise and of the rhetoric behind the “untouchable perfect western” technology, which did not allow them to deconstruct the “black box” - keyboard. When I asked about how they would improve the keyboard, answers reflected this sense of powerlessness and voicelessness:

“We can’t change this keyboard”, “it came like this, there’s nothing we can do”, “we are not capable or have the power to change this.” (Lourdes, 31 years old)

After I explained the possibilities of a potential change, we engaged in an activity in which we tried to design an alternative keyboard that would be easier for them to use. This meant drawing the alternative keyboard on a piece of paper, and discussing changes. They proposed a keyboard in alphabetical order and numbers following the telephone dial pad.

2.4.1.4 Field Notes

I took handwritten field notes in both phases of the fieldwork. Lofland and Lofland (1984) highlight the importance of field notes since they “allow[s] you to recall the extra-ordinary complex range of stimuli with which you have been bombarded” (p. 46). The notes were mostly information about participant observations, focus groups, reflections of the field, questions for clarifications, preliminary analysis, drawings, and sporadic conversations. During the interviews I also took supplementing notes related to the informants’ reactions to questions or comments, body communication, or any event perceived as relevant that could not be documented by the audio recorder or camera. Although my communication with the informants was in Portuguese, my field notes were not all in the same language. As I was pursuing my PhD in Indiana, USA, and was used to writing, thinking and using the academic terms in English, my notes were in *Portuglish* – an unsystematic mixture of Portuguese with English (Casanova, 2012).¹² *Portuglish* provided me

¹² *Portuglish* is spoken in Portuguese and Brazilian communities in California, in Hawaii and in the region between Fall River and New Bedford in Southeastern Massachusetts (Casanova, 2012).

with a convenient and faster way to write down my notes since I had two languages “at my disposal” and could pick the term that would describe best an event.

2.4.2 Secondary Data

Secondary data were collected from various sources as a way to supplement primary data. The sources were: Facebook, survey, photographs, and government documents.

2.4.2.1 Facebook

At first, I was not planning to use Facebook as a way to interact with the informants, thus I did not use it in phase 1. Facebook was used to strengthen my relationship with the informants and to gain their trust by becoming their friends on the SNS. My Facebook profile was used mostly to give me an online presence and connection with the informants. I also used Facebook to check if the informants were using the SNS the same way they told me during the interviews. My interaction with- and observation of the informants on the SNS was very short, it was about 45 minutes a day. This was because they mostly used the chat function on Facebook, which is private, and I could not see what was going on through my account – I discuss this behavior in details in Chapter 6. Hence, the amount of data extracted from the SNS itself was small, if compared to the other sources. I preferred to stand behind them and observe their use of the SNS. In phase 2, during my interactions with the users in the CTCs, they asked for my last name so they could friend me on

Facebook. Once I questioned them *“What if I don’t have a Facebook account?”* their reaction was of disbelief and disapproval:

“Are you crazy? I don’t believe you! You should get a Face [Facebook] so I can give you a ‘salve!’” (Mariana, 14 years old)

Amid phase 2, the social networking site (SNS) became an inevitable tool not only to provide a channel to interact with the informants, but also to create trust and stronger ties.

“Nowadays you have to have a Face to connect to people on and offline. No one asks for your phone number anymore, they all want to know if you have a Face” (Jose, 16 years old)

According to Friend (2013) becoming friends with informants on Facebook enhances the ethnographer’s ability to build a stronger network of participants and gain their trust. Hence, I created a new Facebook account exclusively for this study and became “friends” with the CTCs’ users. I did not use my original Facebook account because most of my posts were in English, and I did not want the informants to feel intimidated and not post on my timeline since they did not know the language. I was also afraid that my original Facebook account would create pre-judgments and barriers based on the differences of our (the informants’ and mine) social status. I wanted them to feel comfortable and free to post their usual content on my timeline, thus I could have an authentic sense of their behavior online. During my daily 45 minutes on Facebook, I posted messages such as *“Have a good morning /*

afternoon everyone", uploaded photos of CTC users and I on my timeline, as well as of the favelas. I attempted to show to my *friends* on Facebook my appreciation of being there, of how much I enjoyed hanging out with them on CTCs, as well as in the streets of the favelas.

Facebook also made the process of leaving the field smoother, since I was able to keep a connection with the informants. Ethnographers usually have a hard time "getting out" due to reasons of attachment to the informants and not being sure if they had the necessary data (Iversen, 2009). The SNS provided a channel to ask questions or collect data remotely, since I could reach the informants on Facebook. However, that was not necessary, and the data collected from Facebook for this study took place just in phase 2. In addition, Facebook was a useful channel to keep the informants aware of the progress of this research, its accomplishments and plans. As an ethnographer, it is my responsibility to keep the informants as informed as possible about the study (Madison, 2012).

2.4.2.2 Survey

Surveys are perceived as a good method to gather data and have an initial and general sense of the field (Sieber, 1973), for these reasons, in phase 1, I attempted to collect data by surveying some Telecenter users. My aim was to gain a general idea of their experiences and use of technology. However, it was a complete failure due to my inability to communicate effectively with them. When I asked them "*Do you use any social networking site?*" or "*Do you have a notebook [laptop] at home?*" they looked at me as if I was speaking a difference language, which in a

sense I was. My lack of knowledge of their customs, slangs, terms and communication patterns, did not allow me to engage in quick chats or perform activities that did not involve deep conversations, such as surveys. Madison (2012) suggests that methods such as surveys should be conducted only when the ethnographer is already immersed in the field, has a deep understanding of the informants' customs, and does not have communication barriers with the informants.

Thus, three months into phase 2 and after I learned the local communication patterns and terms, I designed a new survey that was conducted by the Telecenter Inclusion Agents and me; the new survey had a better fit in the context of the favelas, which avoided misunderstandings with its questions and goals. The questions from phase 1 were adapted to, for example, *“Do you have a Face [Facebook]?”* and *“Do you have a note [from notebook which means laptop]?”*. The survey was designed on *Google Drive*, and none of the Telecenter users refused to do the survey. A total of 108 users participated, and as a thank you gesture, we gave the respondents an “extra 30-minute voucher” to be added to their free 1-hour use of the computers, which was authorized by the Telecenter manager.

2.4.2.3 Photographs

Photographs also supplemented the interviews and field notes. During phase 2, I documented the CTCs, informants' use of ICTs, such as computers, mobile phones, tablets and video games. I also photographed public places in the favelas such as streets, *little squares*, farmers market, and soccer fields. The parallel use of

ethnography and photography in poverty research provides a different option that allows ethnographers to consider the way in which perceptions, motives, and behaviors relate to each other and to the social structure in which poor people live (Hernández, 2009).

I took the first photographs using my digital camera, a simple “point and shoot” Canon 20D, and then changed to the Google Glass, due to the same reason I had to swap audio recorders. During phase 2, drug cartel members approached me twice and questioned why I was taking photos of *their* territory. They demanded that I deleted the photos with the threat of taking it away from me. The Google Glass came in handy when taking photos in public places since I could take them with a wink while walking. It still called the attention of some people who came and asked me: “*Is that thing [Google Glass] helping you to see better?*” or “*Are you half blind*”, which gave me the opportunity to explain the gadget to them. Nevertheless, the Google Glass was more discreet than the digital camera, which it did not require me to stop, point and shoot. After the device swap, cartel members did not approach me anymore, as I described before, because they could not tell that I was taking photos. I did not wear the Google Glass at all times during the fieldwork, only when I was interviewing or wanted to take a photo. It is important to note that when taking photos of people with the Glass, I approached them before and asked for their consent, which I show in the scene below in the Telecenter of Itararé:

Me: “Hey guys, do you mind if I take a photo of the [computer] room?”

Paula: “Not at all. Where’s your camera?”

Me: "I'm going to take the photo with my Google Glass. This is it! Pretty cool, right?"

Gabriel: "Can you take a photo with that?"

Me: "Yes. Can I do it?"

Gabriel: "Of course... can I see the photo later? Can I see it on this thing [Google Glass]?"

Me: "Sure."

The Google Glass has received a lot of press, much of it negative on the issue of privacy and invasiveness (Hong, 2013). However in this study, the wearable technology worked in favor of the informants and me, since it was discreet, when taking photos, and created awareness, when it was recording the interviews. I understood the affordances of Glass and chose to use it responsibly, by explaining how it worked and when it was used to collect data. Google Glass may still get negative press, but, as Hong (2013) claim, *"we all lack experience with how we might use wearable computers, and so it is very likely that most of our expectations will be off the mark"*, hence it is too early to make predictions of its use because our expectations will likely to change over time, as we learn to adapt to the technology and its affordances, and vice-versa.

2.4.2.4 Government Documents

Throughout this research, relevant government publications, laws, policies, decrees and bills were collected and reviewed. The documents did not go through a systematic analysis, but their content was used in order to understand the ways that Brazil and the city of Vitória were approaching digital inequalities. In addition, they were analyzed so their discrepancies and disconnects with what was happening in the field could be used to propose policy improvements.

The documents collected were aimed at promoting the availability of physical technologies, such as computers, telecommunication infrastructure, like the Internet, Telecenters and LAN houses. The documents gathered were: *12.737/2012, PLC 35/2012, PLC 28/2011, Decreto N^o 7.175, de 12 de maio de 2010, Decreto N^o 6.948, de 25 de agosto de 2009, Decreto N^o 6.424, de 4 de abril de 2008, Portaria N^o 13, de 1^o de outubro de 2012, Portaria N^o 16, de 1^o de novembro de 2012, Portaria n^o 520, de 27 de dezembro de 2012, Portaria N^o 13, de 1^o de fevereiro de 2013, PL No. 4.361, de 2004, LEI 8.248/1991, LEI 8.666/1993, LEI 9998/2000, LEI 11.012/2004, LEI 10.973/2004, LEI 11.196/2005, LEI 12.249/2010, LEI 3.437/2004, and LEI 4.782/2006, LEI 6,991/2009.* They were available at online portals, such as: <http://www4.planalto.gov.br/legislacao>, for federal documents, and <http://sistemas.vitoria.es.gov.br/webleis/>, for city documents. These two online portals organized and categorized the documents based on their content, such as technology, which facilitated my search. I also used the search engine available on these websites in order to find documents that were not in the category of

technology, the the keywords searched were: “*tecnologia*,” “*mídia*,” and “*inclusão digital*.”

2.5 Data Analysis

In this section I describe the procedures by which I analyzed the collected data mentioned above. I explain in details how the data were stored, transcribed, coded, triangulated and how it was used to build theory.

2.5.1 Transcription and Coding

The field note notepads, government documents, interviews and focus groups’ transcripts were analyzed for their content and informed me. MaxQDA, a computer assisted qualitative data analysis software (CAQDAS), was used for part of the data analysis, which aided the author in visualizing and organizing the data. MaxQDA was chosen due to its affinity to grounded theory and its features allow working close to the text. My own methodological approach and the set-up of the study with its trajectory from inductive and exploratory to more deductive and problem focused research were similar to grounded theory. Hence, staying close to the text was essential to support the exploratory approach. The software was intuitive and easy to use; it allowed me to code my data as I was transcribing it. Also, its search function helped me making sure that I had every piece of text related to a given theme, for example Facebook, under the code assigned to it. Such activity would have been time consuming and tedious if I had done it by hand coding.

The first step was to read through the text again line by line and ensure that I understood all that was being said, including local slangs and terms. Coding followed an inductive approach and used codes emerging from the text (open coding) (Flick, 2006). Text chunks of variable sizes (paragraphs and sentences) were coded based on their content, and different text chunks could be assigned to several codes. Ideas that had not been mentioned before led to new categories being created. I conducted a thematic analysis and inductively identified emerging patterns of technology use by the participants. Based on the analysis, I chose the quotes and vignettes that were most representatives of each theme. The patterns of technology use were used to answer the questions asked in this dissertation in the light of the developed framework described in the previous chapter.

MaxQDA allows the researcher to retrieve all the text previously linked to a particular code / theme and to read the words in context. This was, for example, particularly relevant when understanding the way that favela residents used words like *rolézinho*, to refer to strolls or hangouts, or *xingling*, to denote pirate Chinese version of smartphones, among themselves. Most codes were in English, while a few, such as *rolézinho* remained in Portuguese. Thus, MaxQDA was used for data management, coding, thematic analysis and data retrieval, but not for note taking, finding links between themes, or later stages of theory. I did this manually.

2.5.2 Theory Building

Theory development was based on rereading memos, running text retrievals and building meta-concepts (super themes) from the existing data, and discussing

findings with the informants. Working with a "constant comparative method" (Glaser & Strauss, 1967), existing codes were confronted with new ones and theory building was a process of systemic circularity. Relations were distinguishable between concepts, though these were often not of a unidirectional causal but of a complex and systemic nature (Kleine, 2007). Given the that the research had two phases, which were 1 year apart, early theories developed in the research log and field notes later led to some new foci of observation, informed interview questions and conversations with respondents and were then disproven, modified or confirmed. Interview data also showed in some instances how an individual's perspective had changed over time. The presentation of early findings to various audiences in the USA and Brazil, peer debriefings, discussions and further reading refined the theory building between and after fieldwork phases.

2.5.3 Data Storage

After each fieldwork phase, the audio data from interviews and focus group were transcribed and later translated to English by me as MaxQDA text files. Between fieldwork phases, these texts were read, ideas collected as memos, and early findings used to prompt theories that informed the research process, however the transcripts were not analyzed in depth until after the end of fieldwork's phase 2. By the end of the fieldwork, several collected data were stored on the my laptop also as MaxQDA text files: text of 64 interviews, 44 follow-up interviews, two focus groups, 2 moleskine notepads of field notes, and conversations and posts from Facebook interactions. In addition, photographs and government documents were

stored on the same laptop. The survey answers were kept on the my Indiana University *Google Drive*. The data were protected and personal data were anonymized before being share in any form, this ensuring responsible stewardship of the data (Akeroyd, 1991).

2.5.4 Triangulation

Triangulation supports findings by showing that at least three independent measures agree with them, or at least, do not contradict it (Miles, Huberman, & Saldaña, 2014). Following Denzin's (2001) recommendations, this research triangulated primary and secondary data sources, theories, and methods. In this dissertation, triangulation was used as a way to get to the finding in the first place, by looking at multiple instances of it from difference sources, and "by squaring the finding with others it needs to be squared with" (Miles et al., 2014, p. 300).

3 The Field

Vitória is the state capital of Espírito Santo, which is located in the southeast region of Brazil: the wealthiest and most industrialized region in the country. It is one of the Brazil's three state capital-islands, along with Florianopolis, Santa Catarina, and Sao Luis, Maranhão.¹³ Vitória borders the cities of Serra, to the north, Vila Velha, to the south, Cariacica, to the west, and the Atlantic Ocean, to the east. The city has a population of 327,801 inhabitants, according to the Brazilian Institute of Geography and Statistics (IBGE, 2013), Vitória is Espírito Santo's fourth most populated city after the adjacent cities Vila Velha, Serra and Cariacica. The people of Vitória are called *Capixabas*, which is a word in Tupi, an indigenous language, meaning, field and clean land for planting. The indigenous people who lived on the island called their corn and cassava plantations Capixaba. After this, the population of Vitória, mainly Portuguese colonizers, began calling the indigenous who inhabited the region Capixaba, after which the name has come to signify all the inhabitants of state of Espírito Santo (Monteiro, 2008).

¹³ In Brazil, state capitals, or just capitals, are the most important and developed cities in each state. Usually, rankings and comparative studies only take into account state capitals due to the assumption that they are the most representative city of the state.

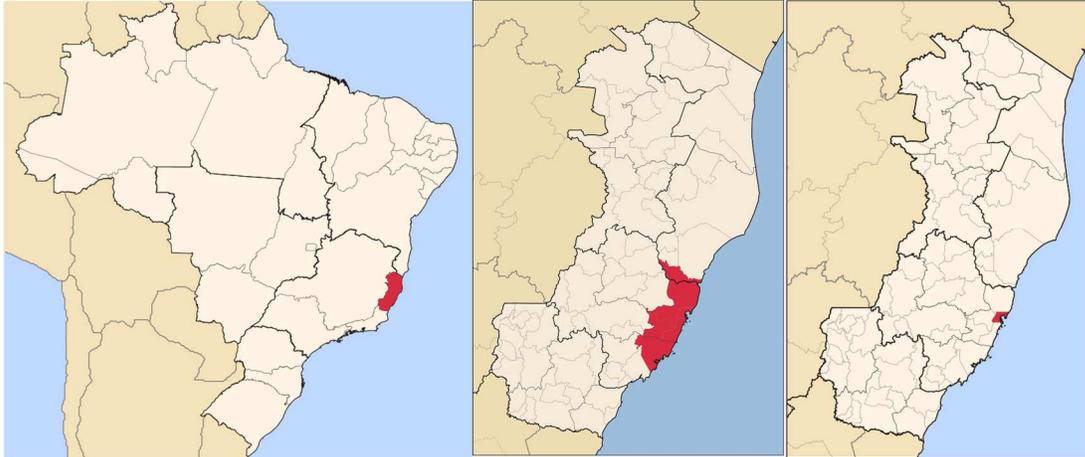


Figure 1: Maps of Brazil, Espírito Santo, Greater Vitória and the city of Vitória.
 (Source: Lorenzeto (2006), used under Creative Commons 2.5)

The city integrates an urban administrative entity called the Greater Vitória Metropolitan Region, comprised of the cities of Vitória, Cariacica, Fundão, Guarapari, Serra, Viana and Vila Velha, shown in Figure 1. The city of Vitória comprises the main island, within the Bay of Vitória, a mainland portion, and 34 other islands covering an area totaling 93.381 km² or 36 mi². Originally Vitória had 50 islands, many of which have been aggregated to the main island by means of earthwork.¹⁴ Among Brazil's state capitals, Vitória has the second best human development index (HDI), after Florianópolis, Santa Catarina. The city was considered the fourth best city to live in Brazil by the United Nations in 2013 and has the fourth highest Gross Domestic Product per capita (PPP) (Neri, 2011). Vitória has two major ports: the Port of Vitória and the Port of *Tubarão* (Shark). These ports were part of the largest port complex in Brazil, which includes several other ports from Espírito Santo and were considered the best in quality in the country (RobLes, Meriguetti, & Cutrim,

¹⁴ The earthworks done in Vitória moved parts of earth's surface (i.e. land) to expand the island's territory.

2012). Endowed with natural beauty, the city is located on a rocky massif, with Morro da Fonte Grande and the Pedra de Dois Olhos (Stone of Two Eyes) right in the center of the main island. The city manages the Island of Trindade and Island Martim Vaz Island, situated 1100 km from the coast, which are important meteorological bases because of its strategic geographical location, which is in an area of dispersion of air masses. The city is also a tourist destination due to its famous beaches, shown on Figure 2, and cuisine (Merlo, 2012).



Figure 2: East coast of Vitória.
(Photo: PMV, used under Creative Commons 2.0)

3.1 Brief History of Vitória

The foundation of Espírito Santo and Vitória began 34 years after Brazil was discovered by the Portuguese nobleman Pedro Álvares Cabral in 1500. The King of Portugal, Dom João III, divided the lands of Brazil in 13 hereditary captaincies, leaving the captaincy of Espírito Santo to hidalgo Vasco Fernandes Coutinho, who took office in May 23, 1535. He settled at the bottom of Morro da Penha (hill of Penha) and declared Vila do Espírito Santo (Town of Espírito Santo) the capital of the captaincy (J. T. de Oliveira, 2008).

Coutinho defended Vila Velha from constant attacks from Goitacás, Aimorés and Tupiniquins indigenous peoples, and foreigner explorers such as the Dutch and French. Due to such attacks, the Portuguese decided to move away from Vila Velha and explore the captaincy to seek a safer place. In June 13, 1535, the Portuguese discovered an island inside of a bay, shown on Figure 3, which would allow them to protect themselves and guard their lands. The island was called Island of Santo Antonio, since June 13 is the day the Portuguese celebrate their patron saint Santo Antonio. Right after they settled in the new land, the Portuguese transferred the capital to the island and started calling it Vila Nova (New Town), and the previous capital, Vila do Espírito Santo, became Vila Velha (Old Town). The Goitacás called the island Guanaaní, which means “Honey Island” due to the beauty of its geography and mild climate brought by bay viscous waters and swamps full of shellfish, fish, birds and wild animals. On September 8, 1551, the Portuguese won a fierce battle

against the Goitacás and in order to celebrate their victory, they began to call the place Vitória (Victory) (Saletto, 1996).

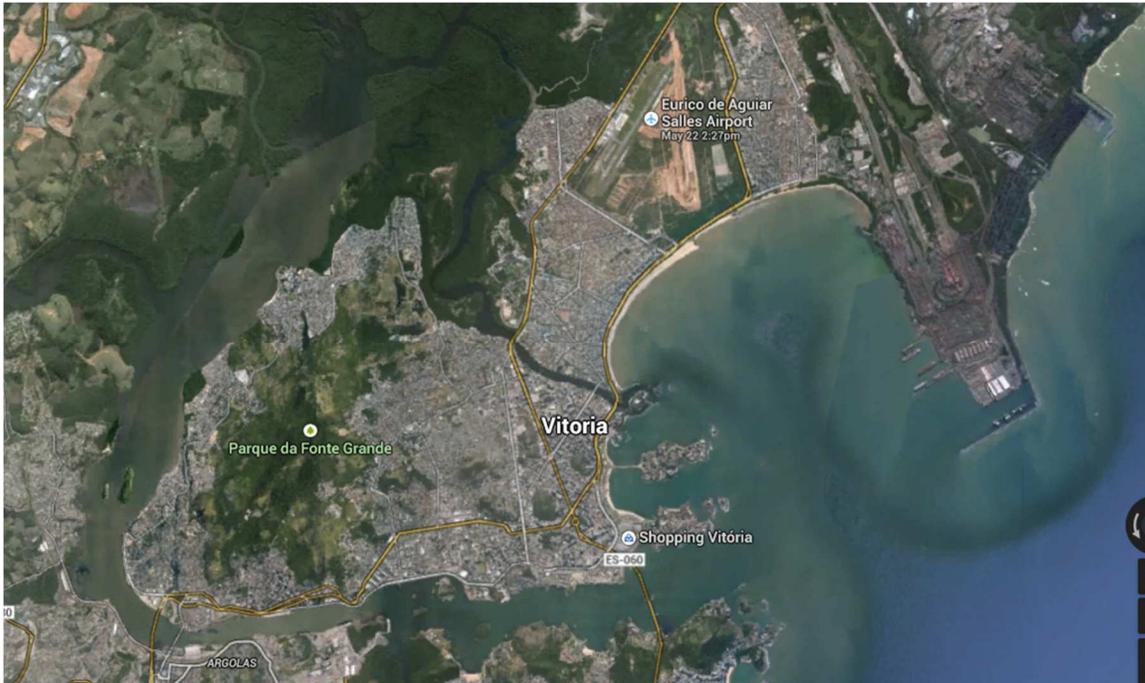


Figure 3: The island and bay of Vitória.
(Photo: CartoDB, used under Creative Commons 3.0)

Vitória is one of the three oldest cities in Brazil, after Recife, Pernambuco and Salvador, Bahia. The Portuguese used the city mostly as a town-port in the first 300 years of its history. Due to the island's strategic geography, the Port of Vitória exported most of the sugar and *Pau Brasil* extracted from the inlands of Brazil to Portugal.¹⁵ The rest of the captaincy became known as the “green barrier,” in reference to the dense Atlantic Forest left untouched by the colonizers. Although the forest was rich in *Pau Brasil*, the Portuguese most wanted natural wealth at that

¹⁵ *Pau Brasil* “is a tree with a dense, orange-red heartwood that takes a high shine, and it is the premier wood used for making bows for stringed instruments. The wood also yields a red dye called brazilin, which oxidizes to brazilein. The plant was the first wealth found in Brazil by the Portuguese, who named the country after the tree” (Souza, 2008).

time, the colonizers used the vegetation as a protection zone for the inlands. Although the “green barrier” helped the Portuguese by preventing possible intruders and smugglers, like the French, English and Dutch, it also compromised the city and captaincy’s progress. Only in 1808, when the Portuguese royal family moved to Brazil and the country’s mining started to decline, did Espírito Santo and Vitória began development, which was very late compared to other regions of the country (Saletto, 1996).

In February 24, 1823, an Imperial Decree granted the status of city to Vitória. Pirates and invaders were constantly attacking the city’s lower lands, requiring several forts to be built along the coast to keep the city protected. Thus, the city began its urban development in the higher lands, where Vitoria’s downtown is currently situated. In 1894, due to the increasing expansion of the cultivation of coffee, the city initiated many earthworks in the lower parts of Vitória, changing the shape of the island. The earthworks belonged to Vitória’s wealthy families who owned the coffee plantations, and are currently where the upper class neighborhoods are located (Saletto, 1996). In 1941, the first wharf was built in the capital, and in 1927, the bridge that connected the island to the mainland was constructed. In 1949, the city carried out more earthworks in order to expand the island and build seaside wide boulevards. After these various changes, the city became the largest center of Espírito Santo. In 1970, the Port of Vitória became one of the most important in the country, and the capital began its industrialization process with the implementation of 2 state run industries: Companhia Siderúrgica de Tubarão (Steel Company of Tubarão) and Companhia Vale do Rio Doce (a metal

and mining corporation). Both industries were privatized in the 1990s and rebranded as ArcelorMittal-Tubarão and Vale respectively. They remain the city's main industries (J. T. de Oliveira, 2008).

The modernization of Vitória, in the 1950s, led to the disappearance of almost all traces of the colony and the empire on the island. The city government forced thousands of poor people out of crowded neighborhoods that were being demolished around the downtown port area in an effort to expand the earthworks and seaside boulevards. Many poor individuals and families who were expelled took to the hills, and created the favelas. Former slaves and African-descended Capixabas were strongly represented in the favelas, but Portuguese and descendants of indigenous people were also present (Salomão, 2006).

3.2 Social Economic Context

Although Brazil was the world's seventh wealthiest economy in 2012, with a Gross Domestic Product (GDP) of US\$ 2,253 trillion, the country was far from repeating such outstanding performance in other world rankings, such as the GDP per capita (PPP), occupying the 105th position with an index of US\$11,319.97 (World Bank, 2014). Also, despite the constant social spending under leftist governments for the last decade, Brazil slowed down its Human Development Index (HDI) rise and occupied the 79th place, with an index of 0.740 (United Nations, 2014). Vitória presented better economic numbers, with a PPP of US\$43,004.63 in 2012, the city had the highest index among state capitals in Brazil (Atlas Brasil, 2013), and the city with the 3rd highest number of people in Class A (Neri, 2011).

The city's economy was focused on active trade, service companies, tourism, port activities, lead by Port of Vitória and Port of Tubarão, and industry, lead by ArcelorMittal-Tubarão and Vale. Vitória also had a "very high" HDI of 0.845, placing the city at the top of Brazil's rankings: 2nd among state capitals and 4th among cities.¹⁶ Vitória's HDI was influenced by its "very high" income (0.876), life expectancy (0.855) and education (0.805) indexes (Atlas Brasil, 2013).

These impressive numbers, in Brazil and Vitória, have also been attributed to the rise of the middle class, also called the Class C (Luce, 2013). This phenomenon was a reflection of the Class C's insertion in the job market and the consequent growth of their income, which inflated the base of the social pyramid occupied by the middle class. In Brazil, 103 million people belonged to class C, representing 52% of the population, and in Vitória, about 140,954 people, or 43% of the population. In 2012, this group consumed no less than US\$ 585 billion, accounting for 58% of the credit in Brazil. They purchased 8.5 million in domestic trips, 6.7 million televisions, 4.8 million refrigerators, 4.5 million tablets, and 3 million cars throughout the country (M. Teixeira, 2013). Although people in the upper classes labeled them "money wasters," Gomes (2012) explains their consuming behavior quite differently:

"We can see the class C enjoying their increased income responsibly. Only 20% of these consumers are in default of payment. These people have learned to

¹⁶ United Nations Development Programme (UNDP) categorizes countries as 'low', 'medium', 'high' or 'very high' in human development.

manage their finances. They are really conscious and precocious with their money. They control their spending with water, electricity, telephone, and begin to plan their future by investing in their education. Thus, they are becoming a high value and specialized workforce, who are mastering the new technology, and consequently are able to advance in their in career. Women are the most dedicated to their development, with four years of training more than men.”

The consuming power of the Class C was especially interesting for the market (industry, retail, service providers). In 2013, the advertising market became more focused on people in class C, by launching products and services according to their needs and reality (M. Teixeira, 2013). With the growth of income of the Brazilian population, credit cards became a symbolic desire of the Class C rise, since they were more accessible. In the past, credit cards were seen as an exclusive privilege enjoyed solely by people in upper classes. According to the Brazilian Association of Credit Cards and Services Companies (ABECS in Portuguese), in 2013, 45% of the consumers in Class C had a credit card, spending about US\$225 billion in their cards (ABECS, 2012).

People in Brazil’s lower classes, D and E, also had an increase of income, which promoted their consuming power. Such increase was credited to the provision of allowances, or conditional cash transfer programs for the poor, such as “*Bolsa Família*,” by the Federal Government. According Mourão and de Jesus (2011), programs like “*Bolsa Família*” leads to a reduction of extreme poverty to those in

classes D and E by guaranteeing a minimum income, which could enable the benefited people to ascend to upper classes, like class C.

Although people in lower classes saw their economic situation improving, it did not mean that their quality of life was changing considerably. The people were still facing the fundamental challenges of being poor in Brazil, which involved the need to rely on the government in order to have access to services for basic needs. Unfortunately the services, such as education, health care, and safety, were low quality, undermining their chances of social mobility (Luce, 2013).

Vitória's poor also faced the same issues, despite the city's outstanding GDP, PPP and HDI. As shown on the map below, Figure 4, Vitória's wealth is highly concentrated in a few rich neighborhoods, such as Praia do Canto, Mata da Praia and Enseada do Suá. The poor, just over 59,000 inhabitants, are scattered in 60 of the 79 neighborhoods in the city.^{17,18,19}

¹⁷ Praia do Canto, Mata da Praia and Enseada do Suá, were plantations on earthworks that belonged to rich families.

¹⁸ The wealth numbers were extracted from the IBGE's latest census in 2010.

¹⁹ The maps in Figure 4 and Figure 7 were generated by the author based on demographic data provided by PMV (2012a).

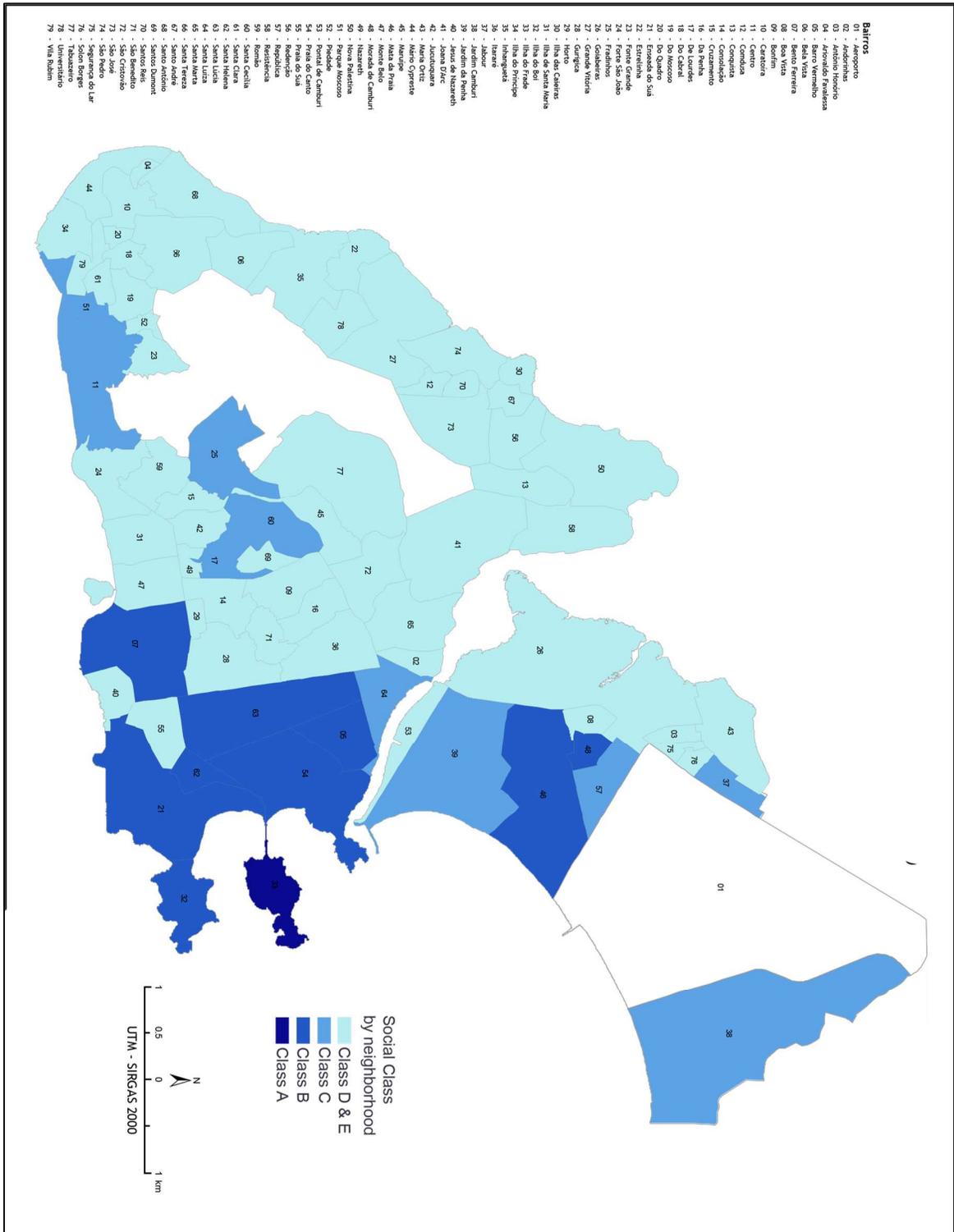


Figure 4: Map of Vitória with the social class by neighborhood

Social Class	Number	% of the population
A	27%	88,507
B	12%	39,336
C	43%	140,954
D & E	18%	59,005

Table 2: Social classes in Vitória.

Class D and E neighborhoods Bairro da Penha, Gurigica, Itararé, and São Benedito, (map numbers respectively: 16, 28, 36, and 71) were the field site of this study. These neighborhoods are considered favelas, since the houses or shacks were built of wood or masonry, many with multiple floors, and have no spacing between each other creating a densely populated area. Most of the houses did not have city building permits and illegally occupied the hillsides without land titles.

3.3 Favelas: An Overview

The first favelas emerged in the 19th century in Rio de Janeiro, when free blacks or runaway slaves established African neighborhoods on the hillsides of the city. In the late 1890s, impoverished soldiers returning from the Canudos war, in northeastern State of Bahia, founded a favela called Providência on a hill in the center of Rio de Janeiro. It is from that settlement that the name favela derived: the steep hill reminded some of the soldiers of Mount Favela in the Canudos war. Providência was thus the first favela to be established; its persistence today demonstrates that once established, favelas do not disappear (Cunha, 2010).

Resistance had been a strong part of Afro-Brazilian history and is present in the history of favelas. Resistance to slavery was both physical, with runaway slaves forming independent villages known as *quilombos*, and social, with the strengthening of community bonds among different tribal groups, creating a grassroots solidarity in community survival and collective work (Zaluar, 2000). The Brazilian government officially recognized communities that descend directly from original quilombos, which was the case of São Benedito, where several quilombola families from São Mateus, city in northern Espírito Santo, settled in. Urban movements have also sprung up inspired by the history of the *quilombos'* resistance, keeping their traditional artistic roots and incorporating contemporary international music and dance trends such as funk, samba and graffiti.²⁰ The strongest characteristic of such urban movements in Brazil is pride in their culture—especially in their art and music—and in their ability to adapt to adverse conditions and keep certain legacies intact (Alves & Evanson, 2011).

The strong connection to cultural and historic roots is present in dance, music, painting and sculpture, and Afro-Brazilian religions, such as *Candomblé*, *Macumba*, and *Umbanda*. The martial dance art of capoeira was developed for the self-defense of slaves and is recognized officially as part of the historical and artistic patrimony of Brazil. But most important, the legacy of working together as a people and of solving problems in solidarity with one another is what characterizes the

²⁰ Funk in Brazil is very different from what the genre means in other places. Funk is a type of music derived from Miami bass and African style music that became popular in the favelas as a way to show their culture and protest. Funk is often criticized due to their violent, sexually explicit and degradation of women content.

favela communities (Penglase, 2009). Perhaps the most visible aspect of this legacy is the *mutirão*, in which people gather to build houses, pave roads, install sewage systems, clean streets, or do any work that is best done collectively. Neighbors help one another in this way and, at the same time, strengthen the ties that bind them together and form the spirit that they refer to as “community” (*comunidade*). This fills the void left in a time of war against the drug traffickers, when the state becomes most present as an agent of violent repression. Even garbage collection has to be done by residents, as organized by the Residents’ Association. The favela’s concept of community expands Gurstein (2007) and Gusfield (1975), who see communities as a physical space where the residents have relationships, by adding problem solving as an important aspect in order to define a community.

Outsiders have often used the word “favela” pejoratively, associating it with violence, crime, poverty, lack of order, and people of dark skin color. However, for those who live in favelas, the term imparts a sense of history, of connection to the past (Alves & Evanson, 2011). In Vitória, the favela residents say they are from “community such and such” and ask one another, “Which community do you live in?” They also feel different from those who live in Class A, B and C neighborhoods. This strong relationship to the community may be contrasted with the lack of feeling of community in the upper class neighborhoods of the city; one cannot, for example, say that one belongs to the community of Praia do Canto, Mata da Praia or Ilha do Frade. In these places, similar to large modern cities around the world, neighbors often do not know one another and have a reduced collective sense of what a

community is. Residents told me that this sense of community is one of the reasons they do not want to leave, as mentioned by Olavo, 21 years old:

"I think there's a lot on the Internet that we can use. We can learn a lot from it and even improve our lives. But better life doesn't mean getting out of the favela. Nobody wants to be away from their friends... Here everyone goes to the streets, talks loud, asks neighbors for sugar. Why would I want to live in a wealthy neighborhood? To stay imprisoned at home? No way!"

In the favelas, the sense of community is reinforced by a strong local culture that includes rooting for a community-supported samba schools (*escola de samba*). The samba schools, founded in connection with communities' preparations for Carnival, run training sessions for children and adults year-round. They hold annual competitions to choose a theme song, the samba *enredo*, in which community residents participate. They are an enormous source of energy and creativity: for designers, for the seamstresses who make the costumes, for the sculptors who create the magnificent figures in the different allegoric cars, and for those who research and write the story that will be told by the samba schools. It is unlikely that the samba schools would exist without the historical legacy brought by the slaves, and they could not exist without the sense of community and collective work that is expressed in the tradition of *mutirão* (Perlman, 2006).

Pega no Samba was the samba school that represented Gurigica, São Benedito, Itararé and Bairro da Penha. The neighborhoods did not have gangs before the drug cartel appeared; instead, people joined Carnival groups and samba

schools. They still do, *“so although one can say that people in the favelas have been shaped by a history of exclusion, exploitation, and resistance, one should also take note of these astonishing efforts of collective and individual creativity and the tenacious maintenance of community traditions. At their best, the favelas offer the rest of Brazil lessons in community spirit and the strength that comes from joining together with neighbors. They show people working together in a way that overcomes race and regional ties”* (Alves & Evanson, 2011, p. 25).

3.4 The Field: Gurigica, São Benedito, Itararé and Bairro da Penha²¹

Gurigica, São Benedito, Itararé and Bairro da Penha were located east of Vitória, on the São Benedito hill, Figure 5, and in between the avenues Marechal Campos and Leitão da Silva, as shown in Figure 7. The illegal occupation trajectory of this region began in 1945, with the first attempts to occupy the hill, but it was in 1954 that the first settlers effectively occupied the land. This period marks the time when the city urbanized the old mangroves, where Av. Leitão da Silva is currently located. The expansion of the earthworks and the advancement of urbanization in Vitória evicted the poor population from their homes and forced them to relocate to uninhabited areas, such as the hillsides of the Farm Baixada da Égua and Farm Maruípe (currently the studied neighborhoods). Migrants from the states of Minas

²¹ In this section I tell the history of the field site, the marginalized neighborhoods of Gurigica, Itararé, São Benedito and Bairro da Penha. The history of these favelas has not been registered in any history book or Government report. The only official history available about these favelas is available in the City history archive, which is written in two short paragraphs. To tell such “untold” story I rely on an extensive set of oral and personal histories, survey done in newspaper articles, numbers from statistic agencies such as Instituto Terra and Plano Bem Maior, as well as Government reports.

Gerais and Bahia, freed slaves, and Espírito Santo's rural migrants also occupied the hill. They arrived in Vitória hoping for a better life and work condition. The first occupations took place in the low lands, or bottom of the hill, due to the ease of access and proximity to the city center. As people were relocating to the region, the bottom quickly became crowded making it hard to find an empty piece of land. The new incomers settled in the upper areas of the hill where most of the lands were unoccupied (Programa Terra, 1999).



Figure 5: View of São Benedito hill from Itararé (Photo: David Nemer).

According to Francisco, an 80-year-old long time resident of Gurigica (and a charismatic figure in the neighborhood), the Hilal family owned the Farm Embaixada da Água and the Monjardim Family owned Farm Maruípe. Both families

lived on site in the 1940s and 1950s and tried to prevent the occupation of their lands. The owners appealed to the police intervention that acted with brutality to prevent the occupation. There were seven intrusion attempts between 1945 and 1954, which the first six ones failed due to the police intervention. Most occupations happened without warning and were undertaken by families who had no place to live. At the time, the occupation leader was Arcendino Fagundes de Aguiar, known as Sergeant Carioca, a retired military man from Rio de Janeiro, who encouraged and planned the strategies for the occupation (Programa Terra, 1999).

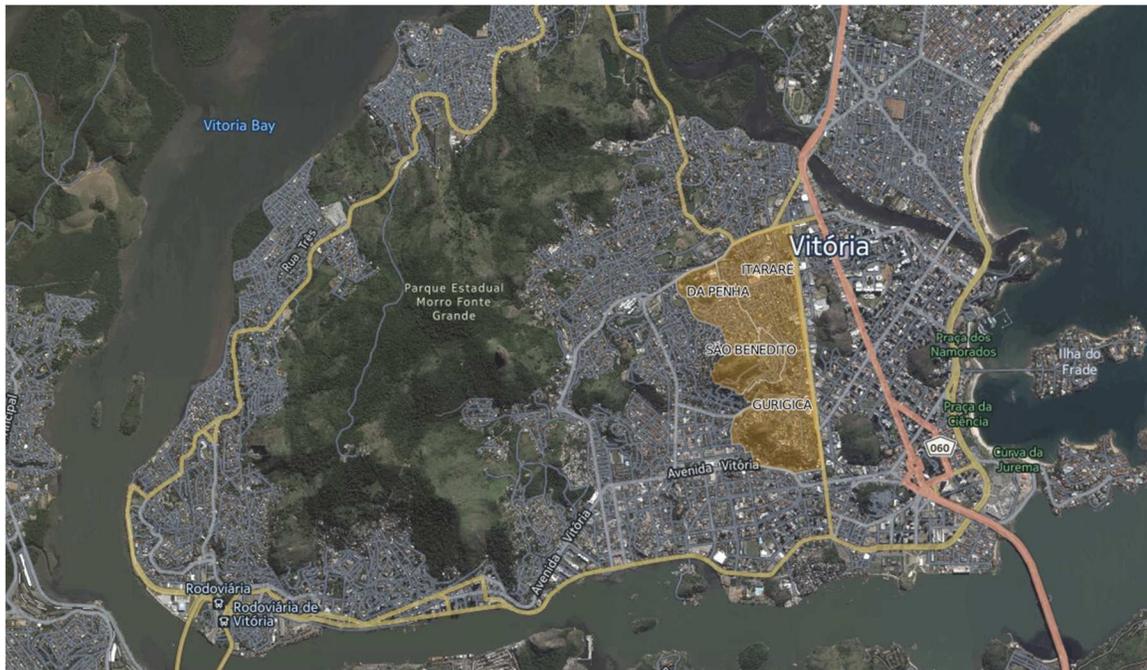


Figure 6: Satellite photo of Vitória with the researched area highlighted.
(Photo: CartoDB, used under Creative Commons 3.0)

The occupation attempts came with night raids as a way to divert the police actions. During the day, residents acted as "lookouts", blocking the police arrival and organized protests. They tried to occupy as many public spaces as possible, including roads of access. The occupiers built the first streets and alleys themselves

with machetes and hoes, since, at the beginning of the occupation, there were no stairs and ramps on the hill. Due to the constant conflicts and the successful occupation in 1954, the Government of Espírito Santo intervened by claiming the land and making it public. There was no evidence of the conditions and negotiations between the Government and the Hilal family regarding the transfer of the Farm Baixada da Égua. The Monjardim Family, owner of Farm Maruípe, donated their lands to the Federal University of Espírito Santo (UFES), who later donated them to the city of Vitória (Salomão, 2006).

In 1964, mayor Solon Borges divided the lands into neighborhoods, which were no longer related as farms. In 2003, Law 6077 finally regulated the neighborhoods names and areas, making Gurigica, São Benedito, Itararé and Bairro da Penha official. Although the residents' were content about having an official neighborhood, some of them did not agree on how the neighborhoods were demarcated:

“Right on that street sign, it says that I live in Jaburu, but I can tell you that I don’t! I live in Gurigica, I grew up in Gurigica and all of my family and friends live in Gurigica. Someone in the city government, that didn’t know anything about this place and us, came up with these ways of dividing our neighborhoods.” (Jairo, 43 years old)

As Jairo mentioned, some local residents did not identify themselves with the official neighborhoods; instead, they chose the neighborhoods based on their history and

relationships. These two approaches of defining the neighborhoods, government and locals, caused bureaucratic issues for the residents:

“Pega no Samba was founded and built by the community of Gurigica. But officially we are in Consolação. The people from Consolação are our brothers and sisters and they are also part of Pega no Samba... we are open to every community around us, but this [street sign] is not fair to our history. Sometimes we don't get our mail or bills because some people write the wrong address, and this is really problematic... being from the favelas, you don't want any trouble with the law.” (Rogério, member of Pega no Samba, 33 years old)

The City Government did not take into account the cultural and local context of the communities in order to officially recognize their boundaries. Such lack of state interest contributed to the already troubled life in the favelas.

According to the latest census, at the time of this research the neighboring favelas of Gurigica, São Benedito, Itararé and Bairro da Penha had a population of 22,450 people, which 89.3% of the households belonged to Class D & E and 5.9% belonged to Class C2. The area presented a low education rate, 6% of the people were illiterate, 49% did not finish middle school and 11% did not complete their high school degree. As I observed during this study, such numbers were a reflection of the low number of public schools available in the area, as well as the poor education delivered by them, there were only 3 schools for approximately 11.000 students. The area also suffered with the high unemployment rate of 30.2%, and

only 62.4% of the employed people had their employment record booklet signed (Maior, 2009).²²

My participant observation suggested that the number of informal business must have far exceeded the number of formal ones, which could explain the low number of formal employment. Chant (2001) and Figueroa (2003) highlight the importance of the informal sector in Latin America, and similar to Kleine's (2007) findings in Aljun, Chile. I also observed that informal businesses were seen with concern by the city because of the loss of taxes. However, closing the informal businesses would have been politically unsustainable due to the high number of families who depended on them for their livelihoods and the precariousness of the local job market. Informal activities ranged from housekeepers, bricklayers, painters, hairdressers, LAN houses owners, craftsman and, manicures and pedicures.

Among the poor quality services delivered by the state to the favela residents, safety was the one with the highest concern. Due to the state's absence in the favelas, non-state armed groups have emerged who control drug dealing and use violence to enforce contracts and maintain power. Since the residents settled at the bottom and middle part of the hill, the drug lords found the perfect location for their base at the very top of the hill. They worked as watchtowers, since they could see when cops or rival gangs were coming up the hill and prepare for battles. They

²² Record booklet, or carteira de trabalho, is a mandatory document for those who come to give some kind of professional service in Brazil. The booklet is one of the few documents to reproduce, clarify and verify the details on the work life of the worker.

maintained the order in the favelas by enforcing their own laws and making treaties with other gangs, which defined what cartel would be responsible for which territory. The residents respected the drug lords because they created an environment in which critical segments of the local population felt safe despite continuing high levels of violence. Drug lords also tried to please the local population so they would not protest and call the attention of the media, police and government, which could compromise their drug trafficking (Nemer, 2013a).

The most famous favelas in Brazil were in the city of Rio de Janeiro, like Rocinha and Cidade de Deus (City of God). In order to prove the city could be a peaceful venue for the World Cup in 2014 and the Olympic Games in 2016, the police expelled the drug traffickers from Rio. Many of those who escaped attempted to hide inside favelas in nearby cities such as Vitória (do Val, 2012). Their presence in Gurigica, Itararé, São Benedito and Bairro da Penha turned the slum into a war zone. The drug lords from Rio de Janeiro teamed up with the rival cartel, from Bairro da Penha, and were trying to take over Gurigica and São Benedito's territory.

At the time of this research, the residents considered Av. Hermínio Blackman, an avenue that divided the neighborhoods, as the Capixaba Gaza Strip due to the constant conflicts and shootings in the area. The drug war also contributed to the confusion regarding neighborhood territories, since the constant battles were defining new boundaries. Although the vast majority of the locals were not associated with the cartel, if one belonged to a given territory ruled by a certain

drug lord, she or he may not be welcome in other territories of the favela, thus making it hard for the residents to know where they were allowed to transit.

3.5 Race Divide: The Other Side of the Avenue

Roberto, 26 years old and black, was living on Beco do Cafezal (Coffee Crop Alley) in São Benedito since he migrated from a small town in the state of Bahia at age seven, with his parents. Bruno, 27 years old, was born and raised in Itararé and was the son of a housekeeper, mother, and a locksmith father. Roberto and Bruno both lived in western Vitória, on “the other side” of Av. Leitão da Silva. The region, divided by the avenue, ran from Nova Palestina to Ilha do Príncipe (Prince Island) and also included the studied favelas: Gurigica, Itararé, São Benedito and Bairro da Penha. The whole region had a population of about 177,000 people, mostly black and brown (Bourguignon, 2014).²³

The connection between race and socioeconomic status appears clearly in Figure 7. Based on IBGE’s 2010 census data, I mapped the residents of the 80 neighborhoods of Vitória according to their color. The map shows a line, or the Avenue Leitão da Silva, that divided the city: on the one side, the neighborhoods with predominantly white population, and on the other side, the neighborhoods with the majority of blacks and mulattos.

²³ This section is also based on the report written by Bourguignon (2014).

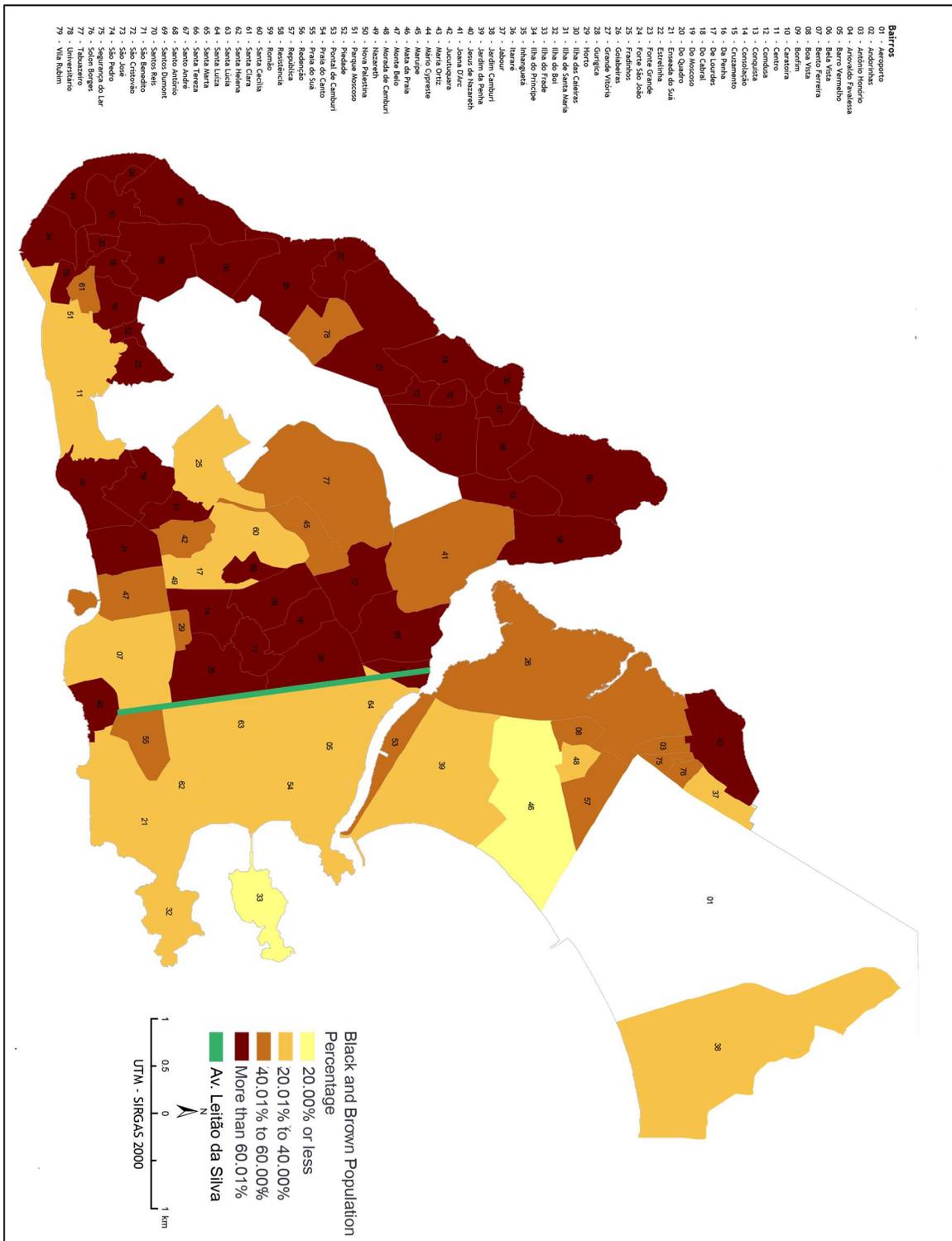


Figure 7: Map of Vitória with the population color by neighborhood.

This observation was echoed in Bruno's comments:

"If you walk around in Praia do Canto and Mata da Praia, you will think that Vitória is a white town. But this reality changes completely, if you cross the avenue, in Itararé and Gurigica, for example. Then you can see that the difference is not just socioeconomic, but also racial. Unfortunately this division is explicit even in public spaces that should be open for everyone to use, such as squares, parks and beaches." (Bruno)

According to Roberto the urban mobility plan helped to enforce these two sides of the city:

"In Ilha do Boi, a rich neighborhood, there is just one bus line that went through the area, and the residents have already asked the city to remove it. The same thing happened in Ilha do Frade. The residents do not want outsiders there, because they don't want these blacks circulating in their space. It's surreal."

The "reality changes completely" and "surreal" point to the fact that these divides may be explained by the history of the area, but they still were something that still seemed strange and even troubling to the population. As explained before, the ethnic-racial configuration of Vitória did not happen by chance. Roberto agreed

that the positionality of the black population in the city was no coincidence, but a historical consequence:²⁴

"From the times of slavery and until very recent, the black population was considered fugitive, and not welcome in white neighborhoods. It's almost like a war strategy to live hiding in high places like the favelas on hillsides."

From the top of the hills and the edge of the swamp, the residents of the poorest neighborhoods in Vitória had privileged views of the city. However, the hard life of those who lived "on the other side" left little time to contemplate, as mentioned by Bruno:

"We read and hear so much about the violence that we forget that honest people are the majority here [Itararé]. And these people who wake up at five o'clock in the morning to catch the bus and come home late, do not have time, nor energy to think about their own situation and what to do to effectively try to change it."

He did not blame white people or those who lived in wealthier neighborhoods for the problem of the suburbs.²⁵ "Everyone is inserted into this perverse logic, in which is not fair for anyone."

²⁴ Positionality in cultural anthropology means the placement or social location that someone is found in a particular environment.

²⁵ In Brazil, suburb is a term used to describe areas where poor people live. Suburbs are located far from the city center.

The situation observed in Vitória was similar to Alves and Evanson's (2011) findings in the favelas of Rio de Janeiro. Many favelas there were under stress produced by criminal groups and the police, which had people calling favelas the twenty-first century senzalas. "Senzala," an African word that entered Brazil in the sixteenth century, describes the huts and dormitory spaces for slaves living under the domination of the casa grande (big plantation house). Slaves left the senzala to work on the sugar plantations but spent much of the rest of their time within it. When applied to the contemporary favela, the reference suggests crowded living quarters in dormitories and communities turned inward, with a structure of police repression mounted outside and ready to intimidate, beat, and even kill.

According to Alves and Evanson (2011), the idea that favelas are present-day senzalas partly explains why those outside—those who live on the asphalt—tend to ignore the repression and killing that goes on so close to them. The other side of the coin is the mentality of those who live in the casa grande. One might fairly compare many residents of the rich Praia do Canto, Mata da Praia, and Ilha do Frade to the occupants of the casa grande. Developing the comparison to the senzalas further, the state, in carrying out its policy of armed invasion to repress drug traffickers, can be compared to the capitão de mato (slave hunter) sent into the forest to recapture fugitive slaves. In the case of the favela, the target has changed. The police enter a favela to arrest drug traffickers and seize their drugs and weapons. They prefer to view the residents as accomplices, much as the capitão de mato might have viewed all slaves as likely runaways.

3.6 Digital Inequalities in Vitória

Vitória also figured at the top of Brazil's rankings when it came to accessing digital technology. The city was in 3rd place in the ranking of "access to personal computers at home," with 73.88% of the population having such access, and 2nd place in the ranking of "access to personal computers with internet at home," with 68.41% of the population. Vitória was also the leader among state capitals in broadband access at home; with 80.6% of the computers with Internet access having a broadband connection (Neri, 2012). According to Neri, these impressive numbers were a consequence of Vitória being one of the Brazilian cities with the highest HDI and concentration of people in Classes A and B. Nonetheless, one third of the population still did not have access to the Internet at home and depended on CTCs for such access. Based on my observations and the locations of the Telecenters, the digital inequalities also followed the same socioeconomic and race inequality geographic distributions in Vitória, as shown in Figure 8.²⁶ The Telecenters appear predominantly in the poorest sections of the city because the richer areas have private access.

²⁶ According to the Telecenter manager, the City deployed the CTCs in the neighborhood where the residents have difficulties with infrastructure, Internet provider's services, and low literacy. Two Telecenters were located in wealthier neighborhoods, such as Jardim da Penha and Jardim Camburi, in order to serve the high student population there.

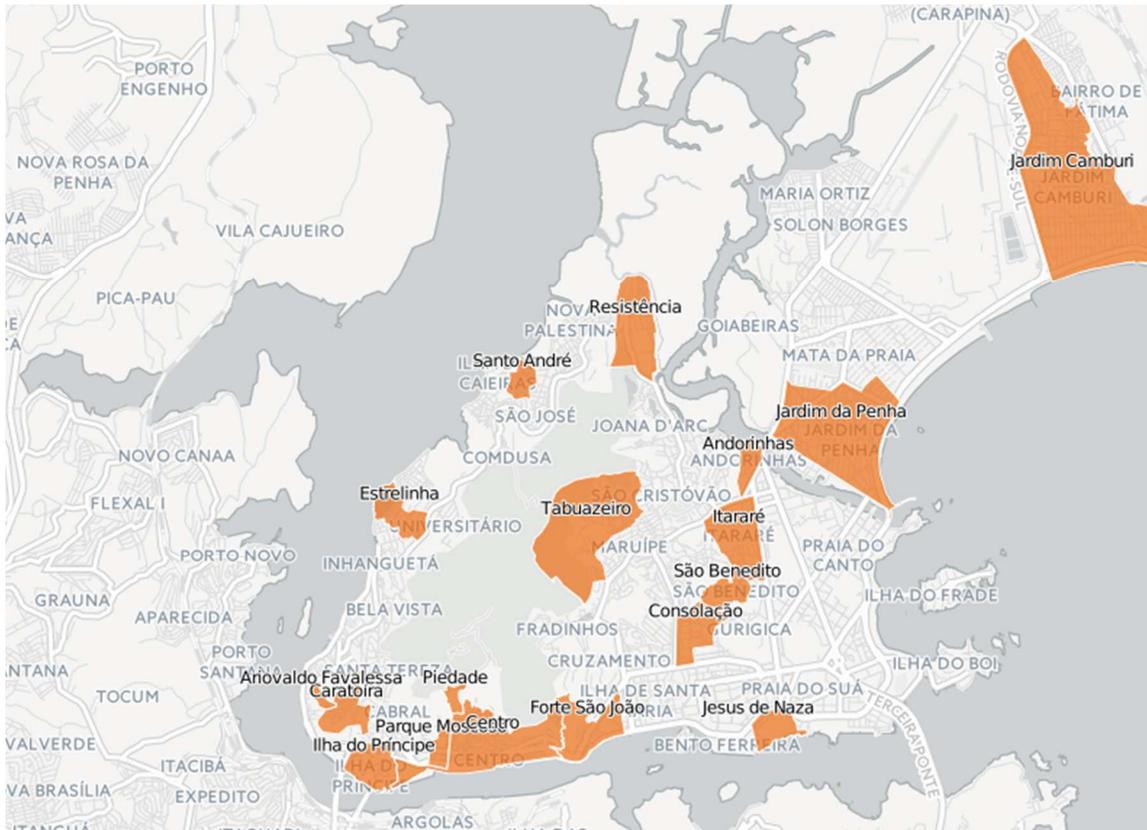


Figure 8: Map of Vitória with neighborhoods with a Telecenter.
 (Map: CartoDB, used under Creative Commons 3.0)

Since 2009, the city of Vitória has been trying to alleviate the digital inequalities by implementing Telecenters in poor neighborhoods, where access to ICTs and Internet was problematic. Vitória was ranked 4th among state capitals in providing free public access, with 20 Telecenters and the *Vitória Online* project. *Vitória Online* was a set of technologies that allowed the residents and tourists to access the Internet using a wireless network without the need for a commercial provider. The project started in 2009 to promote digital inclusion and support for tourist and economic development through a public mesh network. The open wireless network was available in 17 neighborhoods, 49 hotspots, which were

parks, public squares, government buildings, 2 beaches, and 5 Telecenters (PMV, 2012b).²⁷

The Telecenters started with 7 units in 1998 with the donation of old computers, desks, and chairs from the City Government. In 2011, the City applied to the Telecentros.BR program, and was awarded with 20 “kits” of 10 PCs, 1 server, 2 routers, 1 printer, and 10 desks and chairs in each kit. According to the Telecenter manager the City only opened 20 units because that was the number of kits awarded, however she mentioned that Vitória needed more than 20 Telecenters in order to fully cover every poor neighborhood in the city.

LAN houses were also important digital inclusion venues in the researched area.²⁸ They were not associated with the government and their owners did not have any incentives to run the businesses. According to my observation, each neighborhood of the studied area had 2 to 3 LAN houses, which were used by favela residents, not only to access the Internet and games, but also to gain skills, socialize and develop their communities.²⁹ According to Neri (2012), Vitória was the state capital with the smallest number of paid public access venues, such as LAN houses and Cybercafés. The low number of such centers can also be explained by the

²⁷ The *Vitória Online*'s hotspots were not necessarily in poor neighborhoods, they were available in rich areas, such as Mata da Praia and Downtown, as well as in poor areas, such as Itararé and Bairro da Penha.

²⁸ Digital inclusion, in the context of Telecenters and LAN houses, means physical access to ICTs and appropriation of such ICTs to improve the local residents' lives.

²⁹ Based on my observations, LAN houses moved to different buildings, opened and closed quite often, which made it difficult to count how many units were open during the time of this research. However, the LAN houses I conducted ethnography, were constant opened.

concentration of people in Classes A and B in the city. As explained in Chapter 1, in early 2000s, LAN houses first became popular in rich neighborhoods, and due to several factors such as “anti LAN house” policies and the diffusion of ICTs and broadband in these areas, the venues did not stay in business for much longer. In the favelas, however, LAN houses were still operating and working since official policies were rarely enforced and broadband connection was still an issue.

In the chapters that follow, I present the experience of favela residents from Gurigica, São Benedito, Bairro da Penha and Itararé in relation to technology in CTCs – Telecenters and LAN houses. The stories that I tell attempt to approach understanding of the favela residents with respect and no prejudice, avoiding the stereotype of their use of ICTs being derogatorily mocked and labeled as superfluous and “a waste of time.” Even though they faced serious problems on a daily basis, such as lack of digital access, poor education, discrimination, and drug cartel activities, they still managed to use the technology, which was imported from the north and developed far from their context, in very innovative and meaningful ways. Shedding light on different places where technology is used, especially in unexplored places such as the favelas, broadens our understanding of the relationship between society and technology. It also offers a different window for understanding political processes, social tensions and cultural values, especially of those experiencing digital inequalities.

4 Going beyond the “T” in CTCs: Telecenters and LAN houses as Key Sociotechnical Spaces in the Favelas

This chapter focuses on the experiences of favela residents in the Community Technology Centers (CTCs). It sheds light on how these centers, in marginalized areas, contributed in alleviating the unfreedoms and promoting human agency of their users. In order to illustrate such experiences, I analyze the use of two types of CTCs: Telecenters and LAN houses.

CTCs “are generally nonprofit, locally based organizations that provide ICTs to groups that do not get access to it in other ways. “Community technology center” is an umbrella term that covers a wide range of types of organizations. Most centers focus on providing access to technology. A public library, for example, may simply provide a space for computers with Internet access, but offer no training. Other CTCs offer either general or specialized classes. Many CTCs, for example, offer basic classes in keyboarding, how to use email, and popular software applications such as Word and Photoshop. [...] Others are more oriented toward providing specific training that can help participants obtain jobs in IT-related fields. Most CTCs target low-income and urban people” (Davies, Wiley-Schwartz, Pinkett, & Servon, 2003).

The CTC movement started in 1968 in the U.S., but had its “explosive” growth in America in the 1990’s with the support of national agencies, such as the National Science Foundation (NSF), which maintained more than 20,000 in the 2000’s throughout the country. Due to its popularity in the U.S., CTCs quickly drew the

attention of scholars interested in researching issues around digital inequalities (P. B. Miller, 2013). Hence, the literature on these centers has been almost entirely focused on the United States (Nemer & Reed, 2013). Also, despite the large amount of studies done on CTCs, they have been mostly based on quantitative surveys of users (Kleine, 2010), and focused on the use of ICTs as the only activity in these centers. In this chapter, I attempt to contribute to the CTC literature by presenting an ethnographic account of how favela residents – who are from understudied and marginalized areas – use these centers also beyond ICT use. By having such a nuanced understanding of CTCs, I propose an expansion of the umbrella term in order to include for-profit centers, such as LAN houses, and provide a different perspective of how these centers should be evaluated.

The consequences of CTC use are important for people who confront various information-related challenges associated with education, security, poverty and access to the job market (Donner & Walton, 2013). Thus, I argue that CTCs go beyond the use of ICTs and provide to marginalized communities with a key sociotechnical space and place. I bring technical and social aspects, such as gender, drug cartel activities, and the implications of being poor, which affect the experiences of favela residents in the CTCs.

4.1 Rethinking the Role of Telecenters in Communities

The Telecenters of Vitória were funded by the city government, which contracted the Center for Digital Inclusion (CDI) to manage and maintain the CTCs. CDI is a nonprofit organization specialized in creating and managing community

centers in low-income, rural, indigenous communities, hospitals, prisons, and psychiatric clinics, with the intent to strengthen low-income communities by providing access to ICTs (CDI, 2015). In Vitória, two female managers took care of the CDI branch, they were in charge of hiring and training the Inclusion Agents, and negotiated the Telecenters' plans with the Telecenter Manager, who was working for the city. The CDI managers also proposed workshops and activities to be conducted in the Telecenters by the Inclusion Agents. During my fieldwork (phase 2), the CDI managers conducted monthly meetings with the Inclusion Agents. I was invited to and attended 6 meetings, where they debated problems and issues, shared their experiences in the Telecenters, learned about the government's social programs available to the public, and discussed ideas for workshops.

The Inclusion Agents organized weekly workshops, usually on Wednesdays from 1pm to 2:30pm, in which they conducted activities aimed at developing skills of the Telecenters' users. The workshops ranged from technical activities, such as photo editing, computer maintenance, and formatting and layout of CVs, to non-technical activities, such as how to dress for and behave in job interviews, and build board games from recycled materials. Workshops were popular among the Telecenters' users, but not as much as the free browsing of the Internet. I attended 18 workshops and observed an average of 6 to 7 people attending each. While the workshops were happening I also observed that the waiting room would always be filled with people, mostly teenagers. I questioned some of them why they would not join the workshop, and the idea of having a school-like lecture turned them off, as expressed by Thais, 17 years old:

“We all have bad experiences with our [public] school... the lectures we attend are terrifying and traumatizing. Why would I want to attend another lecture here in the Telecenter? I’m here to have fun.”

Although the Telecenters were perceived as a fun place, 16 out of 18 teenagers and young adults mentioned they used the CTC to do their homework and school projects. The public school they attended did not have libraries and the archaic computers in the informatics lab were not available to them. Hence, the CTCs became complimentary to their academic needs. Among adults, CV typing and online job searching were the most popular activities, out of 19 adults I interviewed, 12 mentioned they all typed and printed their CV for their job search, and 9 said they got jobs. The Inclusion Agents printed openings from job database websites and glued them on the Telecenters’ wall so people could easily read them.

The Telecenters were free for anyone to use. Users had to bring a photo ID in their first visit so the Inclusion Agents could register them in the system.³⁰ Users under 12 years old could use the Telecenter if accompanied by a parent or an adult. For those who were 13-15 years, access was allowed with a written letter of consent by their parents or guardians. From 16 years old, the use was free. Each user was assigned a Telecenter ID number, which was given to the Agents every time the users went back to any Telecenter. The system stored the users’ personal information, such as date of birth, name, sex and address, and access number in

³⁰ The Federal Government issues identification cards for free for every citizen.

order to generate a report at the end of the month with basic statistics of use and access. The Telecenter manager was mostly interested in knowing the location where the users resided so she could report to the city government that the CTCs were serving the local community, however, the system was not developed with the local context in mind:

“I want to know if the Telecenters are serving their targeted communities... like the communities around the units, but it is impossible to get that information. The users don’t really know their address, neighborhood or zip code. When they know their address they say, for example, they live in Consolação, but it is actually Gurigica. We can’t get the actual address”

As I observed, since the users did not own land titles, they did not have a formal address, hence the address they provided were actually directions to their homes, such as: *“The alley where Joe’s bar is and before Maria’s bakery”* (José, 15 years old). The address fields were mandatory, so the Inclusion Agents just went ahead with the information they were provided by the users:

“There’s nothing I can do. How am I going to check this information? Also, we don’t have formal addresses here, so I just go with what they tell me. When they tell me their neighborhood [favela or community], I usually look up the zip code on the post office’s website, but this is no guarantee that the area they live in is actually how the city sees it.” (Inclusion Agent in Itararé)

CDI purchased the information system used in the Telecenters, which was custom-made by a software company in Rio de Janeiro. Such a system was one example, among others detailed throughout this dissertation, of how technology frequently is developed from a vantage point of those who stand in the center (even when it is a closer center like Rio de Janeiro) and expect the same technology to function just as well everywhere else. This approach is known in ICT4D as “one size fits all” where the center is understood as the destiny of and model for developing areas, or that *“the world at large is destined to become “like” the one under construction in our research laboratories”* (Dourish & Mainwaring, 2012).

Each Telecenter was equipped with 1 printer, 1 server, and 10 desktop computers that ran Ubuntu, a Debian-based Linux operating system. The computers were connected to the *Vitória OnLine* Wi-Fi link, which provided the users with open, free and fast Internet.³¹ Although the users were able to access whatever content or website they wanted, some did not feel that Ubuntu, an open and free source software, was giving the freedom they wanted:

“I do not feel free here. This system can't do anything, it asks for the password [admin] every time I want to install something. I can't play any games on Chrome, there's always error messages popping up from the plugins and I can't update Java. I wanted Windows, or at least Wine so I could install my favorite

³¹ The Internet speed was of 100Mbps and there were no blocked or censored website / content.

games. Who wants Linux to play Sudoku? Is this what you call free software?
[...] I feel frustrated and don't want to come here " (Jeferson, 17 years old)

Open source software (OSS) are seen in the literature as liberating and empowering because it affords users with full access to the software's code and library, allowing users to tinker and adapt the software to their needs (Lerner & Schankerman, 2013). But in the favelas, as my observations show, some users perceived OSS as limiting their choices because they were interested in the latest games advertised on TV, such as Counter Strike and FIFA, which were not supported by Linux. All of the informants were just overcoming the so-called *first-level digital divide* (Hargittai, 2002) and developing skills to seek information and use it in their lives, and as such they did not have advanced technical skills, such as coding, to tinker with OSS. Although CDI claimed to be a supporter of OSS, it was not in their plans to implement a program or workshops to develop technical skills so users could take advantages of using OSS. Also, the Telecenters manager claimed that it was the city's choice to use OSS *"simply because it is free and we have to reduce costs by every means."* Therefore, adopting OSS because they are free, as in beer (Crowston, Li, Wei, Eseryel, & Howison, 2007), may promote access to ICTs due to its low cost, especially in financial troubled areas. However, it does not necessarily lead to the free, as in speech, use of the software.

The Telecenters I visited for this study were located in São Benedito and Itararé, both opened from 8am to 5pm during business days. Itararé was right on the *foot* of the hill, as mentioned by the residents, and it was closer to the city as it

bordered with Av. Leitão da Silva, hence it was the most developed community among the other studied communities: Gurigica, Itararé and São Benedito. Itararé was considered the “shopping center” of the region; the residents of other favelas used to walk down the hill to do their shopping there. It had all kinds of shops, such as auto repair, clothes, electronics, sewing and restaurants. Itararé had a franchised supermarket, called *ExtraBom*, and a large public square, despite the residents called it *pracinha*, where the farmer’s market took place every Wednesday morning, residents played soccer, and where, every evening, people of every group age flocked to.³² Mothers hung out and chitchatted while watching their children playing, teenagers played loud music on their *xingling* as they had their *rolézinhos*, and elder men played checkers. CIAS, a private hospital owned by UNIMED, the largest health insurance in Brazil, was located right next to the supermarket ExtraBom. When I asked the informants if they were able to use the hospital, the answer was simple and clear: “no.” They did not understand why the hospital was there, as represented by 23 years old Tereza’s resentment:

“They [hospital management] don’t even employ the people from here [Itararé]. They are occupying a space in our community but don’t give anything back. I wish it was a public hospital, so, at least, we could try to use it.”

Despite being the most developed favela in the area, Itararé did not have a public hospital nearby and the residents felt left out by the government due to the

³² *Pracinha* means little square in Portuguese.

conditions they were living in. Gabriel, 17 years old, summarized the residents' frustrations:

"Now you can see what it means to be marginalized. If you get hurt, you can't even go to the hospital right next to your house because they won't take you in because you don't have money... My school, which is public, of course, is a joke. Anyone can get good grades. The teachers don't really care about us and we don't really care about school. It becomes a vicious cycle. The only thing that works here is this [Telecenter]."

The public services, such as schools, in marginalized areas in Vitória were precarious or inexistent; hence, as I show in this dissertation, local residents relied on Telecenters to overcome such precarity.

The Telecenter in Itararé was implemented in 2009 after the federal project *Casa Brasil* failed, as described in Chapter 1. In 2009, the city of Vitória took over the place and integrated it to their network of Telecenters. Even though the administration of the Telecenter changed, some of its users still referred to it as *Casa Brasil*. The CTC had a small waiting room, an office for the Telecenter Manager, the computer room, a small kitchen, 2 bathrooms and a maintenance lab, where 4 young adults worked to maintain and fix the Telecenters' computers, printers and networks. The waiting room was as active as the computer room. Users waiting for their turn to use the computers engaged in chitchats and conversations about the community, as observed in a conversation between Andre, 48 years old, and Jaciara, 19 years old:

Andre: *"I'm here to research about my family roots and how they migrated from Italy to Brazil. I heard there's a lot of stuff about Italians who became trail blazers in Brazil. What are you here for?"*

Jaciara: *"To do some homework and research for a school project. My teacher wants me to write about the Independence of Brazil. Can you believe the [public] school doesn't have any books to help me? I'll let you know if I come across something about the Italians,"*

Andre: *"Thank you. Where do you live?"*

Jaciara: *"In Bairro da Penha, just after Nelson's barbershop"*

Andre: *"Ah! You better be careful, I heard some "meetings" would take place this evening between some drug people. You know how these things end up. In Gurigica things will be like a "grape."³³*

Jaciara: *"Thanks for letting me know. I won't stay long here and then just run home."*

The waiting room worked as an *information ground* where users shared their life experiences, technical expertise and became aware of what was going on in the favelas.³⁴ It was a social space where users had casual interactions that lead to meaningful exchanges: female teenagers grouped around a *xingling*, pushed the

³³ Grape, or *uva* in Portuguese, was a slang used by favela residents to refer to tranquility and security.

³⁴ As defined by Fisher et al. (2006), "*an Information Ground is an environment temporarily created when people come together for a singular purpose but from whose behavior emerges a social atmosphere that fosters the spontaneous and serendipitous sharing of information*".

phone's buttons, and discussed how to take selfies until they figure it out. Adults exchanged information about social programs provided by the government, such as the social driver's license (*CNH social*) and *ProUni*, and male teenagers scheduled *peladas* and tried to get on the security computer.^{35 36} In the Telecenters, the users felt comfortable, safe and "at home", as mentioned by Mariana, 14 years old and Marco, 15 years old:

"The Telecenter is the best thing we have around here... I always bring my xingling to transfer some music... You know, you realize you are at home when your xingling connects automatically to the Wi-Fi." (Marco)

"I have a computer at home, but it is so boring to stay home alone. Here I have my friends, we can talk, play, and take photos. They help me with stuff I don't know, and I help them with things I know... so much happens outside the Internet, in real life, that influences how we actually use the Internet."
(Mariana)

Following Mariana's claim and my own observations, a lot happened offline that shaped the way users used the Internet. For example, teenager girls frequently used Facebook chat, and instead of having the conversation with just the person on the other side of the screen, they often debated the topic of the conversation with each

³⁵ Social Driver's License (*CNH Social*) was a social program in which low income adults could apply for a grant to pay for their driving school and license. The process of getting a driver's license can cost up to US\$1,000.00. *ProUni* is a program that granted full and partial scholarships for low income people in private institution of higher education.

³⁶ *Pelada* is a term in Portuguese to refer to pickup soccer. *Palada* means naked (in a female form) in reference to the naked and rough conditions that fields were usually found.

other in the Telecenter before responding. I also observed users that were acquainted, developing a relationship because they helped each other. Mario, 32 years old, and Sergio, 26, were regular users of the Telecenters, but their interactions were limited to greeting each other. In July 2013, Mario saw Sergio accessing the *ProUni's* website and asked Sergio if he could help him signing up for the program. One month later, they were meeting twice a week to study for the university entrance exam, which is called *vestibular*. The social science research tradition of Community Studies has since its inception focused on roles of social relations (pattern of interactions) and social relationships (shared world views and common projects) in communities, especially how the former change into the latter. The literature has focused on social attributes, such as trust and dependency, to explain such transformation (Parra, Nemer, Hakken, & D'Andrea, 2015). However, as shown in the case of Sergio and Mario, this dissertation compliments the literature by focusing on places, such as CTCs, as key players in affording this transformation.

Each Telecenter had a male security officer who sat at a desk in the waiting room and watched the security cameras through the computer screen. Their duty was to maintain the order in the Telecenters as well as to intimidate thieves and people related to the drug cartel in order to keep them out. Their computers were also hooked to the Telecenters' network and they eventually got on the web:

“Although we are in a area of risk, I have never had a problem with people looking for trouble. This is not as stressful as I thought it would be, however, I

need to keep my eyes always open and checking the [security] cameras. When the Telecenter is not as busy, I get online, check my Facebook and play Social Wars. I play against these kids, and now that they realized that I could get on Face, they always try to get on my computer when they run out of time. I always tell them to stop otherwise they will get me in trouble.” (Security officer in Itararé).

The city government had to pay an expensive price to keep all 20 Telecenters running in areas of high crime. Through access to the Telecenters’ financial books, I observed that the city spent R\$120,000.00 (approximately US\$ 60,000.00) a month to maintain the Telecenters (rent of the facilities, Inclusion Agent salaries, utilities, etc...) and paid R\$300,000.00 (US\$150,000.00) a month to the outsourced security company to provide trained security personnel. Due to the lack of State presence in areas of high crimes and violence, the city had to pay for security instead of funding at least 50 more Telecenters. That is not even counting the cost of security cameras, which I did not see in the books.

The informants did not have any concerns regarding the security cameras. When I asked them if they felt that their privacy was being invaded, their answer was unanimous: “no.” They were in favor of such cameras because they perceived them as tools that would keep drug cartel members and troublemakers outside the Telecenters’ doors:

“The security guy and these cameras are intimidating to those troublemakers. Instead of feeling that I’m being watched all the time I actually feel free and

safe. I can be myself. I'm really afraid of the invisible cameras, which are the eyes of drug traffickers out at the streets. We have to always behave differently like we have a ghost watching us" (Rodrigo, 21 years old)

As discussed in the literature (see Blanchette & Johnson, 2002; Gregory, 2010) security cameras can be used as tools to enforce people to control their own behavior constantly, however in the Telecenters, they were perceived as tools that allowed people to feel comfortable, protected, and be themselves, as mentioned by Rodrigo. It was the "invisible cameras," which were the eyes of cartel members, which created the real *Panopticon* feeling for the users.³⁷ The conversation with the manager of the Telecenters also confirmed the goals of these cameras:

"They [security cameras] are here to protect the users from the violence that happens outside. The images are stored in the local server and not shared with anyone, unless required by court."

Inside the computer room in Itararé, the Inclusion Agent approached the security cameras differently by enforcing Foucault's concept of "discipline and punish." As I observed, teenagers often begged the Inclusion Agent to let them stay longer on the computer after their time was up. The Inclusion Agent often let them stay longer, however, when the Telecenter was busy and the waiting room was crowded with people waiting to use the computers, the Inclusion Agent would show one of the cameras to the teenagers to get them to leave: *"My manager is watching us, if I let*

³⁷ See Foucault (1977) for Panopticon.

you stay she will yell at me and you... you could get suspended from here.” The Inclusion Agent was not pleased to enforce the Telecenter rules like that, but this was the only way she found:

“I feel bad that I have to lie, but that is the only way I found to get them to leave. They know that I always let them stay longer when the Telecenter is not busy, but they always try to squeeze in every possible minute as possible on the computer.”

The materiality of security cameras affected the behavior of the users in the Telecenters, whether by providing them with a safe place, or by enforcing the 1-hour slot policy. Either way, the users did not have privacy concerns that security cameras usually raise (see Dourish & Anderson, 2006), due to their understanding of the role of these artifacts in the CTCs.

Some users found a way to go beyond their 1-hour slot limit by going to another nearby Telecenter. I noticed that 9 informants, who were all teenagers, used both Telecenters: Itararé and São Benedito. The Telecenters were 1.5 kilometers, about 1 mile, apart from each other, which took me 15 minutes to walk from one center to another. Even though the teenagers had to cross boundaries set by the drug cartel, they thought it was worth the risk to stay closer to their friends and inside the Telecenters:

“There’s no stopping me [laughing], isn’t this our right? I mean... aren’t the Telecenters for us... so I’m not doing anything wrong. I get here, I play games, I

meet friends, what else could I ask for? The walk from Itararé to here [São Benedito] is not so bad... when it's not raining [shoot outs]." (Felipe, 16 years old)

São Benedito (SB) was located at the top of the hill, and it was the least developed community among the ones studied. The favela was comprised of unfinished homes, straight alleys, a small square, dirt streets, and a few shops such as bars and small markets. As described in Chapter 4, one of the drug cartels chose São Benedito as their territorial base due to its geographical location: it was easier for them to see when rival gangs or cops were going up the hill, which gave them more time to attack or hide. Another advantage was the fact they could attack with a “top to bottom” approach, making it hard for rivals to move up hill. The top of the hill was a precious location where other cartels were constantly trying to take control, hence the regular shootouts. The SB cartel took very good care of their territory because they did not want any enemies around, everyone that came in or out was questioned by them. I got questioned several times about my intentions there and the outcomes of my research, since they were not used to having researchers in their territory. The Telecenter in SB was also protected by the cartel and it was the only center, among the 20 Telecenters in Vitória, which did not have security cameras and personnel, as explained by the Telecenters manager:

“Right after we opened the Telecenter in São Benedito, the cartel told the Inclusion Agent, who is from the community, to get rid of the cameras and

security. Otherwise they would close the center and we wouldn't have peace. So far we haven't had a problem there."

The Inclusion Agent was born and raised in SB, he was a well-known and charismatic figure among the residents, and everyone respected his authority inside of the Telecenter. He told me he only had one incident in the CTC:

"One time, the Telecenter was really busy and I had several people waiting to use the computers, then I asked this kid to leave the computer because his time was up. He did not say a word, just pulled his shirt up and showed me his gun. I couldn't do anything so I just went back to my seat. A bunch of people saw the scene and was also terrified... All I know was that someone that was here that day told this story to some cartel members and that kid never showed up again. The cartel doesn't allow any of their members to come here, they understand that this is for the community and don't want anything happening in here."

The Inclusion Agent went on to explain that the cartel already had to deal with their constant conflicts, and they knew these conflicts upset the residents. Hence, they wanted to keep strategic places, such as churches, shops and the Telecenter, safe for the community in order for them to have a minimum of basic services to maintain the order. Having the residents unhappy and protesting against the cartel presence would just give them one more thing to deal with, which could weaken and make them a more vulnerable to their rival.

Even though the residents did not approve the war environment created by the drug cartel, they appreciated the fact that Telecenters were left out of their disputes:

“What can we do? It seems that God has turned his back on us... so we have to rely on this [cartel]. Just pay attention where we have gone to... we have to be thankful because they are letting us go to the Telecenter. It is safer than my house.” (Jussara, 31 years old).

The Telecenter in SB faced a different situation than the one in Itararé, the drug cartel did not allow cameras in the Telecenter; they served as the “invisible cameras” that protected the CTC but also watched the SB residents on the streets.

The violence was not the only problem faced by SB residents. Although being on the top of the hill was strategically good for the drug cartel, the residents were often neglected from basic services. As observed, access to water, electricity, education and Internet was much harder there than at the bottom. CESAN, water company, and ESCELSA, power company, did not invest in the infrastructure there, hence did not provide utility services to the residents, who had to rely on illegal makeshift pipes and wire taps. SB residents were left with no choice:

“It is not a matter of being illegal, it is a matter of surviving.” (Ricardo, 20 years old).

The situation was also hard for the Telecenter in SB. The Internet was brought to the CTC by a long-range directional Wi-Fi antenna that was located at the Telecenter of

Itararé, which boosted the *Vitória OnLine* signal so the receiving antenna at the Telecenter in SB could share the Internet among the computers. During the second month of my fieldwork (June 2013), the receiving antenna fell from its base and broke due to a heavy rain. The Telecenter was left without Internet for a whole month even though the residents and Inclusion agent constantly requested a replacement for the antenna:

“Everything up in here is hard. I’m not surprised that it is taking them [City government] to fix this. Every time a computer braked down, it takes ages for someone to come up here, pick it up and fix it.” (Inclusion Agent SB)

As I further questioned the Telecenter manager, she described how she could not do much beyond requesting a replacement antenna through the city government, as she explained:

“It is not that simple. We don’t have access to the money to buy a replacement antenna. We have to start a licitation issuance process, so several contractors can bid an offer, and just after that, the government will give us the money to buy the cheapest antenna that meets with all the requirements. The same thing happened to CDI, for us to contract them, we had to start a similar licitation issuance process.”

The licitation issuance was a requirement determined by law to avoid inappropriate use of public money. It applied to every branch of the government, institutions and agencies funded with public money. The bureaucratic steps needed to comply with

the licitation issuance were many, and required a long time. The episode of the Internet antenna was just an example of how public administration happened in Brazil. As Spilki and Tittoni (2005) explain, the incompetency of the politicians and the inefficiency of the bureaucratic state of Brazil contribute to perpetuate the dependency of the poor on the government, the authors add, bureaucracy is the reason why hospitals and schools do not have proper and updated resources.

During my visits in May 2013, the Telecenter in SB had its 10 computers busy most of the time, but in June 2013, the number decreased to about 5 computers. Despite the lack of Internet, the CTC's waiting room was still busy with people meeting up, playing board games or asking if the Internet was back. In the beginning of July 2013, the Telecenters' maintenance guys fixed the broken antenna. However when it was installed back in SB, it was not able to deliver the same Internet speed as before. The Internet was slower and no one could really explain why. Knowing how things worked with the government, the Inclusion Agent decided to not file another complaint, which would result in a wait for a new antenna:

"If I complain again, they will take this antenna down and it will be another month without any Internet until they can get back to us. But I've noticed that slow Internet is what keeps people away from the Telecenter... forget rain, violence, and walking up the hill."

During the time of no and slow Internet, some users of the Telecenter in SB used the CTC in Itararé instead, but others were left with the frustration:

“I work at the small restaurant by the bus stop, I only have one hour to come here [Telecenter in SB]. But it pains me to see the Internet so slow... I spend about 1 hour to just check my email. I can’t do much. I come here to talk to my sister who lives in Bairro da Penha, and now I can’t [...] It’s been almost 1 month without news from her.” (Roberta, 22 years old)

The experiences of SB residents in the Telecenter were representative of their overall life experience. They often felt frustrated with the public services provided and were at the mercy of the social conditions they lived in, as well summarized by Felipe, 16 years old:

“See, this is just a taste of what we have to face in our everyday life in São Benedito. This is what it means to be marginalized. The Telecenter is here to help us, and the Inclusion Agent does so much for us. But unfortunately, it is still us that face slow Internet, you know, poor Internet for poor people, politicians that only show up when they want our vote, cops treating us like shit and criminals, and traffickers that pretend to be fighting for us.”

The users in SB felt neglected and left out by the government, as my observations suggest, such exclusion maintained their disbelief for a better life.

The life conditions experienced by the ones in the “bottom of the pyramid,” such as the residents of SB and Itararé, were the focus of the World Summit on Information Society in 2005, which advocated for the application of ICTs to become

one of the prioritized paths to fulfill the Millennium Development Goals (MDGs).³⁸ Due to the short timescales and pressure to show tangible delivery, Telecenters became a quick, off-the-shelf solution that could be replicated in developing countries' poor communities (Chouna, 2013; Heeks, 2008). Such a "one size fits all" and pro-poor innovation model has been heavily criticized by scholars (see Gurstein, 2007; Prado, 2010) because it is often plagued by low utilization and an indifferent response from the communities into which they have been inserted. Also, it imposes preexisting designs with the expectation that the poor will adapt to them, limiting communities to organize themselves and develop solutions "by them for them."

Although these critiques and assessments of Telecenters could be valid for some cases, it would be unfair and hasty to generalize and call them an inefficient model. The majority of studies on Telecenters has overemphasized ICTs as the main drivers of empowerment and has been based on quantitative surveys of users. Both of these approaches provide a limited understanding of the social and technical roles such centers have in poor communities (Kleine, 2010). Approaching Telecenters through an ethnographic gaze allowed me to have an authentic and nuanced understanding of the experiences of favela residents in these centers. As I show in this chapter, the Telecenters I studied were not an ideal solution for the issues faced by favela residents. However they were far from having a "low

³⁸ According to Prahalad (see Heeks, 2008), the "bottom of the pyramid" is the 3 billion people who live on less than US\$2 per day.

utilization;” rather they afforded responses to community needs and goals. They not only provided their users with a myriad of social and technical benefits, but also became spaces that amplified the tensions, resistance, and struggles lived by favela residents. From a research perspective, these centers provide us with an opportunity to study ICTs, such as computers and Internet, beyond their technical aspects and contribute to the literature that understand them also as social objects (see Burrell, 2012; Kleine, 2013; Medina, 2011; D. Miller & Slater, 2000).

In the ICT4D literature, Telecenters were perceived as a failed innovation model mainly due to two reasons (Heeks, 2008, p. 27):

- Sustainability: Telecenters failed to deliver and survive prompted a new emphasis on ensuring the longevity of such projects.
- Evaluation: Telecenters were often held aloft by hype and uncorroborated stories, which fostered a new interest in objective impact evaluation.

I argue that the failure was not embedded in the Telecenter’s model per se, but in how sustainability and evaluation were defined. As I claim in my framework, policymakers and funders’ evaluations are too narrowly focused on economic returns of Telecenters,. These evaluations need expanding and should go beyond economic impact measurements and take into account the non-instrumental elements described in this Chapter - such as ways to promote human agency and alleviate sources of unfreedom - in order to have a holistic understanding of the experiences of CTCs’ users.

The Telecenters of Vitória were also facing problems to justify the CTC's budget because the city government was demanding such economic and objective impact evaluation, but the Telecenter manager was not able to do so, as she mentioned:

“David, the Telecenters are facing a high risk to close down. Every year I need to write a report to the city government justifying why the Telecenters should stay open. The number of people who access them is not enough; they want to know how much money the Telecenters are bringing into the community, the skills people are learning, how many jobs people are applying to and if they are getting hired... all these in numbers... There's no way I can translate the rich experience that the users are having inside the Telecenters in statistics and percentage. Every year I have to face the same struggle... they [politicians] don't understand that the main benefits don't always come as money... If the Telecenters close down, the marginalized communities will become even more marginalized.”

As I show in this section, favela residents used Telecenters to improve their economic condition, for example, by seeking and applying for jobs, however the findings suggest that these activities were not the exclusive, or even main, reason of their visits. They approached Telecenters as a key spaces in their communities where they felt safe, turned relations into relationships, and participated in *information grounds*. Thus, focusing on something that the Telecenters were not

mainly used for, such as activities related to economic return, will certainly make it hard, if not impossible, to evaluate them.

As for sustainability, I concur with Michael Gurstein's piece: *"Telecentres are not 'Sustainable': Get Over It!"* According to Gurstein (2011), Telecenter funders had the idea that once the initial investment had been made in these centers: *"mostly in providing hardware, software and some period of supported connectivity – that they would somehow 'magically' be able to transform themselves into 'social enterprises' which could get enough revenue from their local communities to cover access coverage, pay rent, pay salaries to staff, and cover charges for repair and replacement."* He explains:

"The broader purpose of Telecentres was and remains to add value as social initiatives by governments or others by providing free or very low cost Internet access to low income populations, in remote regions, or for those with other forms of social disability that prevent broad participation in an increasingly digital society. If governments (or others) choose to de-fund existing Telecentres on the basis that they are saving them from the evil of 'dependency' (or whatever) they should know that they are choosing to penalize precisely those whom they have otherwise identified as requiring support because of their social and economic circumstances.

Governments are not only unrealistic but they are deeply hypocritical in requiring communities in which they previously made these investments because of their overall lack of resources, to somehow now come up with the resources to support these facilities. One additional observation, Telecentre funders repeatedly confuse the

issue of Telecentre utilization rates with the issue of funding and sustainability. [...] Telecentres have or at least should have the mission of providing Internet enabled services and opportunities for access and use to those otherwise unable to obtain such access, make such use and thus achieve a degree of digital inclusion.”

These services, mentioned by Gurstein, “*are responsibilities and goals for which government funds have been budgeted. Attempting to transfer such responsibility and cost for the delivery of these services onto the poor and marginalized themselves – which the continuing chants for “sustainability” in fact are, is the height of cynicism”* since Telecenters serve as spaces to alleviate the unfreedom caused by the lack of investments by the government. In 2014, Brazil passed the *Marco Civil da Internet* (Brazilian Civil Rights Framework for the Internet) – law L12965, which officially declared access to the Internet as a human right to every citizen. Thus, the Internet was reclassified as a universal service that every Brazilian citizen has the right to access; the same way that education and health care have been classified in the past. However, there is no debate of how public schools and hospitals should be sustainable, since it is understood that the government is responsible to use taxpayers’ money to provide such facilities to its citizens. Therefore, why are Telecenters being questioned for not being sustainable? As I mention in the next section, even the drug cartel sees CTCs as vital spaces for the communities, so why should not the government? This calls for a reformulation of how politicians should perceive CTCs and who is responsible to keep these centers running, which is one of goals of this dissertation.

As I described earlier, the public services provided by the government, such as education and health care, are not of good quality, which makes Telecenters an exception since, according to the informants, they provided good services and ICTs to their users. However, it is uncertain whether the government will keep the same investments since the City of Vitória is planning to reduce the number of units or shut them down, due to the lack of understanding of these two factors: evaluation and sustainability. Therefore, it is necessary to think of realistic ways to maintain these CTCs steady for populations in marginalized communities and not so dependable on unstable governments. Hence, the real challenge faced by scholars, policymakers, funders and practitioners is to design and develop Telecenters that are embedded and owned by local communities. Such Telecenters would need to *“provide those communities with the variety of services and supports (e.g. e-government, e-health, small business development and support) which they require and, in the absence of the Telecenter, would be much less accessible and much more costly and difficult to obtain and to deliver”* (Gurstein, 2011). This is how Telecenters can reach their true potential as ICTs around which social engagement can occur.

4.2 LAN houses: Can a CTC be for-profit?

The LAN houses I visited for this study were located in Gurigica (Ghetto LAN house) and in Bairro da Penha (Life Games e LAN house). Gurigica and Bairro da Penha were located in the middle of the hillsides, between São Benedito and Itararé. These communities presented similar geographical characteristics as they were heavily populated and had houses of all kinds: from falling apart shacks to 5 story

brick houses. The impression I had was that every space in these favelas was taken to build houses. The unplanned settlement led to the formation of narrow alleys that seemed endless, reaching the entire hill like a giant spider web, connecting the bottom of the hill, in Itararé, to the very top of São Benedito. The lowest part of both favelas was also commercially oriented, where most shops were bars, bakeries, restaurants, small markets and barbershops. One of the few differences I noticed between Gurigica and Bairro da Penha was that the latter had a very tense environment, since the drug cartel there was in constant war with the cartel in São Benedito.

Both LAN houses were owned by local residents and were located in spaces adjacent to the owners' houses. Ghetto LAN house had 5 desktop computers, 2 ink jet printers, 1 Xerox machine, and 2 first generation PlayStations hooked to a small TV each. Perla took care of the space during the day and her husband, Rogério, helped her in the evenings; he was also in charge of the computer and network maintenance. During the day Rogério worked as an office boy for a local bank. At Life Games e LAN house, Rafael took care of the grounds and computers, while his wife helped with printing services, burning CDs, and typing CVs. Life Games had 9 PCs, 2 Xerox machines, and 4 video games (3 PlayStations 1, 1 Xbox) hooked to one TV each.

The scene in the LAN houses was a very active one. People were coming and going all the time, gathering in the middle of the room, chitchatting, buying 1-hour slots, and requesting photocopies of documents. I never saw the LAN houses

completely empty; there were always people around purchasing something or just hanging out. The users on the computers demanded the attention from the owners because they needed help in finding specific websites or, for example, transferring files from the web to their *Pen Drives* (USB flash drives). Thus, the help from the owners' spouses was constantly demanded in order to properly serve the users. LAN houses were more accessible to the favela dwellers than Telecenters because they were inside the residential areas; as described before, the LAN houses were extension rooms of the owners' houses. The Telecenters were in both extremes of the hill. In Itararé, it was mostly commercially oriented and in São Benedito the Telecenter was located away from the houses and the base of the drug cartel. LAN houses were opened from 8am until 9pm, and during the weekends. Although these centers were geographically more accessible to the residents and were opened for a longer period, the cost of using the ICTs was a factor that affected people's access, as mentioned by Marco, 15 years old:

*"We are all poor here, it is not like we have the money to stay on the Internet or video games all the time. I try to save my money as much as I can, and when there's money left, I always come here [Guettho LAN house]. I come here about 3 or 4 times a week, but get on the computer about twice. What I like about the LAN houses is that they have Windows, I can play Counter Strike and it doesn't crash as much as the computers in the Telecenters. [...] It's not like I don't like the Telecenters, I think they are great and just as fun... specially because they are free. That's where I do my homework, and watch YouTube. But when I want to have **FUN**, I come here to play CS (Counter Strike)."*

The favela residents did not perceive LAN houses and Telecenters as competing centers but, instead, as complimentary in their social and digital experiences, with different operating systems used in these centers, as well as opening hours and location. In both LAN houses the PCs were equipped with old large CRT screens and *cracked* Windows XP. Rafael mentioned that he tried to use Linux before but the users did not like it:

“The people hated Linux, they found it hard to use it. It was also hard for me to keep the machines updated. Every time there was a major update, which would significantly change the layout of the system, it caused lots of complaints from my costumers.”

Perla complemented Rafael’s thought by questioning the business viability of OSS and original copies of Windows:

“I tried Ubuntu here, but their word processor is bad. Have you tried BR Office? It crashes all the time and it constantly requires updates. My Internet can’t afford to update stuff this often. I find MS Word to be the most reliable. Also, my users favorite game is Counter Strike, which doesn’t work on Linux. [...] I can’t afford to buy legal copies of Windows, they are too expensive. I wouldn’t be able to keep my business open.”

The owners did not inform me regarding how much money they made per month with their LAN houses, but they mentioned that they were profitable and made enough money to “get by” and live an “OK” life:

“The money I make here I can pay my bills and save some. It’s not like I’m rich or I can leave the favela, but I can’t complain about my economic situation here. It [money] stays here in the community anyways... I buy all of my stuff here in the little markets.”
(Rafael).

According to them, original copies of Windows would not be financially feasible for their centers due to their cost – a single original Windows copy cost R\$650,00 (approximately US\$270.00).

Rogério and Rafael mentioned that they acquired computer and network maintenance skills on their own, by looking at tutorials online and spending a good amount of time tinkering machines. As I observed, they also provided maintenance for favela residents as complimentary to LAN houses’ ICT access. 9 informants said they had computers at home (only 5 had internet connection) and all relied on LAN houses to fix their PCs when needed, as described by Creuza, 32 years old:

“I’m really glad Perla and Rafael are around... my kids break this crap [computer] all the time... I don’t have the money nor the time to go to Reta da Penha [a wealthier area with formal computer repair shops] to fix it [computer]. How am I supposed to bring this encumbrance [CPU] in a bus packed of people, travel for 45 minutes, spend all my money and still make to work? All in one day? Life is hard... even when you have this magical technology [laughing with irony]”

Expanding LAN houses also as repair shops was an opportunity that both owners saw to help the community and have an extra source of income:

“... nowadays everyone can buy a computer, especially because they can buy it in installments and pay it in 48 months. The problem is that they don't know how to use it properly... People would come and ask me if I could fix their computers since I maintain the computer at my LAN house. I saw it as an opportunity to broaden my business... now I get computers with a thousand viruses, fried boards... and if it wasn't for me they wouldn't be able to fix their computers since I charge them a fair price and usually recycle boards.” (Rafael)

Scholars and practitioners (see Mori, 2012; Soares & Joia, 2014) have stated that the business model of LAN houses was fated to disappear due to the fast spread of personal computers and the Internet, as both were becoming cheaper and more accessible even to the poor. However, besides being important community centers, LAN houses have proven to be adaptable to the market needs. In the early 2000s these centers were solely focused on computer and broadband Internet access (Lemos & Martini, 2010), but throughout the years they have expanded their business to provide access to imported video game consoles. At the time of this research, LAN houses were not relying on ICT access as their only source of income, they had expended their business to provide repair and maintenance services to the community's ICTs, and become the “Internet service providers” (cable and wireless) of the favelas – this is further discussed in Chapter 5.

LAN houses were not only one of the communities' main gateways to the online world, but also places where the locals socialized – to the point of hosting birthday parties – and found safety from the constant conflicts involving the drug cartel. According to the informants, LAN houses were seen as a “sacred” and vital place by everyone - just like the local school, market and church. The mothers from Gurigica preferred to leave their children playing games there rather than letting them play in the streets, where, as explained by Madalena, there was a high risk of being recruited by the local drug cartel. They asserted that criminals do not go into these locally owned facilities because they perceive them as being beneficial to the community:

“I don’t have the money to pay for a babysitter to take care of my children. My life is rough, you know, their father got lost in life and I have no one to help me. I work all day to put some food on the table. It breaks my heart to know what could happen to them. I can’t leave them unattended. I’m more relieved to know that they stay in the LAN house. I give them some money, enough for 1 hour to play on the computer, but then they hangout with other friends in there.”

(Madalena, 31 years old)

The mothers and residents of favelas perceived LAN houses as safe playgrounds for their children.

In June 2013, while I was in Bairro da Penha walking to Life Games e LAN house, I found myself in the middle of a shoot out. Having never been in such a situation before, I did not know where to run. I watched bullets shattering windows,

people running around trying to find shelter and children crying. In the midst of chaos, I had an insight to just follow the locals. I noticed that a large group of people ran into the LAN house, and so I followed. Once I got inside, I grabbed a CRT screen to use as a shield. Although I was still shocked with the event, I noticed that people were more calm and relaxed, even though the shoot out was still happening outside. I asked the people why they were not scared, and Gabriel explained:

“This LAN house is sacred for the community. No one will cause any trouble in here or will shoot bullets aiming for the LAN house. If something happens, Rafael will close this down and there’s not Internet or a place for us to hangout. It is just like the church and the school down the hill. These are the best places for shelter.”

Hence, not only these centers were safe for children, as mentioned by Madalena, but also for adults who attempted to stay away from the violence in the streets.

The services provided by LAN houses also went beyond providing Internet access. The locals could pay their utility bills, buy cellphone recharge cards, play video games, print and copy their documents. Ghetto and Life Game were centers of reference for the community in other aspects: everyday the mailmen dropped a box in the LAN houses with the mail of the people that lived in the area. One of the mailmen explained why he could not deliver the mail directly to people’s homes:

“The address written on the mail does not correspond to the actual place where the addressees live. The people here don’t have formal addresses so they just

give out an address of places close by hoping that their mail will reach them somehow. I have been working in this area for a long time, so to make their lives easier I just drop everything here in the [Life Game e] LAN house so they come to just one place.”

The LAN house owners had a drop box where people came to check for their mail. The owners said they did not have the time to sort the mail: *“It is not my job and I don’t have the time for that... also it is not necessary, people here in the community trust each other, no one will steal anyone’s bills and pay them [laughing]”*. (Perla)

The LAN houses charged the users by the hour to use the computers and video games, one hour cost around R\$3.00 (approximately US\$1.75), and R\$2.00 (US\$0.75) for the Wi-Fi. Marco was a frequent user of LAN houses and he spent most of his allowance playing FIFA on PlayStation, but recently his main activity had been chatting with his friends on Facebook:

“I can’t go to talk or play soccer with my friends that live up on the hill or at Bairro da Penha. It is too dangerous for me to go there [...] There are always shootings going on”.

The constant conflicts between drug cartel members in the region have kept the people away from hanging out on the streets and alleys. The favela dwellers have found a way to break the boundaries set by the drug cartel and to maintain their social relationships in the LAN houses.

Adults mostly visited LAN houses for the same reasons they visited Telecenters: to type their CVs, seek jobs online and use e-Government services, specifically to print their criminal background so they could visit their relatives that are in prison:

“My nephew is in jail in Viana, and my brother can’t visit him because of his background, so I end up being the spokesperson between them. [...] Living here in the favelas doesn’t make me feel part of Vitória, but when the webpage finds my information [background check system] I feel that I’m still part of the city.”

(Fátima, age 56).

They also sought other e-government services such as filing taxes and applying for government issued documents, but the limited number of online services provided by the government was often criticized:

“our lives are already filled with problems and the government could at least try to make things easier [...] I can’t afford to take a day off from work so I can go to São Lucas [public hospital] just to schedule a doctor’s appointment.”

(Lourdes).

LAN houses, just like Telecenters, became the point of contact from central governments into these communities through e-Gov. services. LAN houses were also perceived as fundamental extensions of the two public schools in the area. The computer rooms in the schools were not open for the students after class time, and were only available upon the teachers’ request. The computers were obsolete; they

were recycled and brought in from many departments that belong to the city government. The Internet connection was slow, as the 1 Mbps connection link was distributed to 8 computers, which were usually shared among 30 to 40 students:

“The classes in the computer lab are useless, I can’t do any research, it takes forever [...] and to do research for my homework I have to go to Guetto LAN house. Here, at least, I can find help online and offline.” (João, 15 years old)

The children, from different ages and school grades, developed a peer-learning process in which they sat in groups of 4 or 5 in front of a computer and did their homework together. They first debated their questions and studied topics among each other, then, they would only get online if they could not figure out an answer to gain clarification on the topics of study. They were able to afford this peer-learning process everyday because they could split the cost of using the computer, which was usually a fraction of 1 hour.

Adults were also benefitted by the educational potential of the LAN houses. Mr. Alvares, 57, was a frequent customer of Gyga Point. However, he was mostly interested in services other than using computer. He was illiterate and was not motivated to use the Internet:

“I would come in to meet people and buy cell phone recharge cards, but after watching and listening to what my friends were doing here [Gyga Point], I became interested”.

Mr. Alvares had to overcome the first obstacle, which was to learn how to read and write:

“It was a hard task to help him, but he was always getting help from me and his friends that were on the computers next to him [...] now he is able to communicate with his grandchildren on Facebook” (Luis, owner of Gyga Point).

Although the benefits afforded by the LAN houses may have turned them into shrines from the perspective of favela residents, they still faced serious problems that could jeopardize their business and the community:

“The drug cartel is setting a very early curfew for the community, so the people can’t leave their homes and use the LAN house after school and work” (Perla, owner of Guetto LAN house).

Because of the current poorly built infrastructure, which is further discussed in the next chapter, the Internet providers were not providing fast broadband connections in the favela. Rafael and Perla contracted a 3 Mbps Internet plan for their LAN houses - fastest available to them - but they had to share the connection with at least 5 computers.

“The users don’t complain too much because this is the only internet they can access [...] The problem is when I have to make a security or Windows update. It takes forever to update every computer I have. It is dangerous because I have

to stay in for the whole night and expensive since I have to pay for electricity”
(Perla).

As Perla mentioned, it was dangerous to have any business running after the curfew set by the drug cartel.

Despite these issues, LAN houses have proven to be places that afford safety, citizenship, social relationships and even education. The cases presented here illustrate just some of the potential that can be promoted in LAN houses. So far, literature on CTCs has labeled private access venues, like LAN houses, as simply sites for individuals to interact with and through the Internet – the purposes of which (at least in theory) are known only to themselves (Gurstein, 2007). However, as my findings suggest, LAN houses have served the community to achieve broader social goals and activities. I argue that such limited understanding of CTCs is a consequence of the literature being almost entirely centered on the United States, and primarily concerned itself with a fairly narrow definition restricted to initiatives from government and non-profit. For example, Davies, Pinkett, Servon, and Wiley-Schwartz (2003) assert that CTCs are “generally nonprofit, locally-based organizations that provide IT to groups that do not get access to it in other ways” (p. 7). However, other scholars and practitioners have defined CTCs in a broader way that can include community-oriented for-profit ventures. For example, Servon and Nelson (2001, p. 280) state that “broadly defined, CTCs are community-based efforts to provide computer access and training to disadvantaged populations that would otherwise not have such access.” For them, an essential characteristic of CTCs is that

they do not originate from a top-down initiative: “In the absence of comprehensive public or private efforts to close the technology gap, community technology centers have emerged at the grassroots level.”

A similarly broad vision of CTC is espoused by CTCNet, a network of organizations and institutions that adopted that name in 1996 (P. Miller, 2000, p. 212). Among their members, they not only include “non-profit organizations, churches, academic institutions and the like,” but also “training centers, internet cafes, shelters and such” (CTCNet, n.d.). One may argue that LAN houses could be financially exploiting an already exploited area, however LAN houses were owned by favela residents and the profit made off of them seemed to stay in the communities, as mentioned earlier by Rafael who “*buy all of my stuff here in the little markets.*”

It is helpful to conceptualize the goal of CTC as digital inclusion; as a consequence, defining digital inclusion can give us specific criteria with which to identify a CTC. Crandall and Fisher (2009, p. 5) develop a definition for digital inclusion that draws on the seminal report from the United States’ National Telecommunications and Communication Administration entitled “Falling through the Net” (McConnaughey, Sloan, & Nila, 1995). Digital inclusion involves not just the provision of computer and Internet access, but also development of skills and content production. For Servon and Nelson (2001) each of these three items can be characteristic of a CTC.

Based on these criteria, I argue that favela LAN houses are in fact CTCs. First, they clearly provide access to a population that would otherwise not enjoy it. Second, by offering opportunities for informal instruction and mentoring in computer usage, they open up opportunities for skill building that would not normally be provided to the favelas. This function is illustrated profoundly in the story of Luis, the proprietor of Gyga Point, and Mr. Alvares. In this example, connecting with family members provides a motivation to acquire not only computer skills, but also more fundamental literacy skills. The LAN house owners played a first-hand role in offering informal training to the user.

The third criterion, content creation, was harder to identify within the users in the LAN houses. Servon and Nelson (2001, pp. 286-87) state that CTCs oriented toward content help their users both assemble content from the open Web and use it to create new content. Even so, it is significant that those authors see this content-related function as only characteristic of some CTCs. The clear implication is that other CTCs do not share this function, and hence that content creation is not strictly essential to the definition of a CTC. Also, the content creation was harder to identify within these cases, not because LAN houses do not afford it, but because Brazil, as other countries in the global [technological] periphery, has a long history of content consumption, of any kind, instead of creation (A. Miranda, 2000). I also observed the same lack of content creation, such as blog posts or informative texts, among users in the Telecenters, which are inherently considered CTCs. Hence, content creation is an issue that requires a much deeper analysis involving cultural and socio-economic factors, and not just technology access and skill building.

LAN houses fulfill the most essential characteristics of other sorts of CTCs by both providing access to computers and the Internet and – informally – offering training. Although content creation is considered by some authors to be part of digital inclusion, as well as a third function of CTCs, there does not seem to be support for the view that this function is essential to the definition of a CTC. In any case, content creation is not strictly essential to the definition of a CTC and, therefore, doesn't go against the argument that LAN houses are a kind of CTC.

So why is it important to classify LAN houses as CTCs? As I described in Chapter 1, LAN houses have received a lot of bad press, which compromised their reputation and potential. These centers were blamed for teenagers that stayed out late at night and ditched school to play games. LAN houses were also labeled as “gambling houses” (Angeluci & Galperin, 2012).³⁹ Although these centers could be used as such, the findings here presented show another side of LAN houses, which contributed to the wellbeing of the favela residents, promoted human agency, and alleviated sources of unfreedom. These centers provided a space that helped the residents overcome the difficulties of living in a marginalized and unsafe area. Therefore, understanding the potentials of LAN houses and re-classifying them as CTCs could lead to policies that promote their propagation and, consequently, socio-digital inclusion rather than enacting laws that create barriers for their business, such as the law that forbid their presence near schools (Law #4.782/2006).

³⁹ Gambling houses are illegal in Brazil and often are associated with the organized crime.

4.3 *“LAN houses are for boys and Telecenters are for girls:”* CTCs as Gendered Spaces

Johnson (2003) claims that *“in every culture men and women differ in their information needs and views about technology (Momo, 2000). These views, in turn, have an impact on how men and women access and use new technology resources. Although the differences among the sexes are apparent in most contexts, technology deployments continue to be gender indifferent. While an argument can be made that ICTs are gender-neutral, the fact remains that institutional frameworks and formal and informal social structures have a profound impact on the way in which new technologies are deployed and used”* (p. 11).

The infra- and social structures of the CTCs highly influenced who and how favela residents accessed these centers, leading to the norm: *“LAN houses are for boys and Telecenters are for girls”* (Mariana). This section develops on the notion of space beyond the physical into the domain of space as socially constructed and negotiated, exposing how space can be defined by physical as well as socially explicit and implicit boundaries. It focuses on the gender differences in using CTCs while highlighting the experiences of the local women.

The LAN houses in the favelas were considered reference centers for games, either on computers or consoles. Among the informants, no one had a video game console at home, and they went to the LAN houses to play their favorite games, which were FIFA, Counter Strike and Call of Duty. The ambience at LAN houses was dark, walls were decorated with posters with pictures of half-nude Lara Croft and

war scenes from Call of Duty, and boys cursed at each other and shouted constantly. The action and plays taken on the games were also reflected in the real world, as I observed in of my visits to Life Games e LAN house, one boy punched his friend because he did not cover him in the battlefield (Call of Duty) leading to his character's death, while another teenager slammed the PlayStation 1 as a reaction to the referee's "bad call" (FIFA). The language used in the boys' conversations was also very bold; names like "pussy" or "fag" were used to describe someone's inability to play well. Although the boys did not seem to have a problem with such behavior: *"I don't see a problem, this is how we play... in here or in the soccer field"* (Gabriel, 17 years old), the female customers did not approve it:

"I come here [Guettho LAN house] in the mornings because I don't want to see these little delinquents. They scream and say bad words all the time... they need to understand that they don't own the place and might make other people uncomfortable. I'm a grown woman and they know they can't mess with me, but my daughter is not allowed to come to the LAN houses. I don't want her to be around boys specially those that behave so badly." (Madalena, 38 years old)

The presence of female teenagers in LAN houses was not appreciated by their parents – *"my dad doesn't want me to talk to boys because he doesn't want me to end up with a belly [pregnant]"* (Alice, 15 years old) – and the frequent male teenager customers:

"Video games are not for girls, they don't know how play it. Can you imagine a girl plying CS [Counter Strike]? They can barely kill a fly; imagine having the

guts to shoot at someone in the game. They should play with their dolls or polish each other's nails." (Marco, years old).

Brazil's society is considered to be sexist, as argued by Rangel (2013), women are already accustomed to being seen as sex objects and housewives. The author claims that the "mission" given to girls, over the decades, has been the following: get marry, raise children, satisfy the sexual desires of their partners and all without losing the composure of a good girl and a "family" girl. Hence, girls inside the LAN houses meant to challenge the social constraints and go beyond their "given mission." Although the teenager girls obeyed the norm, they did not always agree with it, as protested by Larissa, 17 years old:

"My mom said that she doesn't have money for me to go to the LAN house... I think she does, but she just doesn't want me around games. She thinks games are violent and evil... they are not for girls. I'd like to try them once. I love soccer and I can't wait for the World Cup, but I can't play it [boys did not allow her] on the field or FIFA at the LAN house. I don't think it's fair. I wish Marta would come here and teach them a lesson."⁴⁰ (Larissa).

Girls in the favelas faced the social pressure to stay away from LAN houses, however, they still mentioned their interest in playing video games.

⁴⁰ Marta is Brazilian professional soccer player and a 5 time FIFA World Player of the Year.

“Yeah, the games are violent, but even the guys will say that, that is the main reason why they like such games, but I don’t have a problem with it, it is all for fun, you know? It’s just to relax... I’d love to play games but the boys seem to have a problem with girls playing with them... maybe they don’t want to lose to us [girls] [laughing].” (Amanda, 18 years old).

Just like Amanda, the 13 female teenagers, out of 16, I interacted with, demonstrated interest in playing video games, whether they were considered violent or not, but they were discouraged due to the LAN houses’ ambiance and social norms imposed by their parents and boys in the centers:

“I’m always scared to go to Ghetto [LAN house]. It is dark; the boys are pushing each other... screaming... I don’t know... I don’t get a good vibe from that place. That is why I prefer the Casa Brasil [Telecenter in Itararé].” (Thais)

Telecenters did not provide the same game experience as LAN houses. The computers ran on Ubuntu and the users could not install and play their favorite games. Such limitation affected girls the most because they were not “allowed” in LAN houses and could not play games like FIFA. Their access to games was narrowed to web/flash-based and Facebook games, such as Candy Crush and Farmville: *“my gaming experiences revolves around whatever I can find on Facebook, like Candy Crush.”* (Amanda). These findings follow Lemmens et al. (2006) who argue that boys are more attracted to violent video games than girls, and Oreglia (2014) who claims that girls play Facebook games, like Farmville, more often than other games. However, as I showed in this section, the choices of female teenagers

did not reflect on their game preferences, instead, it was a result of their limitations and social constraints they faced.

Telecenters had a complete different ambiance than LAN houses. The lights were bright, the Inclusion Managers tried to keep the conversations at a low tone and the walls were decorated with workshop announcements, job openings, beautiful landscapes, and motivational and biblical messages. Such arrangement of the rooms was a rule defined and checked every week by the CDI managers:

“We want the Telecenters to look like a welcoming place to everyone. We want these centers to serve, men, women, the elderly, and people with disability... Telecenters are about digital and social inclusion, thus we can't benefit a group of people over another. This is for the entire community” (CDI manager)

In both Telecenters, I observed a larger presence of women than men, which followed the numbers – from the centers' database – mentioned by the Telecenters' manager. According to her, in Itararé and São Benedito the ratio was 3:2. The women felt welcomed and comfortable in the CTCs, not only because of the ambiance but also because of the social interactions in there:

“I don't like LAN houses because it is too heavy for me, you know... it is just not for me. I only go there if I have to get online on the weekends. I don't think they are bad, but they are just not for me. Here in the Telecenter [Itararé] I can make new friends, like Zilda the cleaning lady. Now we go to church together. I feel free, I can talk to people, ask for help to the Inclusion Agent, she is so

friendly and welcoming. Sometimes I just want to come to see her.” (Neuza, 40 years old).

Telecenters users were always requesting the help of Inclusion Agents, from finding websites to editing a photo. Their openness and willingness to help was something appreciated specially by the female users:

“Here in the favelas it is hard to be a woman. We have men constantly coming on to us; it bothers me. Sometimes, when you ask for help to a guy, like carrying something for us or even when we buy something at a store, they always expect something in exchange... and this “something” is like a kiss or... I don’t even want to think about it. I just know that it isn’t respectful. But with him [Inclusion Agent from São Benedito] it is completely different. He helps us with his heart... no second intentions. I can ask for all the help I need and he will do it with an open heart. I want my son to be just like him.” (Vanessa, 28 years old)

Vanessa’s testimonial is a good representation of the sexist environment outside the Telecenters. The Inclusion Agent in São Benedito did not have issues helping male or female users, however, the Inclusion Agent in Itararé, who was female, had issues with male users:

“They feel ashamed to ask me a question... not male kids, but teenagers and adults. They don’t want to show to a woman that they don’t know how to do something. It would be like a defeat to them. Favelas have a very macho

society... I think the entire country is like that, but here it seems worse. The inclusion agents are trained to deal with people's differences, such as age and gender. When I see that someone is stuck, trying to do something on the computer, I always ask them if they need help, but the men will instantly say "no, I'm just thinking about something else", but when I turn around, I can see them asking for help to a friend next to them."

My observations concur with the Inclusion Agents testimonial. In fact, I was perceived by male users as a way to get help without asking the Inclusion Agent. As described in Chapter 2, I helped users as a way to gain their trust and give back, but when I noticed that the Inclusion Agent [Itararé] was available for consultation and a male user asked me for help, I questioned them: "why don't you ask her?" Some users mumbled and gave up on the idea of asking me for help, while others replied saying that they did not feel comfortable, as mentioned by Olavo:

"You know... well... I don't know... I just don't feel it, you know... It is hard to explain. I'm already 21 years old, I'm an adult and I can't depend on women, I'm already the provider at my home."

In the Telecenters, I did not observe any informants having issues or complaining about users of opposite sex. Also, female users did feel intimidated by the presence of male users in there. The CTCs' ambiance was more harmonic and inclusive than the LAN houses', which was not a coincidence since the CDI managers worked with the Inclusion Agents to provide such atmosphere:

“we do not tolerate any kind of prejudice [...] Telecenters are here to help everyone. We train the Inclusion Agents to promote a comfortable environment which would be welcoming to anyone in the community.” (CDI manager)

Women used Telecenters mainly for social networking, as I discuss in Chapter 6, but they also used the centers to seek for services to improve their daily lives. Food websites were often visited by them, 60% of the female informants mentioned that they printed or copied a recipe from a website. Natalia, 15 years old, used to browse through recipe websites most of the time to cook for her sister and father, since her mom had to work all day as a housekeeper:

“I cook for my little sister and dad, he works around here and comes home for lunch. He is very demanding and always wants me to cook better... I’m not a chef, I’ve told him that, but he doesn’t listen. Ever since I started getting new recipes here, I’ve been able to be more creative and get his compliments; I can feel that the vibe in my house is much better.”

Female users usually were the majority in the workshops provided by the Inclusion Agents, as I observed, they represented around 70% of the users in the room. In the focus group meetings, I asked them why they went to the workshops, and the answers were related to learning new skills to improve a given aspect of their homes, as mentioned by Neuza:

“I don’t have money to buy gifts for my kids, so I always come to the workshops to learn how to build new things. One day we built a checkers board and

collected bottle caps to use them as the pieces. The other day we researched e-waste and we built little robots out of computer boards. [...] I bring these toys to home for my kids and they love it."

As described in this section, the Telecenters afforded empowerment to the female users by alleviating sources of unfreedom such as the social constraints in LAN houses, and promoting wellbeing at home, like the cases of Neuza and Natalia, and in other sectors of the favelas, as I describe in the following Chapters of this dissertation. However, the CTCs empowered them within the "given mission" imposed onto the women of such communities. As I observed, the centers did not help them addressing larger issues in the favelas such as sexism, sexual harassment and women's rights. Telecenters should promote engendered policies in order to mobilize women because in order to affect change, women must cooperate, unify, and synthesize their cultural actions to redefine the parameters of oppressive social structures (Freire, 2000): *"ICTs coupled with the forces of "grassroots globalization," could give women louder voices, greater opportunities, and enhanced ability to design their own futures. Moreover, by leveraging ICTs to mobilize women's groups, ICTs can help women combat environments of oppression and marginalization"* (Johnson, 2003, p. 9).

This section recognizes how gendered social norms related to the usage of CTCs' spaces represent an important framing dimension to access ICTs. While LAN houses in the favelas were coded as male, the Telecenters were coded as female. This shows that technology is situated in framing institutions (Wajcman, 2004) and

such framing can be heavily gendered (Kleine, 2011). This section also expands the literature on CTCs by giving a more qualitative and nuanced analysis of women usage of these centers, since most studies on CTCs were based on surveys and covered gender issues just by “counting women” (Kleine, 2011). Gender-aware studies are a powerful tool in understanding patterns of ICT adoption. As Hafkin and Jorge (2002) have claimed, *“there is an urgent need for improved gender analysis in technology-driven development. Only by paying closer attention to the gender dimension can [CTCs] be effectively leveraged to tap into the full potential of”* marginalized and oppressed communities (Johnson, 2003).

5 Living Under Repair: Understanding the Messy and Mundane Infrastructure of the Favelas

This chapter revolves around the issues that favela residents experienced with physical digital technology, or infrastructure, in the CTCs. It highlights how their contexts – being poor and living in marginalized areas – contributed in shaping the unique and mundane ways they interacted with infrastructure. I bring several cases, from mobile phones to keyboards, to illustrate such experiences.

Access to mobile Internet is growing all over the world, pushed by lower cost smartphones costing as little as \$40. Although mobile phones may not provide the same functionality as a computer, the affordances of mobile Internet have a potential to bring a billion or more people online (Morgan Stanley Research, 2009). The arrival of this private, accessible, but perhaps not optimal mobile Internet has implications, such as the ability to access the Internet anywhere, for ‘traditional’ CTCs serving low-resource communities. Recent assertions in the practitioner literature (e.g. 2010; Samii, 2009) emphasize the irrelevance of CTCs in the age of the mobile, however as I show in this chapter, it deserves further scrutiny. I do not presume that mobile Internet use is a substitute for CTCs or irrelevant to those who use the centers; I argue that CTCs and mobile phones complement each other by promoting communicative ecologies, especially in places facing social and infrastructural constraints such as favelas. Just very few scholars have analyzed the

interplay among such ways of access (e.g. Chigona, Lekwane, Westcott, & Chigona, 2011; McEwen & Scheaffer, 2012; Ray & Prasad, 2015), and even fewer (e.g. Donner & Walton, 2013) have analyzed the outcome of the use of mobile Internet on specific groups of people engaging in particular activities or the strategic choices made by users confronted with a potential repertoire of access constraints (Donner & Walton, 2013). This section does not analyze the use of SMS text or voice calls, but sheds light on the use of mobile Internet use vis-à-vis shared computers in CTCs and Internet access.

Infrastructure, as a term, conjures up images of large, seemingly impersonal systems: electricity systems, rail networks, viewed from up high as a unitary, functional entity. However, in this chapter I discuss infrastructure from a different perspective: what is it like to live with these systems, with their points of failure and disintegration? How does infrastructure inhabit the worlds in which we live? How do we interact with it, how do we manage and force it into the rhythms of our ordinary lives? In this dissertation, infrastructure is understood as, inherently, given social and cultural interpretations and meanings; it renders the spaces that it occupies *“as spaces that can be distinguished and categorized and understood through the same processes of collective categorization and classification that operate in other domains of social activity. Technological infrastructures and services, then, need to be understood as operating in this context”* (Dourish & Bell, 2011, p. 115). The infrastructure at stake in this discussion is the Internet, with all the wires, cables, computers, and promises of futurity that it implies. I argue that thinking about these conditions of everyday breakage and failure allows us to envision

infrastructure as a process, rather than as a stabilizing and steady entity. Infrastructure is cobbled and taped together, it has to be struggled with, and it is full of gaps and holes and seams, both materially and socially created. Hence, if we are to rethink infrastructure, we must think about how it slots uncomfortably and uncertainly into the rhythms of people's daily lives. We must consider what work goes into making it fit, and acknowledge the precarious and haphazard nature of this work and its fixes. It is only in looking at these gaps—these points of breakage, these seams—that we can begin to see infrastructure not as a thing imposed upon or denied to people, but as something that must be lived with and dealt with, in all its messy, uncertain reality.

5.1 Invisible Wires in Mobile Phones

The faulty infrastructure in the neighboring favelas of Gurigica, Bairro da Penha, São Benedito and Itararé did not only affect the physical network, such as cables and water pipes, but also the wireless one. The cellphone carriers did not provide satisfactory signal coverage of the favelas, which lead to constant complaints from the favela residents, especially because walking around in the favelas seeking for cellphone bars was dangerous due to the shootouts from the intense drug war that was happening during this fieldwork, as mentioned by Fernanda, 17 year old:

“My smartphone has no bars up in here [at the top of the hill], my calls are never completed and it is really hard to communicate with people from here. I don't even know I pay for this thing. When I need to make urgent calls, I try to

go to Bairro da Penha, forcing me to walk through Av. Hermínio Blackman. You know that avenue is known as the Gaza Strip of Vitória, right?"

Ironically, the hill where the favelas were located was known as the *Morro da Antena* (Hill of the Tower) with reference to the cellphone tower located on the top of the hill. Due to its lack of utility for the favela residents, some informants did not even know what the tower was for, as mentioned by Rodrigo:

"I come up here on the hill almost every week. I guess that's one way to move up in life. I never went up this crazy thing [cell phone tower] but I look at it and see that there's still more to achieve. It gives me hope."

During the fieldwork, the major cellphone carriers, Vivo, owned by the Spanish Telefonica, and the Italian owned TIM, were under investigation by the State Prosecutors for carrying out a sort of social segregation. The carriers' customers who were in peripheral neighborhoods of Vitória had more difficulty to complete calls than users who were in richer locations (Campos, 2012). According to the *Agência Nacional de Telecomunicações* (National Telecommunications Agency, which is referred to as its acronym ANATEL) the phone carriers offered a blocking rate (calls that are not completed) in the studied favelas greater than 5%, which was maximum rate allowed by the agency.⁴¹ In São Benedito, the average blocking rate was of 15%, and in Bairro da Penha, Gurigica, and Itararé was of 8%. The State

⁴¹ TechTarget (2015): "block rate is the percent of calls offered that are not allowed into the system; generally % receiving busy, but may also include messages and forced disconnects. Blocking rate is an important metric to consider to ensure you are allowing your customers access to your center. It is generally kept very low (under 1%)."

Prosecutors were working with ANATEL to find plausible punishments to the cellphone carriers; one of the discussed penalties was suspension of SIM chip sales from such carriers (Campos, 2012). According to the Prosecutors: “users (...) were being discriminated against in relation to the enjoyment of the carriers’ network service, i.e. the blocking rate was much higher in some peripheral neighborhoods within Vitória, while in others this rate was negligible” (Campos, 2012).

In Brazil, smartphones were expensive because the importation taxes were high and the country did not have domestic manufacturers. The carriers’ coverage was satisfactory in wealthier areas, however their services remained expensive. Favela residents relied on *xinglings* and pre-paid plans in order to maintain a cellphone number and receive calls at the minimum cost.⁴² *Xinglings* were not quite used as *smart*, only when Wi-Fi was available, since the carriers’ infrastructure segregated the favela users from proper wireless services and they could not afford data packages. The *xinglings* were cheaper since they were smuggled in the favelas by people related to the drug cartel and sold in the black market. The cartel had a deal with the sellers, who gave 30% of the sales to the traffickers in exchange for protection. The sellers were secretive about the origins of the smartphones, but

⁴² *Xingling* is a term that was used to refer to cheap Chinese imitation and pirated brands, such as HiPhone, Galaxia, and Lumiax.

Rafael, 23 years old, from Bairro da Penha, who used to sell cellphones in the black market, mentioned that *xinglings* were smuggled in from China through Paraguay.⁴³

The *xinglings* only came with a charger and did not have warranty. The constant power outages in the favelas often fried the chargers, which were of bad quality, and sometimes damaged the smartphones. The favela residents felt neglected since they did not have the money to keep buying new chargers. Hence, sharing cables and power cords was an activity that affected group formations and power relations, as mentioned by Felipe:

“Here, we purchase xinglings in the back alleys or in the neighborhood market. If you’re lucky it comes with a charger and that’s it... the charger lasts a week. I bought the USB cable separately and now everyone wants to go to the Telecenter with me so they can transfer the photos to the computer and upload them on Face [Facebook]. I’ve got tons of friends and respect now. I’m even picked first to play soccer.”

As observed in the CTCs, the *xinglings* were also shared among groups of 3 or 4 friends since not everyone could afford to buy one. Usually, each person of the group would contribute to the *xingling* experience: one would bring the smartphone, one

⁴³ The route China – Paraguay – Brazil is known for the intense black market traffic of fake goods made in China. Such goods are brought to Brazil by smugglers who cross the border bridge, called Friendship Bridge, between Ciudad del Este (Paraguay) and Foz do Iguaçu. It is estimated that more than 30 billion dollars worth of fake goods cross the bridge every year. See Pinheiro-Machado’s (2008) ethnography entitled *“China-Paraguai-Brasil uma rota para pensar a economia informal (China-Paraguay-Brazil: a route to discuss the informal economy)”* for detailed information.

would bring the USB cable, and another would bring a charger. When offline, favela residents used *xingling* mainly as cameras, music and video players.

The CTCs did not only become the wired ISPs of the favelas, but also the wireless hotspots. In the Telecenters' computer room, the users were not allowed to talk or play music (loudspeaker) on their cellphones, but they were allowed to connect to *Vitória OnLine* and browse the Internet on their *xinglings* either inside or outside the computer rooms.⁴⁴ In the LAN houses, the users had to pay a fee of R\$2.00 (approximately U\$0.75) per hour in the centers' Wi-Fi – which was cheaper than 1 hour on the PC or videogame (R\$3.00). Favela residents perceived the *xinglings* as an extension to the CTCs. Although the devices were mobile, accessing the Internet was still bounded to such centers. CTCs provided a place for their users to not only lend their cables and cords, but also to promote other social dynamics such as the gathering place where female teenagers went to the bathroom to take selfies so they could share them later on Facebook.

When on the Wi-Fi networks, the users mostly chatted on Facebook messenger and played Facebook games. The content, such as photos, was not directly uploaded to Facebook from their *xinglings*. For example, the smartphone used by the female teenagers had several photos of different people, thus they preferred to first upload their photos to the CTCs' computers so they could chose the best photos, do some basic editing and distribute them in an easier and faster

⁴⁴ *Vitória OnLine* is an open and free wireless network maintained by the City of Vitória, which were accessible in several public places such as municipal parks, city government buildings and Telecenters.

manner – instead of singing into each teenager’s account and upload a photo through the *xingling*. Mariana mentioned that she prefers to use Facebook on the computer since it offers a better experience than on smartphones.

“I can’t use it [xingling] the way I want. Like on the screen, most of the websites turn into English in the mobile version. I like to use the computer because on the phone it doesn’t work quite right. It is not easy to use the phone... all these terms that I don’t understand. I have lots of difficulties in downloading stuff from the Internet: music, photos, videos...” (Mariana)

Downloading content from the Internet also worked in this manner: they first downloaded music or videos to the CTCs’ computer, to check if the files were not corrupted, and then they transferred them to their smartphones through a USB cable. Hence, CTCs became an important place that filled in the gap with services that the unstable infrastructure was not always able to deliver. Since walking around in the favelas was risky, most users tried to download as much content as they could, for example the latest *forbidden funk* songs, so they would only need to cross territory boundaries when necessary. Music played a big role in entertaining the users, as mentioned by Roni, 21 years old:

“I come here [Telecenter] to transfer songs to my smartphone. Music is everything in my life. It sets me free, like when I read a book. The music goes well according to my mood, but everything in life is music. Car noise is music, tin banging is music... Music is like a world where there’s no prejudice and judgment, and the smartphone is like the spaceship that takes me there.”

As mentioned by Roni, his *xingling* allowed him to “be” in a place where he felt comfortable, Monica, 17 years old, found in her smartphone a safer place to express her individuality, feelings and emotions:

“I can’t go out and scream my pain, I fear the consequences. They will either think I’m crazy or the drug people will “silence” me. So I usually come here and sit right at that little bench [the bench was at the corner of Guetto LAN house and a little market]. I have a deal with Perla, and she let’s me use the WiFi whenever I want, and I pay just R\$10,00 [approximately US\$4.00] a month. With this phone [a xingling] I feel like I my friends can always hear me, you know? Like they can listen to my feelings. I can scream my pain on Face and I will get support. I feel safer and as a real human being.”

Xinglings were powerful enablers of photography and video recording, but since the users had issues with the carriers’ networks and they did not know how to publish content through the CTCs’ Wi-Fi, uploading or downloading audio-visual media was done on the CTCs’ computers. The CTC users navigated the interrelated constraints and affordances made available via the computers in the CTCs and private mobiles; the users benefited from the different functions available on different platforms (computer or smartphone). They used computers for more resource-intensive goals and media production, such as typing their CV on a word processor and editing their selfies, and turned to their *xinglings* for time-sensitive goals, such as Facebook chat and photos. No one used word processors or performed complex tasks on their *xinglings*, similarly no one took pictures with the webcam available on some

computers. Time and money were also constraints that determined which platform the informants used. Although their preference was computers, they did not always have enough money to use the computers at the LAN houses or their free time at the Telecenter had expired. Thus, some CTC users relied on their *xinglings* to overcome such constraints, as mentioned by Ricardo:

“I prefer to use the computer... I can barely use this phone, it is hard to type and see what is going on. It is good for [Facebook] chatting and taking photos, but downloading a webpage on it is so painful... Every time the Telecenter is packed and there is a long wait to use the computer, I get on the free Wi-Fi to pass the time and chat. Also, when I want to do something quick like telling a friend I’m coming over, I get on the Wi-Fi of Ghetto LAN house and send the message, this way it is much cheaper.”

CTCs were ecosystems vital to mobile media literacy. The constant sharing of *xinglings*, and cables, among users allowed them to help each other out, discuss and try new functionalities on the smartphones. The devices ran on an Android-like operating system, however the owners did not have access to the Google Play app and could not download Google apps. Each *xingling* seemed to have a different application to download mobile apps, and as I observed the informants trying it, it was hard for them to search and install apps such as Gmail and *Snapchat*, hence, most of the users simply stuck with the apps that came with the phone, like Facebook. The Telecenter Inclusion Agents and LAN house owners tried to teach the CTC users how to use their mobile devices. However, they were constantly busy

watching the place, fixing computers or helping users that had paid for the hour (in the case of LAN house owners), that they could not find the time to properly help the users of mobile devices. The users often inquired about issues related to media production, such as video recording and effects on photos. However, the tinkering on media translated into simply taking photos and editing them on a website.

“Here in the Telecenter we end up knowing about almost every kind of technology. I have no idea where they [users] buy these cell phones [xinglings], these devices are so sketchy... I help them however and whenever I can, they are not easy to operate, but if you spend enough time on them, you can do something cool, and that’s what I can’t do. I’m always busy trying to help someone that is on the computer or someone that want’s to print their CVs. Thus, I teach them how to transfer the photos to the computers and how to edit the photos on a website, it is easier.” (Inclusion Agent of Itararé).

The smartphones were seen as precious materials in the favelas. The users were afforded with bargaining power and had the possibility to exchange their *xinglings* for pretty much any good they desired, as expressed by Janine, 21 years old:

“Cellphones are the most democratic kind of money here in the favela; they’re worth a lot and everyone needs one. I can buy one in the back alley... talk to everyone... and then if I want to buy something else, I just trade it for something else. The other day I was crazy about a bike I saw. What did I do? I didn’t think twice and offered my cellphone... the trade was fair. This cell phone will still come back to me.”

Smartphones gave favela residents a sense of being included socially. They felt more courageous to cross social boundaries when they possessed the device. Marcos was the only informant who had a smartphone from a major manufacturer: Galaxy S3 by Samsung. His mom purchased the phone for him in April 2013 and was able to afford it because the store financed the phone – she had to make 18 monthly payments to avoid APR interest:

“I got the phone from my mom. This smartphone makes me empowered, because I can just go around to Praia do Canto or Jardim da Penha [rich neighborhoods] and not worrying being judged as poor or favelado. When I went to the mall the other day, I had my cellphone in my hands the whole time, it felt like the it worked as a key and was opening every door I was walking thought.”

The findings in this section join Donner and Marrion (2013) in questioning the declaration of digital inclusion promoted by mobile Internet. Though this study is not the first to refute the overstatement of how mobile Internet promotes digital inclusion (see Donner & Walton, 2013; Gurusurthy, 2010), it also shows:

“The continuing importance of safe, well-equipped venues such as these. Computers in particular play a key role in ecologies of resource-constrained feature phone users. [...] People who could, in theory, be “mobile-only” internet users have instead constructed a “mobile-centric” repertoire, relying on the [CTCs] to complete certain tasks required by school and work as well as to save money. Mobiles played a central role in participation in network based peer interactions but the [CTCs] was central to other

kinds of participation. Public access continues to offer (at this time and in this population) critical value in certain activities. Mobile internet is making great strides, but does not yet substitute for public access, considering hardware, network, cost, space, printing, and guidance. Following, public access via the PC and private mobile access may be different enough to complement rather than substitute each other. Our findings echo those of in the context of higher education, suggesting that while phones are used extensively in educational contexts, computer users enjoy a wider range of choices and greater convenience.” (Donner & Marion, 2013, p. 11-12)

5.2 Living in the Broken City

This section aims to theorize the work of repair as a site—or perhaps more accurately a kind of sustained encounter—through which conditions of pervasive infrastructural neglect and decay are contended with and managed on a contingent, ongoing basis. If the future of the city, as claimed by Davis (2006), lies in the Global South, and is a future characterized primarily by the severity and continuity of legal, economic, and social precarity, then it falls within our remit to theorize and bring to light those ways of living (of *making do*, even if *getting ahead* is an impossibly constrained task) that can render these conditions of ongoing uncertainty somewhat more manageable for those who live within the cities of our future. According to Davis, the “overurbanization,” which has been an accelerating phenomenon of bringing the population to the cities in the center, is driven by the reproduction of poverty, not by the supply of jobs.

Here, I attempt to discuss about the place repair has in sustaining the everyday technological lives of the inhabitants of the favelas. How do residents of the favela—living as they do in a zone of extreme uncertainty, marked by violences writ large and small—maintain a sense of stability in their technological lives? Breakdown and failure are the forms, I argue, in which technology is most commonly encountered within an everyday life that is marked by uncertainty, such as those of favela residents.

Breakdown, should not, then, be treated as an exception to some presumed normal constancy, but should rather be treated as the backdrop against which everyday life and stability must be fashioned. If one has to live with breakdown—and in zones of informality and uncertainty such as the favela and Davis' city of the future it seems inevitable that one will—then studying the work by which breakdown is managed will give us some insight into the kinds of work, people, and spaces that allow for everyday life to continue among built and experiential uncertainty.

Repair, Jackson (2014) writes, can be understood as “the subtle acts of care by which order and meaning in complex sociotechnical systems are maintained and transformed, human value is preserved and extended, and the complicated work of fitting to the varied circumstances of organizations, systems, and lives is accomplished.” In an environment where uncertainty and informality is the primary organizing principle to the small works and acts that constitute an ordinary life, it is

even more critical that we understand the kinds of work and acts of care that manage to hold together a semblance of continuity.

In doing so, I wish to move away from the progressive narratives that have been embedded in discourse surrounding the use of ICTs in developing countries and zones of informality, and instead move towards a conversation that focuses upon the ways by which ICTs slot into the continuance and ongoing maintenance of everyday life. If not moving forward, then making do—this, above all, is an acknowledgement that while acts of creativity and of small-scale works of repair knit together zones of informality and neglect, they too are subject to the disruptions and disparities that long-term infrastructural neglect and abandonment bring in their wake (Nemer & Chirumamilla, n.d.).

The breakdowns in spaces of informality such as the *favela* can be large-scale in their nature—such as the continuing struggle over legal recognition of land titles in the favela, and the provision of systems-level infrastructural services, which is closely tied to this legal recognition.⁴⁵ However, instead of focusing upon the broad sweep of legal recognition and its infrastructural consequences, or of the difficulties in implementing large-scale works within the zones of uncertainty within which

⁴⁵ For more on informality (and the infrastructural breakdowns that characterize and color it) as a conceptual approach to the city, see Ananya Roy, “Urban Informality: Towards an Epistemology of Planning,” *Journal of the American Planning Association*, v.71, no.2 (2005). For more on the legal struggles concerning recognition of Brazilian *favelas* and land titles, see Edesio Fernandes, “Providing Security of Land Tenure to the Urban Poor: The Brazilian Experience,” in *Holding Their Ground: Secure Land Tenure for the Urban Poor in Developing Countries*, eds. Alain Durand-Laserve and Lauren Royston, Sterling: Earthscan Publications, (2002).

favelas exist, I choose here instead to focus upon how technology works at a smaller, more personal level.

The ICTs of interest in this section—ranging from power supply units to the keyboards of CTCs—are precisely those small-scale technologies that saturate the work and goings-on of everyday life. Whereas previous works on infrastructural systems focused on their large-scale constitution⁴⁶, the affective and symbolic power of these grand technological systems⁴⁷, or the consequences of the partition and breakup⁴⁸ of large-scale technological systems, I choose here to instead focus on those kinds of technologies the historian Arnold (2013)—thinking of devices such as bicycles and sewing machines—has called “everyday technologies.”

What I wish to emphasize is the necessity of more flexibility in thinking about the scales at which we approach technological life. The kinds of interactions that we encounter at the level of the neighborhood and its individual residents give us a kind of affective and intimate insight that systems-level thinking can obscure (Hughes, 1983). These insights, I will show, are crucial to understanding how technologies—especially the kinds of communicative technologies marked as

⁴⁶ Hughes, Thomas P. (1987) “The Evolution of Large-Scale Technological Systems.” In *The Social Construction of Technological Systems: New Directions in the*

⁴⁷ Nye, David E. *American Technological Sublime*. Cambridge: MIT Press, (1996). For an extended discussion of technological poetics and affect within the context of the colonial encounter and its particular history, see Rudolf Mrazek’s *Engineers of Happy Land: Technology and Nationalism in a Colony*, Princeton: Princeton UP, (2002).

⁴⁸ Graham, Stephen and Simon Marvin. *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition*. London: Routledge, (2001).

newfangled and “digital”—are taken up and received in areas far from the centers of technological and political power.

As this dissertation shows, adopting an ethnographic approach to technological infrastructures in the favelas opens our thinking about infrastructures, allowing us to conceptualize them not only as systems to be imagined and (perhaps) built, but also as disparate collections and loose networks of entities around and through which *life* must be fashioned, even within the overarching conditions of uncertainty and breakdown that characterize the city of the future. The vignettes that follow work as snapshots of this intertwining of technology and daily life.

While all of these technologies – power supply units to the keyboards of CTCs – are closely bound up with the practices of everyday life, the forms by which their functionality and breakdown manifest themselves within daily practice are quite different, and the demands they expect and pleasures that they afford their users are also quite varied. In looking at this diverse range of small-scale technologies, and the sites where they were found, it is the goal to offer a richer picture both of the kinds of technologies present in the favela, and the practices, *bricolage*, and acts of care that are needed to manage them and render them livable and enjoyable.

5.2.1 Broken Keyboards: How the QWERTY Layout Afford a Faulty Infrastructure

QWERTY is the most common modern-day keyboard layout, it is based on a design created for the Sholes and Glidden typewriter to speed up typing by preventing jams. Regardless of its efficiency and economic controversies, it remains in use on electronic keyboards due to the belief that alternatives fail to provide very significant advantages (Liebowitz & Margolis, 1990). Although some countries, such as France and Germany, have made changes to the QWERTY layout to better match their languages, countries in the periphery of technology development have imported the American “ASCII keyboard”, with very few changes. In Brazil, the keyboard standard is the ABNT NBR 10436 which has just a few differences to “ASCII keyboard”: the letter “Ç” has its own key and some symbols, such as “^”, are rearranged.

The question “*why are they keys arranged in the QWERTY layout and not in alphabetical order?*” has been asked for a long time and by people from all over the world. But in the Telecenters in Vitória such a question was asked with frustration and an angry tone:

“I’m trying to learn how to use this thing [computer] but it doesn’t make sense, I waste so much time to write [type] something because I can’t find the right letters [keys]. It gets in the way of learning this thing [computer] I feel angry and unmotivated. But that’s OK because when I find the damn letter [key] I don’t push it, I punch it!” (Rosana)

This barrier could cause anger and frustration, but even worse it may cause avoidance.

"I don't have the patience, if I have to write [type] something I ask my son Jadson to do so. He comes here and gets everything done quicker than me. I know that this way I won't learn anything, but we have so many problems already... why can't they make our lives easier and put this in alphabetical order?" (Regina, 39 years old)

Ontologically, favela residents were accustomed to categorize and organize things in ways that they were exposed to, such as in alphabetical and numerical order. This is why the QWERTY layout frustrated and did not make sense to most favela residents. Since typewriters have a long history in the West, where it was designed and its keyboard was imposed in the name of efficient English typing, the people in the west became wont of such layout generations before those in the south. Even when typewriters were translated to the South, they did not make it to the peripheries, such as favelas, which allowed those in richer areas transition to computer keyboards in a smoother fashion (Freund, 1982). As observed, computers and mobile phones were becoming more accessible to those in the favelas, and the dwellers' resistance to the keyboards was mainly caused by their lack of experience with typewriters in the past, and the decontextualized layout of the artifacts' keyboard.

The letter keys were not the only issue in the Telecenter, the arrangement of the number keys is often contested by the users.

“As you can see, I’m always on the phone and I’m used to these numbers [keys]. It starts up here with the number 1, and then goes down to 9 and then 0. Every time I have to write [type] my cellular [phone] on Face [Facebook], I have to do it two or three times because these numbers on the keyboard are upside-down.”
(João)

The CTCs’ users questioned the intentions of technology designers since they could not find a reason to why the layout was set that way.

“Even the Government said that the keys on the Electronic Ballot are arranged like on the phones to make our lives easier, so why this [keyboard] is arranged this way? The technologists can’t be more evil than the Government (laughing).” (Tereza)

The ink on the keys was also an issue. Luis, the owner of LAN house Gyga Point, expressed his disappointment regarding the keyboards he bought for his computers:

“The letters are always fading away from the keys. My costumers complain a lot but I don’t have the money to keep buying new ones... I think they are made in China”.

Because the users paid by the hour at LAN houses, some believed that the owner erased the letters on purpose just so they would take longer to type, which made some Luis lose costumers:

"I rather stay away from computers than to come here. I don't think he [Luis] is being honest." (Fatima)

The CTCs' users proposed an alternative solution to the QWERTY keyboard, which was to develop a layout in an alphabetic order, as mentioned by Neuza:

"I don't know why the keyboard is like this; God knows what is in the head of its designers. But if I were to design it I'd put the keys in alphabetic order. Especially because the letters on the keys fade away. If they fade away, at least I'll have a better chance to guess where they are."

Researchers have studied alphabetic keyboards for quite sometime (see Granata, Chetouani, Tapus, Bidaud, & Dupourque, 2010; Norman & Fisher, 1982) and they were considered inefficient because they slowed down the typing speed when compared to typing on a QWERTY keyboard. However these studies have deployed the alphabetic keyboard in western contexts where people were already accustomed to the QWERTY layout. The alphabetic keyboard may not be the most efficient solution for those in the favelas. For example, in the job market, favela residents would most likely encounter keyboards following the QWERTY layout, such as supermarket cashiers and data entry clerks. However, developing an alphabetic keyboard and typing courses could work as a way to progressively introduce CTCs' users to the QWERTY keyboard. Since some users were often discouraged to use the computers and the Internet due to the barriers created by the QWERTY layout, having something more familiar to them, like an alphabetic

keyboard, could potentially alleviate some of the resistance between CTCs' users and the technology.

The QWERTY keyboard comes from typewriters, an artifact that has a long history in cities that are in the center, whether in the global North or South. With traditions and educational structures setup surrounding this format, a change from that standard presents major issues for use, but in the context of the favelas of Brazil, this format presents a barrier. In a personal computing context, these material elements may serve only as a mild annoyance until frequent interactions render them commonplace. In the context of the Telecenters and LAN houses, where an individual's interaction with a computer may be less frequent, it can present a real problem. Conversely, the material of an individual keyboard sees a lot of use from a number of different users. The wearing away of the ink on the keys indicates that the durability of the keyboard's material is also a concern. In both cases, the action of using the computer is different in this context. From the perspective of the individual, use is less common than with personal computers; from the perspective of a single keyboard, the use may be greater.

5.2.2 Overcoming the Neglected and Enforced Infrastructure of the Favelas

Favelas were not only known for their social problems, but also for their lack of adequate infrastructure. The urbanization of favelas in Brazil was recent and inefficient. While the government did not forcibly remove favela residents, it also did not improve their lives in the way of infrastructure (electricity, water, gas) or social services. Often as a consequence, favela inhabitants frequently acquired

utilities illegally through makeshift wire and pipe taps, called *gatos* (“cats”) (Nadaud, 2012).

The LAN houses Gyga Point and Guetto acquired their utilities through legal means, but the *gatos* all around the favela hurt them, especially regarding electricity and Internet. The illegal and irregular wiretaps affected the electric current causing damage to the computers in the LAN houses.

“Changing light bulbs here is a frequent activity, but they are cheap, what really concerns me is how often the power supply units fry. Most of the time I don’t have the money to buy a new one right away, so I have to put the computers away until I can buy new power supply units.” (Luis)

“These power unit supplies are bad and fry all the time, they really hurt my business. I guess the ones I can afford are not good. I wish there were stronger and cheaper units.” (Perla)

Because of the current, poorly built infrastructure, the Internet providers were not able to provide fast broadband connection in the favela. Perla and Luis contracted for their LAN houses a 3 MB Internet plan, fastest available to them, but they had to share the connection with at least 5 computers.

“The users don’t complain too much because this is the only Internet they can access [...] the problem is when I have to make a security or Windows update. It takes forever to update every computer I have. It is dangerous because I have to

stay in for the whole night and expensive since I have to pay for electricity”
(Perla).

As Perla mentioned, it was dangerous to have any business running after the curfew set by the drug cartel.

Although the Internet providers were responsible to maintain their infrastructure in the favelas, they were not keen to improve it and make it more accessible. Such disregard also affects the favela dwellers.

“I called GVT [internet provider] and they told me that the outdoor internet box for Gurigica has been completely “taken”, thus, they can’t offer me an internet connection [...] they suggested me to find a neighbor who has Internet and share the connection with him because they won’t expand their box here”
(Fatima).

To overcome the limitations imposed by the ISPs, Internet connectivity also acquired a makeshift character in the *favela*—like the electrical connections, they too have to be somehow acquired and reliably maintained in the face of continued institutional neglect as mentioned by Rafael:

“they [internet providers] say they won’t improve their internet infrastructures because there aren’t enough costumers for them in the morro [hill], but it’s not true... if you look out there every light pole you will see tons of blue cables going to every direction and every house [...] we need more and better internet.”

Rafael looked up information on computer networking himself in order to distribute the Internet in the favela:

“I can’t stay here and wait around... The Government is not interested in us, so I might as well do something about it [Internet]. The people here don’t have the time to learn about technology and Internet, and since this is what I do, I decided to look for articles on Google and Youtube that could teach me how to do this [bring the internet to his community]. This is indeed another source of income for me but I also feel I’m doing some good for my community”.

He proceeded to subscribe to a faster Internet connection through his uncle’s house, which was located on the border of the *favela* and a richer neighborhood. Gustavo used 15 Linksys routers, which were placed inside plastic boxes on the light polls, and 500 meters of Ethernet cable to connect both his LAN house and the neighboring community.

The LAN houses had, in their centralization of technological availability, become a source of help and technological knowledge for the favela residents. The increasing affordability of technology has led to an increasing number of first-time users in the favela. The LAN houses provide a base from which residents can acquire the knowledge and help to maintain their purchases: nowadays everyone can buy a computer, especially because they can buy it in installments and pay it in 48 months.

“The problem is that they don’t know how to use it properly... People would come and ask me if I could fix their computers since I maintain the computer at

my LAN house. I saw it as an opportunity to broaden my business... now I get computers with a thousand viruses, fried boards... and if it wasn't for me they wouldn't be able to fix their computers since I charge them a fair price and usually recycle boards" (Rafael).

The LAN house operators themselves scrape together this technological knowledge through a combination of hands-on interaction and online videos and articles, rather than any formalized certification or training. The knowledge of proper use, much like the repair of computers or the provision of power, is cobbled together: something that is seen in the favela residents' own use of the computers in the LAN houses and Telecenters.

Just as durability posed issues with the keyboard, so too does the durability and resilience of the infrastructure. While the abstractions used in high level code may treat resources as if they are inexhaustible (Blanchette, 2011), when introduced into the context of the favelas, where connective cables and electricity could be in short supply, this kind of treatment could be a major impediment, both in terms of access to information (such as updates) and fundamental functioning (as with the power supplies). The materiality of the infrastructure also not only involved the economic requirements of maintaining a dedicated system for the computers, but also the economics of utilities such as electricity. Even with support for the specific artifacts of computation (i.e. the computers), use was still subject to the limitations imposed by the materiality of supporting infrastructures.

5.3 Conclusion

What can we learn from these snapshots of ordinary technological use within a zone of continued (and continual) infrastructural neglect? Some preliminary suggestions are presented below, with the caveat that further research, as always, is necessary—particularly in trying to think about what forms of difference a backdrop of legal informality and persistent precarity lends to the notion of “infrastructure.” If not always functional, if not steadily reliable, what (and *how*) do infrastructural objects and systems gain meaning in people’s everyday lives and practices? What kinds of character can be attached to an infrastructure that is blatantly visible (because it is so often nonfunctional to varying degrees), to systems and technologies that cannot be rendered an invisible part of the landscape, as it so often is in the developed world?

The mobile phones provide a particularly striking illustration in regard to the multiple meanings that may lie within the differing scales of technological systems. While the larger, systems-level picture is one of segregation by the major wireless carriers and dysfunction, with areas of the city delimited by their (in)ability to receive calls, at a more intimate level the smuggled *xingling* smartphones are clearly an integral part of everyday life, affectionately described by their users as “doors” leading to better (or at least, *other*) places.

How do we understand these two competing sentiments? The presence of affective attachment at this more intimate level does not negate the breakdowns and failures occurring within the system at a wider level. One could think of these

differing sentiments—the sharp awareness of the broader picture of technological neglect residing alongside the deep appreciation for those devices that do embed themselves within everyday life—as a strategy of sorts, a way of rendering livable the extremely inequitable and uncertain technological environment in which one finds oneself.

The shared *xingling*, unlike the dystopian and individualistic smartphone experience that Western movies like *Her* envision, fosters a communal sociality that emerges out of conditions of technological unevenness and lack: friends gather at the CTCs with one bringing a charger, another the data cable, and the third the *xingling* itself, in order to load data on to and off the phone. In the interlocutors' accounts, USB cords—those *wired*, material connectors—were a bridge to a more joyous and richer social life, *xinglings* were keepers of exchange-value within the *favela* (tradeable for other goods), and sources of confidence outside in spaces outside of the favela.

None of these observations about the mobile phone are directly connected to the kinds of informal knowledge and labor practices that we most commonly associate with technological repair. But, in these stories surrounding the mobile phone, we can perhaps begin to see the outlines of what an “act of care” (to return to Jackson's conception of repair) could look like. It is a deeply affective (and perhaps, affectionate) relationship with what one has, with those things that *do*, despite everything, manage to find themselves embedded within the circle of one's everyday and ongoing existence.

Looking at the CTCs, specially LAN houses, and the way in which it functions as a node drawing together patched-together and piecemeal communications infrastructure, gives us another kind of technological negotiation to think through—negotiations that are certain to become the bedrock upon which Davis' envisioned cities of the future will be built. The LAN houses in the favelas are dependent upon illegal taps of electricity and telephone lines to supply their customers with connectivity and power. In order to maintain these piecemeal connections—connections which are only acknowledged by the authorities and utility providers as a drain on resources, rather than indicative of an unmet need.

The owners of the LAN houses utilize a mix of personal relations (like relatives in legally recognized areas who can be convinced to buy an Internet connection), informally acquired and tested knowledge (like learning repair off of YouTube), and cheap parts (the constantly frying power units) in order to maintain some semblance of continuity and stability. The infrastructure, in this instance, is not *invisible* when rendered normal, as older understandings of infrastructure (Star, 1993) would lead us to believe. Within normal practice in the favela, the Internet and electrical infrastructure remains constantly in sight, constantly in need of care in order to successfully undergird the goings-on of everyday use and practice. This constant attention—both to the deficiencies of the built environment and to those fixes which can be acquired through means outside of legal or traditional avenues—could be seen, arguably, as a kind of stabilizing force.

This stability, I believe, is always contingent, always in flux—dependent on the whims of relatives, on the will of the utility companies to enforce what rights they can and on the skill of the LAN house owners to put in what fixes they can. The infrastructural stability of the LAN houses' Internet and electrical connectivity is constantly, visibly *produced*. In some sense, this is qualitatively different from works of maintenance as such—instead of working to keep a system of technologies functioning at an acceptable level or a standardized ideal, here instead is the visible, constant struggle to *bring forth*, to ensure such things as relatively reliable power or stable connections exist at all to begin with.

Lastly, the intimate frustration that users experience with the QWERTY keyboard—and the bodily means by which users display these frustrations, punching the keys with force—are an illustration of a more deeply felt relationship with technology. The pain of technological failure—of this most basic of devices failing in ways that render it incomprehensible to its users—is something that has not been taken up yet in studies of infrastructure.

What does it mean to *care* for technology, as Jackson (2014) asks us to envision the work of repair doing? What does it mean to *suffer* and become enraged with it, in ways that aren't entirely comprehensible to one's self? Users' thoughts on the possible motivations of the technology's designers (surely they cannot be more evil than the Government) may seem fanciful, but they do offer an entirely new way of thinking about how technological failure forces itself to the forefront of imagination and comprehension. Large-scale breakdown may inspire a kind of fear

and helplessness (any number of disaster movies will attest to this), but it is this small-scale frustration—this daily compounding of anger towards an incomprehensible *thing*—that provides us with a more poignant and meaningful window into thinking about what technology does to us, and what we do to it.

Affect and affection—how one *feels* for those technological things that surround oneself—permeate the stories which I present here, though perhaps not in the same ways that scholars like Turkle (2012) have theorized.⁴⁹ Here in the LAN houses of the favela, there is less sublimation of the self, and a stronger awareness of just how closely intertwined the wider breakdown within the environment is with one's own experience of a particular technology, even an unremarkable keyboard. Any account of what technological life looks like amidst precarity—must consider these emotions as central to its experience. So too with repair. If we are to take the metaphor of an “act of care”⁵⁰ out to some kind of conclusion, then thinking about what acts of work and sorts of feeling are necessary to manage these sensations of frustration and incomprehension—sensations which are embedded within the uncertainty that defines everyday life in the favela—is a good place to start.

⁴⁹ Turkle (2012) in *Alone Together* analyzes our affection to technology when it is always on and always on us. Technology in the favelas created a different affection to their residents because the infrastructure, social and physical, was not always stable and on them.

⁵⁰ Here care, as claimed by de la Bellacasa (2010), stands for a signifier of necessary yet mostly dismissed labors of everyday maintenance of life.

6 Online Favela: Affording Empowerment Through Mundane Use of Social Media

“If you spend one day here, in the Telecenter, you will see that all they do is spend time on Face [Facebook] and social media. To be honest, I don’t know how much of this kind of use can be beneficial to them... people perceive the ideal Telecenter user as one that comes here and reads pages and pages on the history of Brazil or something related to school, but this is not most common user... maybe learning is happening in a different way nowadays” (Inclusion Agent in Itararé).

As mentioned by the Inclusion Agent, the use of ICTs in LAN houses and Telecenters comprised mostly of “Facebooking”, chatting, playing games and watching videos on YouTube. The Inclusion Agent’s concerns were also seen in the conversations I had with the Telecenters’ manager. However, due to their proximity with the Telecenter users, they were able to see the benefits of social media use, but they were not sure how to report them or link “entertainment” to individual or community development. As I show in this chapter, social media use, which some may label as merely entertainment and pastime, has resulted in development aspects that ICT4D is familiar with, such as digital literacy, income generation and relationship maintenance. We have this limited understanding that social media use typically promote the idea of some grand authoritative display of our “selves” through a variety of channels and lots of participation, where what is evaluated are the

discussions and active contributors to demonstrate effective and meaningful ways to use social media. Hence, a social media initiative in a favela for example, might instead take into account that for some users a simple click of a “like” is going to be indicative of something much more significant than researchers might assume.

The findings here presented are a subset of the different ways individuals use ICTs in order to fulfill their desires and needs, especially in marginalized and understudied areas such as favelas. The insights in this chapter are not intended to solve the issue of the duality “haves and have-nots”, nor does it try to make the case that favelas have access to digital technology hence they are digitally and socially included. It provides a channel to amplify the voices of favela residents in Brazil and highlights their social and technological experiences in CTCs with the focus on social media, which was the most used service by them. Different perspectives of technology, especially in the geo-political periphery, contribute to public knowledge by illuminating its use in many facets of daily life. To do this, in this chapter I focused on the use of social media that is specific to the context of the favela residents. The key findings presented in this chapter relate specifically to how use of social media was routine in everyday life in order to support the chapter’s main argument: the use of social media can afford a pathway to empowerment and human agency.

6.1 The Role of Social Media in the Pursuit of Empowerment

The presence of the neighboring favelas of Gurigica, Bairro da Penha, São Benedito, and Itararé was considered a result of unequal distribution of wealth and

a housing deficit in the city. The drug trade has highly affected the favelas, which tended to be controlled by traffickers. The territories of the favelas were divided among the drug lords in informal treaties and agreements, and they attempted to maintain order in each area. The drug lords followed a feudal system in which each drug lord provided its local population with access to goods, such as propane cylinders gas and wire tap electricity, and services like protection from outsiders and rival gangs. This was done in order to gain respect from critical segments of the local population and to create an environment in which people had the feeling of being safe despite continuing to live with high levels of urban violence. At the time of this fieldwork, the favelas were in a state of war due to the constant conflict with new drug lords who had arrived from Rio de Janeiro. As I described in Chapter 2, these drug dealers were fugitives of the “pacifying” process that was taking place at the favelas in Rio.

The favela residents often witnessed frequent shootouts between traffickers themselves, as well as against police. The shootouts were related to territory wars and crime fighting respectively. Walking around and visiting friends and family in the favelas were highly dangerous, not only because of the shootouts but also because territory boundaries were shifting quite often, making it hard for the residents to know which drug lord their area belonged to and where it would be safe for them to stay. This situation often left families divided and unable to communicate, a consequence of the invisible walls set by the drug cartels. Maria, 45 years old, a frequent user of the Telecenter in Itararé summed up her experience:

“My daughter lives with her family in Bairro da Penha. I haven’t been able to see her for more than one month... I live in Itararé and I don’t have enough credits on my cell phone to call her every day... and attempting to go up the hill to see her is too risky. I never know when all hell will break loose... It makes me sad because I can’t see my 2-year-old granddaughter growing up... The Telecenter has helped me keeping in touch with them. She goes to the LAN house next to her house and we get on Facebook and chat, exchange the Lord’s words, she sends me photos of my granddaughter and we even play games sometimes... It is not the same as us being together, but at least I can rest assured that they are safe.”

The computers at the CTCs were heavily used for Facebooking and entertainment purposes. The informants from all age groups spent most of their time on Facebook chatting, watching videos, and listening to music from YouTube, playing Facebook and flash-based games and *gastando*.⁵¹ Such non-instrumental uses of computers were important because they drew people into digital worlds and improved their skills in using technology itself, along with language skills, information-seeking skills and targeted browsing skills. They also afforded people to exercise their relationships by providing a safe channel for them to keep in touch with their relatives and friends.

⁵¹ *Gastar* is a verb which in English means “to spend” or “to waste.” It is used by teenagers in Brazil to describe the activity of hanging out, chitchatting, making comments, and mocking someone. *Gastando* is the gerund form of the verb *gastar*.

Based on my observations in the CTCs, Facebook has turned into the users' main social media; all of the informants had a Facebook account and were active users. In fact, to some of them, Facebook was "The Internet", meaning that they did not use or were aware of other services provided on the network. When signing up for Facebook, the SNS required an email address to verify the account, and they found on Facebook's Help Page suggestions to free email providers so they could proceed with the registration on the SNS. As I saw Diana, 18 years, creating an account for her brother Victor, 14 years old, I asked her to explain to me what she was doing:

Diana: "It is quite easy to create an account on Face. You put your name and date of birth, and click on Avançar [Next]. Keep clicking on it until you have your account ready. I don't understand all these words and instructions, I keep hitting Avançar, and whenever I see that I should type in my name, I do it."

Me: "What about this email account you are creating?"

Diana: "What is an email?"

Me: "This... right here [I pointed to her screen]."

Diana: "Ahh... I don't know... I'm just creating a Face account... this is also part of the process."

As demonstrated by my conversation with Diana, the informants did not know what an email was for and did not know that they were actually creating an email

account; they thought that this was just one of the steps of becoming a member of Facebook. Such behavior was also seen in other developing countries, such as Nigeria, Indonesia and India, where Internet access by marginalized and poor population was precarious (Lee, 2015). Perceiving Facebook as “The Internet” could be a problematic issue because it shifts the idea of the Internet being free and open to belonging to a proprietary platform, which is motivated by market and private interests.

The popularity of Facebook was surprising because Orkut used to be Brazil’s number 1 social networking site (SNS) until 2012 (Nemer, 2013b), but only 4 of the informants, out of 56, were still using Orkut. Part of the reason for this transition was explained as a response to wider social trends:

“Nowadays you have to have a Face [Facebook] to connect to people on and offline. No one asks for your phone number anymore, they all want to know if you have a Face” (Jose).

Although Facebook has been the largest SNS in the world since 2008, it was not until 2010 that Facebook started to gain a massive number of users in countries such as Brazil. Before then, most Brazilians used Google’s Orkut as their major SNS. In 2011, Facebook finally became the most visited SNS in Brazil (Nemer & Freeman, n.d.). As the lower classes in Brazil were gaining more access to basic services and technology, such as the Internet, they also wanted to be part of the famous Orkut. Their presence in the social network was not well received by the first adopters, people from upper classes, that created several communities on Orkut geared

towards making fun of the way "poor people" used Orkut, in such communities mocked about the poor's habits online and offline, "low educated" posts, bad Portuguese and photos. There were a few websites, such as *PerolasDoOrkut.com.br* (Gems of Orkut), dedicated to find such "gems" on the SNS and spread them with mocking words and out of context comments.

"I'm not on Orkut... I wanted to be on as many sites [social media] as possible because I want to communicate with everyone. But I had to quite Orkut. I did not feel comfortable there... there were several communities mocking poor people from the favelas. When you first look at those photos, they seem funny, but then you realize that you could be on those photos. I left Orkut before they [mocking websites] found my stuff and now I'm just on Face." (Alice)

The lower classes' access to and behavior on Orkut was labeled "Orkutização" (Orkutization). The term was later extended to label things that became too popular, accessed by the poor and deteriorated by their habits. Such term was used to refer to things online and offline (Reis, 2014). As mentioned by Alice, the Orkutization was also one of the reasons why some of the informants courageously moved to Facebook right away - which back then was in English, thus, making it even more exclusive to richer classes - who had the skills of understanding English. As observed, the people from the favelas were migrating to Facebook or choosing it as their first SNS, the prejudice persisted on posts that talked about the Orkutization of Facebook, as demonstrated by Ricardo:

“There are all kinds of open groups you can join on Facebook, like Utilidade Pública [Public Interest]. I have joined the group but I just read stuff there... I don’t dare to post anything. They make fun of your looks, your Portuguese, and when you have a question, they will call you favelado and tell you to study.”

The mocking websites also adapted to this change of SNSs; they changed their name in order to broaden their “hunt for the poor gems,” for example, at the time of the fieldwork, *PeroloasDoOrkut.com.br* had changed its name and URL to just *Perolas.com*. Such behavior suggested that the upper classes did not want the “untamed” poor in the same space as them; based on their posts, they were not interested in understanding the favela residents’ background and motivations to behave differently. The online prejudice contributed to distance the already segregated poor classes to feeling more included and accepted in the Capixaba’s society, as mentioned by Leticia, 27 years old:

“Everyone at my job get along really well... we play and joke all the time. I also wanted to have that here [on Facebook]... but some people there live at Praia do Canto and Santa Lucia [rich neighborhoods] and I’m afraid to be judged or even embarrass my friends on their own Face.”

Another factor that contributed to the spread of Facebook was that the SNS teamed up with several cellphone carriers, such as Oi and Claro, to provide free data for customers to use the Facebook Messenger (chat) (Junqueira, 2013). Among the informants, all of them considered Facebook chat as the primary function of the SNS. They felt safe communicating through the tool since they had a sense of control of

their audience. Producing content on Facebook, and on the Internet overall, was an issue for the people in the favelas because they did not feel able to produce what would be perceived as good content and were afraid of posting things that would upset people related to the drug cartel thus opening themselves to suffer eventual retaliations.

“Are you crazy? Posting on Face? I’m very careful to the things I post on it. I mostly share stuff that other people create, like funny images and cool photos... When I have to talk to someone, it goes all on chat, because I know for sure whom I’m talking to, and if someone spills the beans I know who the person was. I’m even afraid to talk with people outside on the streets... the light polls, walls, cars... everything here has ears and you don’t want to be heard by the wrong people”, Rodrigo.

The Facebook Messenger caused discomfort among some of its users regarding concern for their privacy settings; the application would give away the users’ location, as well as have the capacity to delete and modify files on the phone (Neemuchwala, 2014). Nevertheless, the users in the favelas were more concerned about their privacy regarding the drug cartel having access to their messages. The informants claimed that the fear of being retaliated against kept them from posting on Facebook regularly, but still dared to eventually post their feelings and opinions on the SNS regardless. They mentioned that it is hard for them to be themselves and “*favelados*” (favela residents) at the same time; they felt oppressed everywhere they went. If they hung out at public places in the favelas, they felt they were being

watched by the drug cartel. If, alternatively, they went outside the favelas, they felt discriminated by society and targeted by the police. They found Facebook to be a safer place to express their individuality, as mentioned by Joana, 18 years old.

“The Life Games [LAN house] is right next to my house and I can use their Wi-Fi connection... I put my hand in my pocket and just to know that it is in there [Facebook], I feel safer. With it I can get out of this crazy reality anytime I want. I can cry, scream about my pain because I know that someone will be here, online, listening to me... I can for a moment be myself. [...] It is like Face is my best friend.”

Joana’s statement is a good example of not only what technology does for us, as tools, but also what it does to us as people. Facebook, for example, provided a platform for favela residents to exercise their individuality the way they wanted to do offline. The informant suggests that her offline identity is complimented by her online one – online identity is further explored in the next section. Facebook’s technological affordances allowed these users to develop affections for the SNS, which expands the notion that we only create affection to technology when it is always on and always on us (see Turkle, 2012). In the case of the favelas, CTC users were still able to create affection for technology even when they were not always on them.

Although the CTC users were careful and tense when they used Facebook, they found on YouTube a way to relax. As I observed, YouTube was the second most

used social media by the users, whom approached the website with different goals, as mentioned by Bruno:

“This is great [showing me a video playing on the screen]! I can come here, watch the History Channel and learn so much. I can’t afford cable and even if I could, my wife wouldn’t let me change the channel... she loves soap operas. So I come here, and it feels like I’m diving in a pool of knowledge... I also like to watch Chaves [or Chavo in Spanish]. You know how I was laughing just a while ago; yeah, it was because of the show... SBT [TV Channel] doesn’t broadcast it when I get home from work, so I come here before I go to work to start off the day in a great mood.”

Gabriel used YouTube mostly to listen to his favorite genre of music: Funk. As explained in Chapter 3, Funk was originated in the favelas of Rio and became the genre of the favelas all over Brazil. Favela residents usually composed the songs, and the lyrics portrayed their way of life, poverty, violence, sexuality, and were critical to the society and the government. It was a way for the favela people to express their feelings through music, as expressed by Gabriel.

“This is my favorite Funk, listen to it... this MC shows strength and power, he inspired me. You can’t hear this anywhere else... They won’t play it on the radio because they think it is too dirty... I guess they think people from here [favelas] are dirty too. That is stupid! They only play some mellow and cheesy Funks on the station because they feel like they are more acceptable... they have nothing to do with us. I don’t like it.”

Although Funk was becoming more accepted outside the Favelas, it was still subject to resistance and prejudice due to the criticism made by leading intellectuals and part of the population; mainly because of the content of the lyrics, which were blamed to use bad language and incite drug trafficking and violence to women (Medeiros, 2006). But according Essinger (2005), the lyrics of Funk were misunderstood because it was analyzed outside the context of its creation and use. According to him

“the Funk lyrics are written in general for the favela residents, whom many have low levels of education. Hence Funk is heavily marked by the presence of popular local languages and jargons. Hence, we hear a lot of swearing, slangs, simplification and reduction of words and inadequacies of the use of Portuguese, among others.”

Ana, 42 years old, and 6 friends, also had YouTube as their favorite social media. They worked in the afternoons as cleaning ladies for a shopping plaza outside Itararé, arrived almost every morning at Gyga Point LAN house to do the usual: to watch and chitchat about yesterday's 9 o'clock soap opera, check their Facebook accounts and look at recipes. But in June of 2012, the ladies from Itararé were coming in for an important cause: they were trying to raise money so the construction of the public square in their community could be completed. Tired of waiting on the city government, they went to the LAN house to learn new knitting patterns on YouTube to make things like baby clothes and dishtowels. Ana and friends sold their crafts every Wednesday morning in a stand at the farmers market,

and their profit was used to buy cement and pay for extra people to work in the construction site:

“I understand that the money raised won’t be enough, but it will help a little bit and will get people motivated to make a difference in the community” (Ana).

One year later, Ana and her friends were satisfied with how things have turned out:

“Now I have two places to hang out, the LAN house in the morning and the public square at night” (Ana).

The public square was ready along with the soccer field. The money raised by the ladies was also enough to buy outdoor furniture such as tables and chairs.

In *It’s Complicated*, boyd (2014) shows how teenagers were disappointed with their offline lives but how good those friends they made online were; and how they felt restricted at home and at school but how much freedom they enjoyed in social media platforms. Those “cool” places – Facebook, Youtube, Tumblr, Snapchat, Instagram, online games, etc.— become Peter Pan’s “*Neverland*” to those teenagers where they can fly and “never grow up.” Social media also worked as a sort of “*Neverland*” for favela residents, not because they did not want to grow up or it was restricted for teenagers, but because it offered a safe space where favela residents felt empowered, which in this dissertation is also framed in terms of freedom. Social media provided a space where they could overcome the limitations of their offline frustrations, such as street violence, and could pursue their daily

goals, such as listening to funk, watching the soap opera, contacting relatives, and creating places to hangout.

Such social media adoption and use in constrained access ecologies may be motivated by non-instrumental usages that may not seem immediately beneficial or developmental in scope. Still, skills such as identifying appropriate content, taking photos with *xinglings*, and using specific tools in social networking sites, such as Facebook chat, can definitely be considered as empowerment that demonstrates skillful and creative usages of social media: *“these use patterns represent the choices people make about what is important to them and how they use technology to meet those needs. One choice might be the desire to embrace digital lives as a way to escape/express/imprint through multiple means of engagement with Internet technology. Another could simply be the sense of empowerment a self-managed ICT device gives in the digital era. A third can be the aspirational desire to participate in new opportunities”* that social media is affording (Rangaswamy & Cutrell, 2012, p. 56).

6.2 Overcoming Barriers by Empowering The True “Selfie”

As mentioned by Joana, Facebook chat was also approached as a channel for the favela residents to manifest their feelings, however the expression of the self did not only come in the form of text. Most of the informants posted “selfies” on their Facebook page as a way to express their feelings without being too explicit with their opinions. The photos were taken with smartphones that either belonged to themselves or to a friend. They called smartphones *xinglings* –a term that is used to

refer to Chinese imitation and pirated brands and could not quite be used as smart (only when Wi-Fi was available) since the users could not afford data packages. Also, the informants found it difficult to express their true feelings and be favelados (pejorative way to call favela dwellers) at the same time. They felt oppressed wherever they went: If they hung out in the favelas, they felt that the drug lords in control were watching them. If they went outside of the favelas, they felt discriminated by the society and targeted by the police. They considered Facebook as a safer place to express their true feelings, thoughts, and personalities while escaping from the drug lords' censorship. Jeferson, describes the context for his posting of a selfie on Facebook:

“Today I had to walk through a shooting in Itararé. The police cars were flying by . . . you should have seen it. . . . I’m just very grateful I’m still alive, but at the same time I’m furious to have to face this situation almost every week. Today I posted a photo of myself expressing my gratitude of being alive. . . . I can’t say much more than that because I’ll have trouble with people involved in this shooting.”

For André, taking and posting selfies had nothing to do with narcissism or attention seeking. To the contrary, as a resident of a dangerous area run by drug lords, André did not seek public attention at all. His selfie was a strategic way to show his grief about the shooting he witnessed, his disappointment about his current living situation (“furious to have to face this situation almost every week”), and his expectation for a better life (“my gratitude of being alive”). His selfie practice was

embedded in a socioculturally dense context and cannot be reduced to a simple act of self-promotion. Similarly, Neuza, used selfies for self-reflection:

“I upload my photos on Face [Facebook] so I can see my own person. See who I truly am... that I’m not just a favelada. When I see myself, and hopefully the others will do the same, I reflect on my image. If I’m feeling sad or angry, I take a picture and post it on my Face to see if it reflects on my soul. I don’t think I’m going crazy or anything. I just want to have the conscious of my true self in this crazy world [favela]...” (Neuza)

Neuza was not concerned about others’ opinions of her, though she hoped that others would do the same to “reflect” on her. She did not endeavor to (re)construct her self-esteem or optimize self-presentation to seek compliments. She used selfies to express her emotions (“sad or angry”), to enhance private self-awareness (Cooper & Sportolari, 1997), and to maintain her “true self” in the “crazy world” where she was suffering. Neuza’s selfie practice was self-oriented (e.g., with a focus on self-reflection and self-improvement) rather than others-oriented (e.g., attention seeking). Felipe, a frequent user of Life Games e LAN house, usually used his selfies to let his mom know where he was and give her a sign that he was safe:

“My mom works the entire day and I have nothing to do after school. . . . I love playing soccer on the streets, but it is dangerous due to the [drug] street managers wanting new people in their team. . . . I always post photos of myself to show my mom where I am and that I’m OK. . . . she always checks her Face

[Facebook] at work during her breaks . . . there's a computer there they can use."

For Felipe, being on the streets without adult supervision was dangerous, because the drug traffickers were always looking for new recruits to expand their cartel. Using selfies became a fast and efficient way to communicate with his mother and provide her with visual evidence that he was safe.

As described in Chapter 4, CTCs were a safe, trusted, and friendly place where slum residents felt it was easier to disclose their true feelings and deepest thoughts. Although free WiFi was available in the Telecenters, users did not upload their selfies directly from their *xinglings*, because they were generally unaware of the open WiFi network or how to use it. They usually first transferred their selfies to desktop computers in the CTCs via a USB cable and then uploaded the photos to Facebook. However, the CTCs were more than just physical places to upload selfies. In CTCs, participants felt more relaxed, comfortable, and happier. Mariana explains:

"I come here to hang out with my friends, not just to use the computers. . . . I go to the bathroom and take photos with my friends. . . . I don't have a large mirror like that one [in the bathroom] at home, so here I can fit everyone in one photo. . . . I love the Telecenter, here I feel safe and in these photos [selfies] I can show my happy side, my real self. . . because in the dangerous streets, unfortunately, I'm always showing my worried and anxious side."

For Mariana and her friends, taking selfies in the CTCs enabled them to show a “happy side” of their unhappy lives. Hanging out and taking photos with friends in a safe (and nicer) place comforted and encouraged them, making them stronger and braver to face their unhappy and unsatisfactory lives (“dangerous,” “worried,” “anxious”). These users understood selfies as another example of people using social media to project a better, and curated, image of themselves. They used selfies to escape from the powerful drug lords’ control of their everyday lives, to implicitly express their objections to inequity and violence, to enhance their reflections of their true selves, and to gain self-comfort and self-encouragement.

Illiteracy was another serious issues that favela residents faced. Nineteen interviewees were functionally illiterate and could not describe their selfie practices in writing. However, illiteracy did not stop them from coming to Telecenters and LAN houses. Roberto was a frequent user of the Guetto LAN house and knew his way around the online world. He came to the CTC to play Flash-based games and to *gastar* on Facebook. On Facebook, he mainly used photos, especially selfies, to communicate with his friends. For him, taking selfies became a tactic to overcome his illiteracy and the barriers to communicate with others. With selfies, Roberto did not need to rely on traditional text-based computer-mediated communication that requires sufficient reading and writing skills; this enhanced his capabilities to socialize:

“I can’t talk to people using the keyboard, so I upload my photos. . . . I say hi, good afternoon, good-bye . . . all on my photos. I wish I could read and write, but I guess I’m too old for that.”

Illiterate slum residents also used selfies rather than text messages and e-mail to facilitate communication with their families. For some, taking and posting selfies was a learning process in which they could improve their literacy with others’ help. This process is evident in the experience of Alice. Alice shared a *xingling* with her older sister Mariana, and they learned most of the device’s functionality from the Telecenter staff and from their friends’ help. Although Alice was enrolled in seventh grade in a public school in Itararé, she was illiterate. Alice had a written sheet that listed Facebook’s URL and her log-in information. She also usually relied on her friends to help her use the social networking site.

When she first came to the Telecenter in April 2013, Alice did not understand the words on the sheet and logged in on the SNS by typing the corresponding letter on her cheat sheet on the keyboard. She was unable to read anything on her screen or chat with others, but she managed to “like” and share her photos, say hi (oi), and laugh by typing “kkkkkkkk.” She was mostly interested in knowing what others commented on her photos. By the end of the fieldwork, Alice was able to understand some comments on her selfies such as linda (beautiful), gata (hot), and feia (ugly), edit her selfies, have longer chats, and *gastando* with her friends on Facebook. She said:

"I'm terrified of my school. . . . I feel dumb there and no one is willing to help me. . . . I come to the telecenter to hang out with my friends here. This is a meeting place, but more importantly I can hang out with other friends who are working, at school or in LAN houses and telecenters. . . . We can all talk on Face [Facebook]. . . . They can see my photos and see what I'm doing, what I'm dressing. . . . If I don't come to the telecenter I can't get on Face and I feel lost later at the pracinha [public square]. . . . I need to understand what people are talking so when it's six p.m. and we go to the pracinha, I'm already aware of what is going on."

Teenagers like Alice usually started their conversations on Facebook, because they could not always be physically together. When later they met in off-line places such as the *pracinha*, they would continue their conversations. Originally, Alice was motivated to share her selfies on Facebook, read comments and write feedback so she would not be left out of her circle of friends and the continuing off-line conversations. For her, selfies were a way to be included in social circles and engaged in off-line communities. Alice detailed her motivations:

"I want to be famous in the community. . . . I need to know how to use Face, take good photos and one day, thank God, I'll learn how to do cool videos. . . . I know people from the drug cartel, from church, from school. . . . I want to be a famosinha [famous teenager] so I can talk to cute boys and people will "like" my photos, call me pretty and make me feel important."

Researchers have established that teens use social media in ways that defy popular stereotypes of superficiality (boyd, 2014), and I found similar complexities among youth in Vitória's favelas. However, as a younger generation lacking education, public security, and access to digital technologies, learning how to take and post selfies on Facebook has deeper sociocultural meanings for them: It helped them know more about the world ("aware of what is going on"), benefited their social life ("can hang out with other friends"), and improved their literacy ("understand what people are talking"). In this way, they (re)constructed their confidence, knowledge, hope, and enthusiasm in a relatively severe environment.

As claimed by some (e.g. Barakat, 2014; McKay, 2014), selfies are perceived as a shallow way for teenagers and celebrities to show narcissism and fashion, seek attention, and practice self-promotion. However, these findings do not support these assertions. They revealed that practices of understanding, interpreting, and experiencing selfies are embedded in dense sociocultural contexts. The selfie users were under constant surveillance by powerful drug lords. Slum residents relied on and respected the drug lords but also were afraid of them. These residents' lives were full of violence, poverty, danger, disappointment, uncertainty, and insecurity, but they still did not lose their hope for a better life and their expectations to know the world.

This unique but extraordinarily complicated social, cultural, political, and economic situation greatly influenced these slum residents' freedom and life experiences off-line and online. For them, selfies were far more than an

instrumental artifact of communication and self-representation. They perceived, used, and experienced selfies in a sociocultural dense form of empowerment: They could escape from the eyes of powerful drug lords to implicitly express their dissatisfaction and objections; consciously reflect on their true selves and maintain their spiritual purity; overcome the difficulties of being functionally illiterate and gradually learn literacy skills; and improve their interpersonal communication with family members and peers. Their choices and decisions were guided by their reflections on what was important to them in their marginalized living situation and how digital technologies could be used to meet their social, emotional, and physical needs (Nemer & Freeman, 2015).

These findings add to Noland's (2006) study of a group of marginalized Latinas in Los Angeles, which focused solely on the emotional enhancements afforded by self-portraits. Noland also observed selfies as way to overcome language barriers. This research on selfies in Brazil's favelas follows the findings of Yefimova, Neils, Newell, and Gomez (2015), which report on marginalized groups in Mexico using selfies to realistically depict their everyday lives, history, and social situation. In addition, Frohmann (2005) suggests that selfies could empower the marginalized by creating dialogue about the community's issues through group discussion, reaching policy makers, and informing the broader society of those issues. These findings suggest self-portraits as a way to hear the voices of some of the inhabitants in poor and marginalized regions, as claimed by Hernández (2009). In all these ways, selfies were embedded in marginalized users' everyday lives and perceived as a pathway to a more promising future.

In essence, the favela residents used selfies to present themselves online. But, as I argue in this section, their goals were not to present an ideal (or fake) self online (or shallow displays of narcissism, fashion, attention seeking, and self-promotion). These findings suggest that selfies should be understood as more than a dichotomy of fake or real identities. Rather, I consider people's online presentations (selfies) as ways to improve and benefit their off-line identities: Presenting selves online is to recognize and access an opportunity (i.e., digital technologies) to improve their quality of life and to allow this decision to make a life-enhancing difference (Nemer & Freeman, 2015). This is the context in which I understand online identities and empowerment.

6.3 Empowered until Crossing Social Boundaries: The Orkutization of Shoppings

Famosinhos were the most popular teenagers from the favelas who dictated fashion trends amongst teens within the poor communities. They actively cultivated their reputation by producing videos and content to promote ostentation. They were influenced by Funk Ostentation and in their productions, they often showed their Nike or Puma shoes, expensive brand t-shirts, such as Lacoste and Polo, or even their thick gold necklaces. Such access to material good put them in a higher power position when compared to other teenagers, which some of them became the *famosinhos'* fans. João, summarized how he became a *famosinho*:

"They say that being famous on Facebook is like being rich in the board game Monopoly: the money is useless... But it doesn't matter because I have this

[clothes]; I want to be like those MCs from Funk Ostentation. My fans look up to me, give me lots of respect and I earned it! I spent several hours at the Telecenter and attended the workshops to learn new tools and to be creative... Now I can make videos and talk for my peers about what we want and what we need... being a famosinho also gives the opportunity to fight for what we want."

The *famosinhos* from the favelas organized meetings on Facebook so they could hang out with their friends and meet their fans. These meetings were called *rolézinhos* (meaning "little strolls") and later became a phenomenon throughout Brazil. Larissa, a *famosinha* from São Benedito, had more than 500 likes on her Facebook page. She mentioned that she was invited as special guest to local birthday parties and the local "baile funk" – dance clubs in favelas that played funk music. She showed me the photos of the *rolézinho* promoted by her fans at the public square in Itararé, where more than 200 people showed up:

"I learned that a boy, a big fan, shaved his head to look like me. When he met me, he started crying. Everyone was touched by that moment" (Larissa).

At first, the *rolézinhos* were taking place in public squares in the city peripheries, but they turned out to be so popular that the famous teenagers were organizing the strolls in the malls, or just Shoppings as they were called in Brazil, such as the local one: Shopping Vitória. In Brazil, Shoppings went beyond being a place of entertainment, to hangout, and shopping the latest goods, they were places where the upper class showed their purchasing power and social location (Bienenstein, 2009). Based on my observations, the favela residents perceived

Shoppings as a place to feel more included in the society since they had the chance to show that they also had money (purchasing power) and had access to the expensive and latest goods, not just cheap and old garnets. Thus, their motivation was mostly centered on consumerism.

The Shoppings were outside of the favelas and located centrally in the cities. Unfortunately, this is somewhat like crossing social boundaries and was not well received, and the *famosinhos* and their fans were soon labeled as troublemakers, thieves and rioters because they were in big groups and were targeted as “favelados”.

According to Recuero (2014) *rolézinhas* became a statement of inclusion of marginalized people in what was always understood to be a wealthy person's space (the malls):

“hundreds of Facebook pages invited the young and poor to the malls all around the country. A number of rolézinhas took place, and several malls started closing their doors on the scheduled rolézinha dates. More people started attending and organizing the events as a way to protest against social division and prejudice in the country”.

Thais, a fan of João, was disappointed by how João's *rolézinhas* were recriminated by the police and the people at the mall. She saw the meetings organized through Facebook as a powerful way to show society who they were and what they wanted:

“We didn’t want to cause any harm, we just wanted to walk around with our famosinhos, hang out with our friends, take photos at the mall so we could upload them to Face [Facebook]... I finally ate at McDonald’s, which was like a dream come true... I can’t go there by myself... I’d be tortured by those judging eyes. It’s sad that the police are treating us like that... We don’t have cool stuff here in the favela like they have at the mall... I will organize more rolézinhos on Face so we can go as a group and be persistent with what we want... which is just to have fun”.

João’s *rolézinho* hit the popular news outlets in Vitória, such as A Gazeta (see newspaper article by Miranda (2013)), however the articles presented the members of the gathering as rioters and looters, which influenced the Capixaba society’s opinions about *rolézinhos*, increasing the misjudgments and prejudice already suffered by the teens from the favelas. The newspapers did not report the police repression suffered by the teens, however the *rolézinho*’s members spread such accounts in the favela, scaring some favela residents to cross boundaries and visit the Shoppings, as explained by Jaciara:

“I knew this was going to happen, every time I go to Shopping Vitória, the people that work there always look at me with a weird eye... I don’t like it, it seems that they don’t want me there, or that I will steal something. Now I have one more reason [police repression] to not go there anymore. I rather do online shopping here at the LAN [house]”.

As explained by Jaciara, the local residents did not feel welcome at the malls and saw in online shopping a way around it. However, as explained in the previous section, the post office had a hard time delivering the packages in the favelas due to the violence and the unofficial territory demarcations. The CTCs was also used as a mail distribution hub in the area to help the residents overcome this limitation.

Rolézinhos follow, in part, what boyd (2014) called “networked publics”: an important public space enabled by social media where teens can gather, socialize broadly with peers in an informal way, and engage in political action. According to the author, teens are looking for a place of their own to make sense of the world beyond their bedrooms. Favela teens also want to access to publics to see and be seen, to socialize, and to feel as if they have the freedoms and power to explore a world beyond the heavily on shaped by those in a higher power position, which are the people in upper classes – not parents and school as it is described in boyd’s case. The publics in *rolézinhos* follow Warner’s (2005) argument in *Publics and Counterpublics* that counterpublics enable marginalized individuals to create powerful communities in resistance to hegemonic publics. *Rolézinho* was a phenomenon that helped me understand that favela residents were not only marginalized due to their social conditions, but also because the people in upper classes did not seem to want them in the same situation and power location, such as consumers in the Shoppings. The prejudice suffered by the favela residents in the Shoppings was similar to what they experienced on Orkut, as explained before: the upper classes, according to my observations, did not seem to want to be in a situation where they had the same power and affordances as the poor.

João's use of social media empowered him to become a *famosinho* and a tech savvy user of the CTCs, leading him to reach his goals, which was to consume goods as a way to be more socially included. João's case is an evidence of Neri's (2012) observation that people from poor classes were having more access to goods that they did not have before. However, such way to pursue social inclusion could be problematic since it is molded and dictated by economic and consumerist forces, which in the end only provide superfluous goods (Pochmann, 2013). This findings concurs with Pinheiro-Machado (2014) who suggests in *Etnografia do Rolézinho* (Ethnography of *Rolézinho*) that *rolézinhos* was a reflection of the educational system of poor quality, amplified by the access to digital technologies, which could not perform its role in educating conscious citizens, as well as helped maintaining a large portion of citizens inserted in the consumer market, but marginalized in other ways. Unfortunately, the phenomenon of *rolézinhos* follows the mimicry of Homi Bhabha (1994), in which the favela residents repeat the rich rather than representing their own voices: the disciplined upper classes see poor teenagers wearing brands of the hegemonic market for which they serve and wear, but do not legitimize these teenagers, whose bodies seem to need to be tamed. The upper classes did not recognize the "Other" (poor) and feel a deep and uncomfortable disorder because of such access through the *rolézinhos*.

6.4 Showing Up Late To the Party: The Social Movement of the Marginalized

In October 30th, 2007 Brazil received one of the most anticipated news in years, the land of soccer was selected to host the 2014 FIFA World Cup. The announcement was celebrated by the Brazilians as if the country had won its 6th title; people were wearing the traditional green and yellow and had their hopes increased that the government would finally solve the country's fundamental problems with education, health care, infrastructure and crime. Six years later, as Brazil was getting ready to host FIFA Confederations Cup, an official test event for the World Cup, the excitement that enthralled the Brazilian people turned into deep frustration.

In June of 2013, an avalanche of protests led more than one million people to take to the streets in over a hundred cities in Brazil. The wave of protests began in early June in the city of São Paulo and spread throughout the country. The protests were motivated by the increase of R\$ 0.20 (or 8%) in the public transportation fare (Saad-Filho, 2013). The protests grew to include a much larger set of issues faced by Brazilian society. For instance, the protesters were dissatisfied with the government due to the increase of corruption and impunity (Trigo, 2013). They were also frustrated about the cost of hosting the upcoming World Cup and Olympic games in light of economic disparity and lack of decent public services such as health care, education and security. Citizens wanted assurance that the economic gains that would come from these world events would be used to improve social services.

In Vitória, the first protest took place in June 17th, 2013. University students and members of the Brazilian middle class organized it; they used Facebook to form two popular groups: “Utilidade Publica – ES” (Public Utility – ES) and “Não é por 20 centavos” (It's not just 20 cents). The initial protest attracted 20 000 people, and the protest march started at the Federal University of Espírito Santo (UFES) and toured eleven kilometers, passing through the most important avenues in the city until reaching the official residence of the Espírito Santo’s governor, Renato Casagrande (Nossa, Tedesco, & Borges, 2013). Some protesters had white flowers and signs that displayed their demands. Interestingly, the protesters had hashtags written on their cardboard signs as a way to link their demands to what they were discussing on Facebook.

I participated in the protest march to observe the unfolding of events. I was not able to identify anyone from Gurigica, Itararé, Bairro da Penha or São Benedito. The protesters were mostly white, behaved, and wore clothes that resembled typical upper class citizens. As I am from the city myself, I have an intuition about this as well. The following day, as I went back to the favelas and questioned some of the informants about the protests, most of them did not know anything about them, as mentioned by Thais:

“I heard about the protests in Rio and São Paulo on TV, but heard nothing about the one that happened here... Even if I had, why would I go there? To get beat up by the cops? We already get enough of that here in the community”.

I analyzed the list of members in the Facebook's groups responsible for organizing the protests and again could not recognize anyone from Gurigica, Bairro da Penha, São Benedito or Itararé. I posted a message on the groups asking if anyone was from those communities, but did not get a single positive response – I had 36 people responding “no” to my post and the group had 97,932 users. Since the group members were mostly students and belonged to the upper classes, the information about the protests never reached Facebook users from marginalized classes. The social divide that took place in Vitória, defined by geographical places and income, was also congruently mapped online as the rich and poor social networks did not overlap.

Due to the success of the protest on June 17th, the protest organizers gained interest and attention from mainstream media, such as local TV channels and newspapers, and they announced a new protest for June 20th, 2013. Since the information about the new protest was available through less exclusive and mass channels, like mainstream media, the favela residents became interested in the protests and organized their own group on Facebook to come up with a list of demands. To encourage people to join the protesters Roni, was using the hashtag “#VemPraRua” (in English, come out to the streets):

“We can't be afraid of getting beat up... That's already happening. If we don't do anything then things won't change and my people from the favela will still have no access to education and health care... I don't want this life... We

already have 107 people in the Facebook group and they all said they are going to the next protest.”

The protests of June 20th made history by gathering more than 100,000 protesters in the streets of Vitória and forming the largest public demonstration ever registered in the state of Espírito Santo (Nossa & Borges, 2013). Some of the favela residents were present in the protest. They were demanding better living conditions in the favelas, more respect as citizens and called to end the drug war. Rony considered the participation in the protest an important beginning for the residents:

“It is just the start... we still have a lot to fight for. I wonder if our voices will ever be heard by the politicians... Facebook turned out to be a good way to reach out for people spread all over the communities... The group gave the privacy we needed to discuss sensitive and critical issues, such as the drug cartel activities, without getting people in trouble.”

Even though the people facing digital inequalities in the marginalized areas came late to the protest, Facebook still provided a platform so the residents of Gurigica, Bairro da Penha, São Benedito and Itararé could empower themselves, organize, and manifest their demands in the street protest. But the social inequalities that take place in Vitória affected the way information flowed, impacting the civic engagement of the poor.

Some scholars have perceived social media as a space where people from different social worlds and networks have better chances to connect and share

content (e.g. Aaker & Smith, 2010; Kaplan & Haenlein, 2010). However, that did not seem to be the case of Vitória, where people that belonged to different social classes did not connect or shared content online. The protests of June 2013, was a good example of such social segregation. The organizers of the first protests belonged to an upper class that did not overlap with lower classes, online and offline, thus, the marginalized came in late to the streets and their voices and requests were not as privileged as the ones shouted by the rich. The protests followed Earl and Kimport's (2011) expectation that "social networking sites like Facebook will encourage new uses and dynamics of online protest. With the ability of social networking sites to connect and maintain social relationships as well as telegraph action immediately, these sites might [...] represent collective participation, alerting members of a network when their friend participated in an action" (p. 204), however the events contradicted the authors' suggestion that SNS could bring different social worlds together around specific actions, linking people virtually rather than physically.

As suggested by some scholars (Earl & Kimport, 2011; see Ems, Nemer, & Medina, 2012; Tufekci & Wilson, 2012) SNSs have offered an important space for civic engagement, political action, and planning offline protests, such as the events in Tahrir Square, Occupy Wall Street and the Iranian Protests in 2009. Although Facebook also afforded these same actions to the protesters of June 2013, my findings suggest that it is also important to look at who is organizing and participating in these social movements in order to have a better understanding of where the demands are coming from and who these demands may benefit. In Vitória, when the favela residents joined the protests, they joined a group that

already had demands stipulated by member from upper classes, which were the first adopters of the protests, and did not have their demands amplified as the upper class' demands. Also, besides the lack of social ties between people from different social classes, the social conditions in which the poor lived in also influenced their civic engagement, as mentioned by Roberta:

“Listen, I don’t have Internet with me all the time to know what is going on... I don’t have access to that kind of information, and even if I had, how can I go to these protests? I have to work all day long, put bread on the table and take care of my children... I can’t pay anyone to do that for me, besides tomorrow I have to be at work, if I miss one single day, I’m back on the streets... If I go, how will I return home? By taxi? [ironic laugh] I don’t have money for that, also these protests end late and things get really dangerous here in Bairro da Penha at night. Even if some changes happen, we all know here [in reference to the people from the favelas] that these changes won’t be for us.”

As much as the Internet is considered an open and democratic space, my findings also suggest that the ability of a person to engage in protests and civic actions, highly depends on their offline social location, in which not only they need access to information (in this case the Internet) but also the necessary conditions that would allow them to participate in such activities.

6.5 Conclusion

Marginalized areas, such as favelas in Brazil, are ecologies where the physical access to digital technology is still a problem. Favela residents had to comply with CTCs hours and policies, such as 1 hour per day in Telecenters or had to pay R\$3.00 per hour (approximately U\$1.00) in LAN houses. The adoption and use of social media by the locals were constrained by and a response to issues related to physical access and the contextual limitations that are specific to such areas. They have repeatedly selected strategies and explained how these strategies enabled them to deal with harsh conditions in their environment, for example, to circumvent safety and security problems induced by the drug cartels.

Favela residents lived under conditions that needed addressing to assist them to improve their position in society, such as proper health care, education, basic sanitation, security and infrastructure. However, they demonstrated to be conscious and active users of social media, which empowered them by enhancing their agency advantageously within their own environments. The findings presented in this chapter, such as the use of selfies and Facebook chat, described how social media use empowered the informants by alleviating sources of unfreedom, leading, consequently, toward a quality of life they wished for.

This chapter showed that empowerment through social media use in constrained-access environments are also motivated by non-instrumental uses of technology. It concurs with Kleine (2010) that empowerment is achieved when people are able to make choices toward a desired outcome. Favela residents were

empowered to attain development outcomes of their own choosing. Some may believe that non-instrumental uses do not lead to developmental benefits, but this largely depends on one's interpretation of what "development" is (Nemer, 2015; Rangaswamy & Cutrell, 2012). In this case, this dissertation advocates for the inclusion of alternative development factors, which go beyond the functional and utilitarian frames of modernist development paradigms (Hettne, 2008). In regard to thinking about alternatives to the discursive and rhetorical strategies of development, Arturo Escobar (1995) claims:

"The nature of alternatives as a research question and a social practice can be most fruitfully gleaned from the specific manifestations of such alternatives in concrete local settings. The alternative is, in a sense, always there. From this perspective, there is not surplus of meaning at the local level but meanings that have to be read with new senses, tools, and theories."

This dissertation offers the notion of ICT use that fosters empowerment of marginalized people in a distinct way into what "alternative" development might mean. It builds on the claims by Chirumamilla and Pal (2013), that in thinking seriously of play and non-instrumental use of technology we find

"a way out of the developmental optic, and the constraints it places on the way in which ICT4D researchers and designers envision the possibilities of the life-worlds that their users live in, and the complexities in navigating these same worlds."

ICT4D researchers frequently take on the role of designer and implementers of development projects. If researchers are instead willing to accept the notion of non-instrumental use of technology it not only changes their design strategy, but also their development ethos, in which the subjects become participants and their opinions matter, and are even instrumental themselves.

Thinking about non-instrumental use as empowerment is more than just a shallow acknowledgement of people's desire for entertainment or meaningless use. Understanding the contextualized and real meaning of such use entails a thoughtful and studied approach to the way people choose to live, to how they choose to live and to what things people desire in the run of their everyday lives, whether they are outwardly useful or not. Thus, it concurs with Toyama (2010, 2011) by inviting scholars to comprehend the role and impact of ICTs in people's lives by going beyond simple measurements, since it is required to observe the outcomes that are untimely desired by the people, such evaluation is still missing on the whole from ICT4D projects.

The use of technology in LAN Houses and Telecenters comprised mostly of "Facebooking," chatting, playing games and watching videos on YouTube. But such use, which some may label as merely entertainment and pastime, has resulted in development aspects that ICT4D is familiar with, such as digital literacy, income generation and relationship maintenance. We have this false understanding that social media initiatives typically promote the idea of some grand authoritative display of our "selves" through a variety of channels and lots of participation, where

what is evaluated are the discussions and active contributors to demonstrate success. Hence, a social media initiative in a favela, for example, might instead take into account that for some users a simple click of a “like” is going to be indicative of something much more significant than researchers might assume.

The story of Ana is a good example; she was mostly interested in visiting the LAN house so that she could hang out with her friends and watch soap opera videos on YouTube. Such entertainment usage gave her the digital literacy skills needed to search for knitting videos thus developing new knitting skills. Ana generated income from selling her crafts, which prompted her to donate the money to help finishing the construction of the public square. Although money is an instrumental factor, it was not perceived as the final outcome by Ana and her friends, their goal was to improve the community sense by finishing up the public square. The public square was the place where Ana and her friends and the teenagers, such as Alice and Mariana, maintained some of their relationships and community sense. Alice, who claimed to be terrified of school, was not seeking educational opportunities on Facebook, but still managed to improve her reading and writing skills on the SNS. The ways the informants used social media and appropriated the technology may seem trivial from the lens of ICT4D-bracketed usages, nonetheless, skill such as finding appropriate content, software programs and social media websites “can definitely be considered as positive developments that demonstrate skillful and creative usages” (Rangaswamy & Cutrell, 2012).

The informants suffered the consequences of living in a marginalized area controlled by the drug cartel. Such consequences affected their freedom and life experience offline and online. Nevertheless, this research has shown how they found alternative ways around the limitations and managed to empower themselves by recognizing and accessing an opportunity, using social media in the CTCs, making a choice and then allowing this decision to make a life-enhancing difference. These choices and decisions made by the informants were guided by what was important to them and how technology could be used to meet their needs.

7 Conclusion

In this dissertation I presented an ethnographic study of the motivations, engagements, and adoption of ICTs by favela residents in CTCs located in Vitória, Brazil. It asks the following questions: (1) What is their experience using CTCs? and (2) How does their experience inform the ways we should think about what constitutes empowerment and disempowerment vis-à-vis ICTs? In order to answer these questions and to evaluate the use of ICTs by favela residents, I argued that theoretical positions stemming from technological utilitarianism need expanding, because mundane and non-instrumental practices observed in the favelas shed light on the importance of technology in a variety of dimensions within people's lives. Hence, I described and analysed several findings, which illustrate how such mundane and non-instrumental use of ICTs can afford empowerment and disempowerment.

In Table 3, I summarize some of these findings and link the ways that the use of ICTs in CTCs empowered the informants by alleviating sources of unfreedom, leading, consequently, toward a quality of life they wished for:

Unfreedom alleviated	Case	Empowerment outcome
Repression from the drug cartel.	Maria used Facebook chat to keep in touch with her daughter, who lived in an area ruled by different drug traffickers.	Allowed informants to build and maintain relationships.
Lack of state interest in providing means to promote wellbeing.	Teenagers used YouTube and played Facebook and social flash-based games.	Provided a sense of play and entertainment.
Poverty: can't afford access to training and	Ana and her friends learned new knitting	Afforded the development of creativity and learning

development courses.	patterns to make baby clothes and dishtowels.	(learned how to learn and they learned how to use ICT).
Poor public educational system.	Alice wanted to hangout with her friends on Facebook and at the <i>pracinha</i> , which motivated her to improve her writing and reading skills so she could communicate with them online.	Promoted literacy skills.
Repression from the drug cartel.	Joana saw on social media a way to “get out of the crazy reality of the favelas” by allowing her to cry and scream about her pain. She knew that someone would be there to listen to her.	Offered a safe channel to communicate and socialize with peers and family.
Social deprivation.	Neuza wanted to show and see who she really was. She wanted to avoid people thinking she was a <i>favelada</i> .	Provided a platform for consciousness and expression of the self.
Poverty: can't afford access to training and development courses.	João became an expert in video producing and sharing.	Allowed locals who developed tech skills to be recognized.
Violence and crime.	The constant shootouts in the favelas due to the drug war.	CTCs provided a safe place for favela residents to find shelter and socialize.
Social deprivation.	Favela residents organized themselves through a Facebook group and went to the streets during the protests of June 2013.	Contributed towards promoting civic actions and building a sense of community.

Table 3: ICTs use and empowerment of favela residents.

In Table 4, I summarize other findings that link the experiences of favela residents with technology, which lead to their disempowerment:

Unfreedom reinforced	Case	Disempowerment outcome
Lack of operating system and gaming choices.	Jeferson, a Telecenter user, wanted to play his favorite games, FIFA and Counter Strike, but these games were not supported by Linux (Telecenter's OS).	Felt frustrated and did not feel motivated to visit the Telecenter.
Lack of state interest in providing means to promote wellbeing.	The antenna in the Telecenter in São Benedito was not working properly, leaving the users with slow Internet.	The residents of São Benedito were left without proper Internet, which compromised their communication channels.
Poverty and Expensive Software.	LAN house owners were not able to afford legal copies of Windows and had to <i>crack</i> the OS to keep them working.	High risk of getting fined and getting PCs infected, which could compromise the virtual security of LAN house users.
Poorly built infrastructure.	Perla had to stay overnight to update her computers and Windows.	Risk of getting in trouble for having business open late and after the curfew set by the drug cartel.
Repression from the drug cartel.	Drug cartel members watched the timeline of favela residents' Facebook.	Favela residents felt oppressed and intimidated to create content online.
Social deprivation and patriarchic society.	LAN houses provided a male space in the favelas where girls were not welcomed.	Female users did not have a chance to experience video games, which could lead to entertainment and wellbeing.
Poorly built infrastructure.	Power supply units fried constantly in the CTCs.	Less computers were available for favela residents.
Poorly built infrastructure.	The ISPs in Vitória did not invest in the Internet infrastructure inside the favelas.	ISPs left favela residents without a chance to acquire Internet in their homes.
Digital illiteracy.	QWERTY Keyboard.	Some CTC users felt unmotivated to use the

		computers and Internet, contributing to digital exclusion.
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Table 4: ICTs use and disempowerment of favela residents.

7.1 Making a Difference with Policy and Design Recommendations

The findings presented in the Tables above and throughout this dissertation suggest changes in policies, CTC rules, and ICT design in order to promote empowerment among favela residents. Nonetheless, the recommendations below are expected to advise not only to the Brazilian context, but also for CTCs in other resource-constrained setting where users are increasingly likely to experience ICTs.

Telecenter 1-per-computer rule: Telecenters have a rule that only one person is allowed on the computer at a time. As I observed, the computer rooms are places where the users constantly interact with each other, which leads to relationship building and peer-to-peer learning. As I described before, some teenagers have an interesting communication pattern on Facebook: before sending any messages on Facebook chat, they discuss face-to-face what to say to the person on the chat window, and then they send what they agreed on. As I show in Chapter 4, children in LAN houses highly benefitted from sitting together by the same computer. Due to the importance of the users' offline interactions, Telecenters could provide more chairs per desk in which two or more users would be able to use a computer at the same time. This measure would also alleviate the queue in the Telecenters' waiting rooms.

This recommendation was reported to the Telecenter manager and two centers are currently trying this new rule.

Smartphone Integration: As I described in Chapter 5, the computers in the CTCs played a vital role in the users' experiences with smartphones, or *xinglings*. Some users brought their smartphone to the CTCs in order to post their photos on Facebook, download music, and take photos with their friends. However, some users were confused by the "No Cell Phone" signs on the Telecenters' walls, as shown in Figure 9, and did not dare to bring their phones inside the computer rooms. Smartphones, when connected to either the CTC's WiFi or computers, could increase the coherency of 1-hour slot in Telecenters and be a cheaper option for Internet use at LAN houses. Also, phone storage could cut down on the cost of printing school material.

Inclusion Agents and LAN house owners, according to Donner and Marion (2013), may benefit from specific training and encouragement oriented towards the opportunities presented by the WiFi networks: *"with the proper skills, they could help [CTC] users save time waiting for shared resources and encourage them to get more out of the Internet on their [xinglings]. They also need new skills to help mobile-centric users with things like configuring email on phones to searching, cloud storage, and local caching, and less technical (but critical) skills, such as managing time, contacts, online reputation, and use of mobile-accessible resources for leisure and school"* (p. 13). Hence, promoting explicit rules about smartphone use could improve the experiences of favela residents with ICTs.

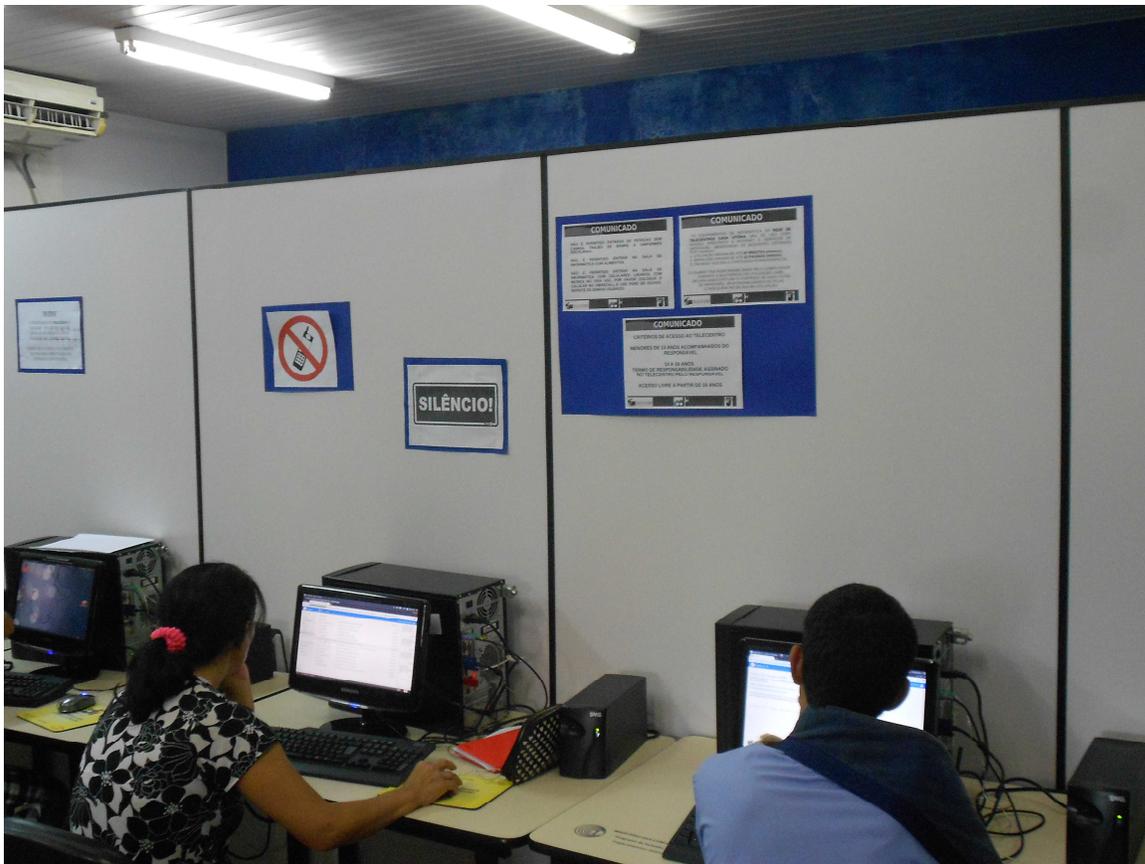


Figure 9: "No Cell Phone" Sign in Itararé's Telecenter.

This recommendation was reported to the CDI managers and they have agreed to train the Inclusion Agents to facilitate the integration of smartphone in the Telecenters.

***Vitória OnLine* or community hotspots expansion:** CTCs are appealing places for smartphone users due to the free or cheap WiFi. In a country where Internet data remains expensive and Telecomm coverage is far from being omnipresent, the long queues for PC access in the CTCs are not a coincidence. Some favela residents were able to benefit from the open and free Internet through *Vitória Online*, which was available inside and around the Telecenters. However, those who

lived no more than one block away from the CTCs could not connect to the hotspot. As described before, *Vitória Online* is a project funded by the city government to promote free Internet access. However the available hotspots, other than the Telecenters, are in wealthier areas where private Internet access is not problematic. Hence, the city government should expand the number of hotspots in areas, such as the favelas, where there is a demand for Internet but it is not easily accessible. According to Donner and Marrion (2013), “a more complementary policy view of Wi-Fi-enabled handsets could reduce pressure on [CTCs] to provide enough time for everyone. Worldwide, 50% of mobile phone users access the Internet via Wi-Fi rather than the cell network (Daly, 2011).” “With the spread of lower-cost data enabled handsets, resource constrained people (without access to Wi-Fi at home, school, or work) would like free hotspots, too” (p. 14).

I informed the Telecenter manager about the potential of *Vitória OnLine* in the CTCs and she has agreed to advertise and promote the users to engage more with the network. She mentioned she would put signs on the CTCs’ walls with instructions on how to connect to it. Also, I attended a Google Hangout meeting with the mayor of Vitória, Luciano Rezende, on June 24th, 2014, and I recommended the expansion of *Vitória OnLine* especially in areas where access is problematic. The mayor mentioned they are working on expanding the network but did not give me any details about how, when or where.

Keyboard: CTC users showed frustration and annoyance with the QWERTY keyboard, which unmotivated some users to keep visiting the CTCs and using the ICTs. As proposed by some informants, a keyboard designed following an alphabetic

layout could alleviate some of their frustrations. Alphabetical keyboards have been considered inefficient (see Buzing, 2003; Hirose, 2001), and as favela residents are introduced to information systems in their workplace, they will most likely use ICTs with a QWERTY-like keyboard. However, having an alphabetical keyboard in CTCs could serve as a way to introduce the users to ICTs in a smoother way, since the artifact could avoid estrangement and resistance at first sight. CTC staff could also train and help the users to transition from alphabetical keyboard to QWERTY keyboard.

The Telecenter manager was interested in this recommendation, however did not think she would be able to implement it straight away. She would need to find funds to purchase alphabetic, and in order to purchase them, she would have to start a licitation process, as I described in Chapter 4, which could take a long time.

Power supply unit: Power supply units (PSU) did not cope well with the constant power outages caused by the poorly built infrastructure in the favelas. As LAN house owners complained, replacing PSUs was an issue since purchasing new units did not always fit in their budgets. This issue often left computers inoperable, which affected the LAN houses' income, and the number of computers available for favela residents. The ideal solution for this situation would be a more robust and steady infrastructure, however this does not seem to be a feasible solution due to the history of marginalization and interventions in the favelas. Another solution would be resistant PSUs designed to cope with unstable infrastructures. However, this could also mean a more expensive artifact, which is not affordable by LAN house owners. Thus, another solution I recommend is to promote policies that would

provide subsidies to CTCs so they could buy cheaper or tax-free PSUs. This would not only benefit LAN houses owners, but also taxpayers since their money is used to fund the Telecenters and purchase PSUs when they need to be replaced.

I wrote a report with some of the findings from Chapter 5, along with the recommendation to subsidize PSUs, and presented it to Max da Mata, a city congressman. We both discussed the issue and Mr. Mata is currently working on adapting the report to a bill format so it can be voted in the city congress.

Telecenter evaluation: As I articulated in Chapter 1 and 4, Telecenters should be evaluated by taking into account mundane and non-instrumental uses of ICTs in order to show how these centers can afford community and individual empowerment. Hence, I recommend the framework proposed in this dissertation to be adopted by policymakers and CTC funders, so that these stakeholders could have a more realistic and effective understanding of the important role that CTCs play in communities, especially in those that suffer marginalization.

As mentioned by the Telecenter manager in Chapter 4, the Telecenters of Vitória were supposed to close their doors in the end of December of 2014 because the city government had a misleading expectation on how these centers should be evaluated. The government was after an evaluation that could translate the users' experiences into statistics and numbers. Since such an approach is not compatible with the role of CTCs in marginalized communities, I wrote a report with my dissertation's framework and recommend the city government to change how these CTCs were being evaluated. The report was delivered to the Mayor of Vitória,

Luciano Rezende, and to the Secretary of Tourism, Labor, and Income (the Telecenters were subordinated to this secretariat), Leonardo Khroling. We had a Google Hangout meeting on June 24th, 2014, to discuss my framework and its implementation in the Telecenters of Vitória. Mr. Rezende and Mr. Khroling agreed to follow my recommendations in order to evaluate the CTCs in 2014.

The city government still required quantitative indicators, such as the number of people accessing the Telecenters, but they also included in their evaluations qualitative cases that illustrated how the centers were affording empowerment to communities and individuals. The Inclusion Agents reported these cases to the Telecenter manager, who included them in the yearly reports. Due to this evaluation expansion, the Telecenters were able to “survive” 2014, and are currently open and running.

LAN house policies: LAN houses are popular places in the favelas of Brazil; they are not only one of the communities’ main gateways to the online world, but also places where the locals socialize – even to the point of hosting birthday parties – and find safety from the constant conflicts involving the drug cartel. In Chapter 4, I examine the benefits provided to the community by such centers, and recommend expanding the use of the term community technology center in order to include establishments such as LAN houses.

Understanding the benefits of LAN houses and approaching them as CTCs could lead to policies that promote their spread and, consequently, socio-digital inclusion of people like favela residents. Hence, I wrote a report based on this

dissertation's findings and discussed it with the Senator Ricardo Ferraço. Senator Ferraço wrote the bill PLC 28/2011, which is called "Law of the LAN houses" and aims at creating incentives that facilitate the regulation of these centers and allow them to easily access public resources in order to expand infrastructure or to acquire new computers. The Senator thought my report would strengthen the bill's argument, and attached it to the final document. The bill passed by the Senate, and the Commission of Science, Technology, Communication and Informatics approved it. The bill is currently in the House of Representative's to be debated and voted. If it passes, then it goes to the President to be sanctioned. Mr. Ferraço is confident that the bill will be enacted into law soon: *"It is increasingly necessary to foster easier access to the Internet for fully exercising citizenship"* (Senator Ricardo Ferraço).

These recommendations were a way of giving back to the favelas residents with an activist involvement of the inequalities they lived with. By considering the critical ethnography tone, I made the commitment to address social injustice by actively intervening on "hegemonic practices and [to] serve as an advocate in exposing the material effects of marginalized locations while offering alternatives" (Madison, 2012). Hence, engaging in the above recommendations was my approach to alleviating some of the unfreedoms suffered by favela residents and to make a difference.

7.2 Final Considerations

Studies on favelas in Brazil are underrepresented in the literature due to their marginalization, lack of interest by scholars and the difficulties to access them. Hence, the one of the contributions of this dissertation is the nuanced account of ICT use by favela residents and how such use empowered and disempowered them, even as they faced social and digital inequalities. Approaching the issue with the rhetoric of digital inequalities invites technology scholars and policymakers to pay closer attention to those who are facing such inequalities. Analyzing perspectives of marginalized people offers a distinct window for understanding technological use and contributes to the growing body of literature on the importance of non-instrumental ways of using ICTs.

The findings of this dissertation build on the notion of empowerment laid out by Alsop and Heinsohn (2005), which focus on increasing capacity to make choices and transform those choices into desired actions and outcomes. Such capacity to transform needs and wants goes beyond the utilitarian notion of what constitutes development, achievement and freedom. Active human agency was taken into account in order to evaluate the achievements of such outcomes. In this dissertation, I researched LAN houses and Telecenters as interactional spaces of ICT use by favela residents, and how their unique perspectives contributed to new understandings of what specifically motivates such user populations to use and adopt social media in specific ways.

The findings also support Rangaswamy and Nair's (2012) challenge of the notion of "resource poverty" within areas such as the favelas. The use of ICTs by CTC users demonstrated technological appropriation and capacity building through simpler practices such as resource recycling and informal routes of skill transfer. Acknowledging the meaningful ways such technology use leads us to "a new view of the world's poor": going from seeing the poor as passive consumers (ICT4D 1.0) to innovative producers and agile agents of ICT services and products (ICT4D 2.0).

This dissertation fosters non-Western and nonconventional modes of technology use by a population least likely to afford and use ICTs in Brazil. It contradicts the common opinion that people on CTCs and social media are wasting precious time (see Ito et al., 2010), and those seeking to improve their lives should look for more meaningful ways to change their situation, such as spending more time at school. The case of Alice, who has been enrolled in school since she was five years old, counteracts such an assumption. She was neglected by the poor quality of education provided by the State and never found the motivation or was taught properly how to read and write. Through the conventional methods applied by her school, she remained illiterate, although in official statistics she was counted as a literate student because she was enrolled in seventh grade. Since Alice did not want to be left out of her friends' conversations, she found a way through Facebook and friends' help to be motivated to start learning. Her active Facebook use could be labeled as pastimes and entertainment, but it allowed her to keep her social capital and improve her digital and general literacy. I am not advocating that children should use Facebook instead of going to school, but Alice's case merely points to the

fact that the use of technology for entertainment purposes, along with other non-instrumental purposes, should not be seen as opposed to development but as expanding capacities such as literacies and skills.

There is still a lot of work to be done regarding building an online and offline environment aimed at empowering those who are marginalized. Based on the findings from my fieldwork it appears that ICTs have been appropriated in specific ways by the favela residents to overcome their limitations, fulfill certain needs and exercise their human agency. However, favela residents had bigger aspirations than what they did through ICTs, as in the case of the *rolézinhos*: although the teenagers from favelas felt empowered to cross social boundaries and go for a “little stroll” at the shopping malls, they suffered heavily with prejudice and discrimination as the upper class people did not want such large groups of teenagers invading “their” malls. Also, Facebook provided a platform so the residents of Bairro da Penha, Gurigica, São Benedito and Itararé could organize and manifest their demands in the street protest. But the social inequalities that take place in Vitória affected the way information flowed, affecting the civic engagement of the poor. The organizers of the first protests belonged to an upper class that did not overlap with lower classes, online and offline, the marginalized came in late to the streets and their voices and requests were not privileged as the ones shouted by the rich.

Even though the outcome of ICT use was not perfectly favorable toward a more egalitarian society in every way, scholars must bring to society’s attention the subtle and important demonstrations of empowerment, capacity and freedom from

such unconventional uses so better policies and technology can be developed, and the voices of the marginalized be amplified and recognized.

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Appendices

Appendix 1: Indiana University IRB Approval



INDIANA UNIVERSITY

OFFICE OF RESEARCH ADMINISTRATION

To: JESSICA EDEN MEDINA
INFORMATICS

From: IU Human Subjects Office
Office of Research Administration – Indiana University

Date: May 09, 2013

RE: NOTICE OF EXPEDITED APPROVAL

Protocol Title: Rethinking Digital Inequalities: the experience of the marginalized in community technology centers

Protocol #: 1304011173

Funding Agency/Sponsor: None

IRB: IRB-IUB, IRB0000222

Expiration Date: May 07, 2015

The above-referenced protocol was reviewed by the Institutional Review Board (IRB-IUB). The protocol meets the requirements for expedited review pursuant to §46.110, Category (6) (7). The protocol is approved for a period of May 08, 2013 through May 07, 2015. This approval does not replace any departmental or other approvals that may be required.

If you submitted and/or are required to provide participants with an informed consent document, study information sheet, or other documentation, a copy of the enclosed approved stamped document is enclosed and must be used.

As the principal investigator (or faculty sponsor in the case of a student protocol) of this study, you assume the following responsibilities:

1. **CONTINUING REVIEW:** Federal regulations require that all research be reviewed at least annually. You may receive a “Continuation Renewal Reminder” approximately two months prior to the expiration date; however, it is the Principal Investigator’s responsibility to obtain review and continued approval *before* the expiration date. If continued approval is not received by the expiration date, the study will automatically expire, requiring all research activities, including enrollment of new subjects, interaction and intervention with current participants, and analysis of identified data to cease.
2. **AMENDMENTS:** Any proposed changes to the research study must be reported to the IRB prior to implementation. Only after approval has been granted by the IRB can these changes be implemented. An amendment form can be obtained at: http://researchadmin.iu.edu/HumanSubjects/hs_forms.html.
3. **UNANTICIPATED PROBLEMS AND NONCOMPLIANCE:** Unanticipated problems and noncompliance must be reported to the IRB according to the policy described in the Unanticipated Problems and Noncompliance SOP, which can be found at http://researchadmin.iu.edu/HumanSubjects/hs_policies.html. NOTE: If the study involves gene therapy and an event occurs which requires prompt reporting to the IRB, it must also be reported to the Institutional Biosafety Committee (IBC).
4. **ADVERTISEMENTS:** Only IRB-approved advertisements may be used to recruit participants for the study. If you submitted an advertisement with your study submission, an approved stamped copy is provided with the approval. To request approval of an advertisement in the future, please submit an amendment, explaining the mode of communication and information to be contained in the advertisement.
5. **COMPLETION:** Prompt notification must be made to the IRB when the study is completed (i.e. there is no further subject enrollment, no further interaction or intervention with current participants, including follow-up, and no further analysis of identified data). To notify the IRB of study closure, please obtain a close-out form at http://researchadmin.iu.edu/HumanSubjects/hs_forms.html.
6. **LEAVING THE INSTITUTION:** The IRB must be notified of the disposition of the study when the principal investigator (or faculty sponsor in the case of a student project) leaves the institution.
7. **VULNERABLE POPULATION:** Please note that there are special requirements for the inclusion of prisoners in research. You may not enroll or otherwise include an individual who is or becomes a prisoner while enrolled in the research. For additional information on the requirements for including prisoners in research, please refer to http://researchadmin.iu.edu/HumanSubjects/hs_policies.html.

Appendix 2: Informed consent statement provided to potential interviewees

English version:

INDIANA UNIVERSITY STUDY INFORMATION SHEET FOR

Rethinking Digital Inequalities: the experience of the marginalized in community technology centers

You are invited to participate in a research study on how and for what purposes people from poor neighborhoods utilize digital technology in community technology centers (CTCs) such as LAN Houses and Telecentros. You were selected as a possible subject because you are an user of such units. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

The study is being conducted by David Nemer, School of Informatics and Computing, as a preliminary research for his dissertation.

STUDY PURPOSE

The purpose of this study is to understand how and for what purposes people from poor neighborhoods utilize digital technology in Digital Inclusion Units (LAN Houses and Telecentros).

NUMBER OF PEOPLE TAKING PART IN THE STUDY:

The study investigators hope to enroll 250 subjects.

PROCEDURES FOR THE STUDY:

If you agree to be in the study, you will be asked to do the following things:

You will be asked to participate in an semi-structured informal interview, to be observed during your visit in the CTCs and also your behaviour outside of the centers, in the community, as well as to participate in a focus group . During the interview you will be asked a series of open ended questions that pertain to your experiences around Digital Inclusion Units. The length of the interview may vary, and may last from twenty minutes to one hour. The interviewer may ask to schedule one or two follow-up interviews at your convenience that will take no longer than two hours per interview session.

The focus group will take place in the CTC that you use frequently. You will be together with a group of CTC users, from six to eight users, where I will ask the following questions (attached). The focus group will be scheduled according to the availability of the centers and the subjects.

With your permission, the interview may be transcribed. To protect your confidentiality, excerpts from our conversation, notes based on your behavior and focus group will not appear in the finished project with your identifying information without your expressed consent.

I may observe you at your school, your home, your workplace, common public areas in the communities such as the “main square” and bars. Before doing so, I will inform you and the owners / managers / responsible for such places in order to make sure that everyone is OK with such activity and to assure that you, or anyone, are not aggrieved by any means.

The study will take place in a series of 8 months periods, primarily in Gurigica, Vitoria, Brazil. It will be supervised by two Professors: Eden Medina, a historian, and David Hakken, an anthropologist.

RISKS OF TAKING PART IN THE STUDY:

This study will not put you in any danger. The main risks of this study will most likely be the possibility of embarrassment or feelings of awkwardness, but I will do my best to avoid these situations.

BENEFITS OF TAKING PART IN THE STUDY:

With the information collected from the interviews, observation and focus group, I will attempt to provide to the technology designers and policymakers with tailored and important information so better technology can be developed and implemented for the marginalized communities.

CONFIDENTIALITY

Efforts will be made to keep your personal information confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Your identity will be held in confidence in reports in which the study may be published.

All your personal information will be kept confidential and interview data will not be identified by name without your permission. All electronic data will be stored securely in a password-protected computer and printed interview transcripts will be stored in a locked box or cabinet. Me and the supervising Professors will be the only persons with access to the data. According to the research standards set by the American Anthropological Association, all field notes and research materials are part of the permanent research record and may not be destroyed. Therefore, all transcripts and interview notes will be kept in a secure place after the completion of the project. Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as the study investigator and his/her research associates, the Indiana University Institutional Review Board or its designees.

PAYMENT

You will not receive payment for taking part in this study.

CONTACTS FOR QUESTIONS OR PROBLEMS

For questions about the study, contact the student, David Nemer, at Indiana University School of Informatics and Computing, 901 E. 10th Street Room 305, Bloomington, IN 47408, (765) 960-0515, and dnemer@indiana.edu. Phone in Brazil: (27) 3225-1372

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, contact the IU Human Subjects Office at (317) 278-3458 or [for Indianapolis] or (812) 856-4242 [for Bloomington] or (800) 696-2949.

VOLUNTARY NATURE OF STUDY

Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time. Leaving the study will not result in any penalty or loss of benefits to which you are entitled. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

Portuguese version

Universidade de Indiana
Informação sobre o estudo

Repensando Desigualdades Digitais: a experiência dos marginalizados nos centros de tecnologia da comunidade

Você está convidado a participar de uma pesquisa sobre como e para que fins as pessoas de bairros pobres utilizam tecnologia digital em centros de tecnologia da comunidade (CTCs), como Lan Houses e Telecentros. Você foi selecionado como um possível assunto, porque você é um usuário de tais unidades. Nós pedimos que você leia este formulário e fazer todas as perguntas que você puder ter antes de concordar em participar do estudo.

O estudo está sendo conduzido por David Nemer, Escola de Informática e Computação, como uma investigação preliminar para sua dissertação.

ESTUDO DE PROPÓSITO

O objetivo deste estudo é compreender como e para que fins as pessoas de bairros pobres utilizam tecnologia digital em Unidades de Inclusão Digital (LAN Houses e telecentros).

Número de pessoas que participaram do estudo:

Os pesquisadores do estudo esperam matricular 250 informantes.

PROCEDIMENTOS PARA O ESTUDO:

Se você concordar em participar do estudo, você vai fazer o seguinte:

Você será solicitado a participar de uma entrevista informal semi-estruturada, a ser observado durante a sua visita nas CTCs e também o seu comportamento fora dos centros, na comunidade, bem como de participar de um grupo de foco. Durante a entrevista, você será solicitado uma série de perguntas abertas que dizem respeito às suas experiências em torno de Unidades de Inclusão Digital. O comprimento da entrevista pode variar, e pode durar de vinte minutos a uma hora. O entrevistador pode pedir para agendar uma ou duas entrevistas de acompanhamento de sua conveniência que vai demorar mais de duas horas por sessão de entrevista.

O grupo focal será realizado no CTC que você usa com frequência. Você vai estar junto com um grupo de usuários do CTC, de seis a oito usuários, onde vou fazer as seguintes perguntas (em anexo). O grupo focal será agendada de acordo com a disponibilidade dos centros e dos indivíduos.

Com sua permissão, a entrevista pode ser transcrita. Para proteger a sua confidencialidade, trechos de nossa conversa, observa com base no seu comportamento e grupo focal não aparecerá no projeto acabado com suas informações de identificação, sem o seu consentimento expresso.

A observação acontecerá nos centros comunitários de tecnologia, assim como em escolas, praças, lugares públicos da comunidade de Gurigica. Caso esses lugares tenham um proprietário e/ou responsável, todos serão comunicados sobre a minha atividade para que você não seja prejudicado.

O estudo será realizado em uma série de oito meses períodos, principalmente em Gurigica, Vitória, Brasil. Ele será supervisionado por dois professores: Eden Medina, historiador, e David Hakken, um antropólogo.

Riscos de tomar parte do estudo:

Este estudo não vai colocá-lo em perigo. Os principais riscos deste estudo provavelmente será a possibilidade de passar vergonha ou sentimentos de estranheza, mas vou fazer o meu melhor para evitar essas situações.

Benefícios de tomar parte do estudo:

Com as informações coletadas a partir do grupo de entrevistas, observação e atenção, vou tentar proporcionar aos designers de tecnologia e formuladores de políticas com informações personalizadas e importante para melhor a tecnologia pode ser desenvolvida e implementada para as comunidades marginalizadas.

SIGILO

Serão feitos esforços para manter a sua informação pessoal confidencial. Nós não podemos garantir sigilo absoluto. As suas informações pessoais podem ser divulgadas se exigido por lei. Sua identidade será mantida confidencial em relatórios em que o estudo podem ser publicados.

Todas as suas informações pessoais serão mantidas em sigilo e dados de entrevistas não será identificado pelo nome sem a sua permissão. Todos os dados eletrônicos serão armazenados com segurança em um computador protegido por senha e transcrições das entrevistas impressas serão armazenadas em uma caixa trancada ou armário. Eu e os professores supervisores serão as únicas pessoas com acesso aos dados. De acordo com os padrões de pesquisa estabelecidas pela Associação Americana de Antropologia, todas as notas de campo e materiais de pesquisa são parte do registro permanente de pesquisa e não pode ser destruído. Portanto, todas as transcrições e notas da entrevista será mantido em um local seguro após a conclusão das project.Organizations que podem inspecionar e / ou copiar os registros da pesquisa para a garantia da qualidade e análise de dados incluem grupos como o investigador do estudo e seu / sua pesquisa associados, da Universidade Conselho de Revisão Institucional Indiana ou seus designados.

PAGAMENTO

Você não vai receber o pagamento por participar neste estudo.

Contatos para dúvidas ou problemas

Para perguntas sobre o estudo, em contato com o estudante, David Nemer, em Indiana University School of Informática e Computação, 901 E. 10 quartos Rua 305, Bloomington, IN 47408, (765) 960-0515, e dnemer@indiana.edu. Telefone no Brasil: (27) 3225-1372

Para perguntas sobre seus direitos como participante da pesquisa ou para discutir problemas, reclamações ou dúvidas sobre um trabalho de pesquisa, ou para obter informações, ou entrada de oferta, em contato com o Escritório de Assuntos IU Humana (317) 278-3458 ou [para Indianapolis] ou (812) 856-4242 [para Bloomington] ou (800) 696-2949.

Natureza voluntária do ESTUDO

A participação neste estudo é voluntária. Você pode optar por não participar ou pode deixar o estudo a qualquer momento. Deixando o estudo não acarretará qualquer penalidade ou perda de benefícios aos quais você tem direito. Se você

retirar do estudo antes da coleta dos dados for concluída, os seus dados serão devolvidos ou destruídos.

Appendix 3: Informed consent statement provided to potential interviewees (children and parents / legal guardian)

English version:

Parental Consent Form for Research and Information Sheet for the Children / Adolescents

PROTOCOL TITLE: Rethinking Digital Inequalities: the experience of the marginalized in community technology centers

PRINCIPAL INVESTIGATOR: Medina, Eden (with David Nemer)

Introduction

You are being asked to [allow your child to] take part in a research study. This document has important information about the reason for the study, what [you] / your child will do if [you] / your child participates in this research study, and the way we would like to use [your] / your child's information

What is the reason for doing this study?

The purpose of this study is to understand how and for what purposes people from poor neighborhoods utilize digital technology in Digital Inclusion centers (LAN Houses and Telecentros). [You] / Your child is being asked to participate because they are a frequent user of such centers.

How many people will take part in this study?

The study investigators hope to enroll 250 subjects.

What will your child be asked to do in this study?

If you consent to [your] / your child's participation, [you] / your child will be asked to participate:

in a semi-structured interview that will ask the following questions... (I've already submitted the questions). During the interview [you] / the child will be asked a series of open ended questions that pertain to [your] / her/his experiences around Digital Inclusion centers. The length of the interview may vary, and may last from twenty minutes to one hour. The interviewer may ask to schedule one or two follow-up interviews at [your] / your child's convenience that will take no longer than two hours per interview session.

I will perform observation of [your] / your child's use of the CTCs and also [your] his/her behavior in the community, outside the centers. I may observe [you] / your child's behavior at school, at home, common public areas in the communities such as the "main square" and playgrounds. Before doing so, I will inform you (the child and the parents) and the owners / managers of the places where I will be conducting these observations in order to make sure that everyone is OK with such activity and to assure that [you] / your child is not aggrieved by any means.

In a focus group in the CTC that [you] / she/he uses. [You] / He/ she will be together with a group of CTC users, from six to eight users, where I will ask the following questions (attached). The focus group will be scheduled according to the availability of the centers and the subjects.

What are some of the possible risks and discomforts?

This study will not put [you] / the children in any danger. The main risks of this study will most likely be the possibility of embarrassment or feelings of awkwardness, but I will do my best to avoid these situations.

What are the benefits?

With the information collected from the interviews, observation and focus group, I will attempt to provide to the technology designers and policymakers with tailored and important information so better technology can be developed and implemented for the marginalized communities.

Will I receive payment for participation in this study?

You, your family and child will not get any money for being in this research study.

If I have questions or concerns about this research study, whom can I call?

For questions about the study, contact the student, David Nemer, at Indiana University School of Informatics and Computing, 901 E. 10th Street Room 305, Bloomington, IN 47408, (765) 960-0515, and dnemer@indiana.edu. Phone in Brazil: (27) 3225-1372

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, contact the IU Human Subjects Office at (317) 278-3458 or [for Indianapolis] or (812) 856-4242 [for Bloomington] or (800) 696-2949.

What are my rights as a research subject?

If you choose to [have your child] be in this study, you and your child have the right to be treated with respect, including respect for your decision whether or not you wish to have your child continue or stop being in the study. Your child is free to choose to stop being in the study at any time.

Any new findings developed during the course of this research that may affect your willingness to have [you] / your child continue in this study will be shared with you.

[You] / Your child's participation in this study may be stopped by the investigator without your consent if [you] / the child is not willing to participate anymore.

Consent Summary:

I have read this consent form and the research study has been explained to me. I have been given time to ask questions, and have been told whom to contact if I have more questions. I agree to have my child be in the research study described above.

A copy of this consent form will be provided to me after I sign it.

I agree to let my child _____ (print name) be in the research study described above.

Parent/Legal Guardian's Name (printed) and Signature

Date

Name (printed) and Signature of Person Obtaining Consent

Date

Portuguese version:

Consentimento dos pais para Pesquisa / Folha de Informação para as crianças e adolescentes

PROTOCOLO TÍTULO: Repensando Desigualdades Digitais: a experiência dos marginalizados nos centros tecnológicos comunitários

INVESTIGADOR PRINCIPAL: Medina, Eden (com David Nemer)

Introdução

Você está sendo convidado a [permitir que seu filho a] participar de uma pesquisa. Este documento contém informações importantes sobre a razão para o estudo, o que [você] / seu filho vai fazer se neste estudo, e da maneira que gostaríamos de utilizar as informações [do seu filho].

Qual é a razão para fazer este estudo? O objetivo deste estudo é compreender como e para que fins as pessoas de bairros pobres utilizam tecnologia digital em Centros de Inclusão Digital (LAN Houses e telecentros). [Você] / Seu filho está sendo convidado a participar, porque [você] / ele é usuário freqüente de tais centros.

Quantas pessoas vão participar neste estudo? Os pesquisadores do estudo esperam matricular 250 pacientes.

Qual será o seu filho ser convidado a fazer neste estudo?

Se você concorda com a participação [do seu filho], [você] / o seu filho vai ser convidado para participar:

- em uma entrevista semi-estruturada, que vai fazer as seguintes perguntas ... (Eu já apresentei as perguntas). Durante a entrevista, [você] / a criança será solicitada uma série de perguntas abertas que dizem respeito a seus / suas experiências em torno de centros de inclusão digital. O comprimento da entrevista pode variar, e pode durar de vinte minutos a uma hora. O entrevistador pode pedir para agendar uma ou duas entrevistas de acompanhamento de sua conveniência que vai demorar mais de duas horas por sessão de entrevista.
- I irá realizar a observação do uso do seu filho das CTCs e também sua / seu comportamento fora dos centros, como em escolas, praças, lugares publicos da comunidade de Gurigica. Caso esses lugares tenham um proprietario e/ou responsavel, todos serão comunicados sobre a minha atividade para que [você] / a criança não seja prejudicada.
- Em um grupo de foco no CTC que [você] / ele / ela usa. [Você] / Ele / ela vai estar junto com um grupo de usuários do CTC, de seis a oito usuários, onde vou fazer as seguintes perguntas (em anexo). O grupo focal será agendada de acordo com a disponibilidade dos centros e dos indivíduos.

Quais são alguns dos possíveis riscos e desconfortos? Este estudo não vai colocar as crianças em perigo. Os principais riscos deste estudo provavelmente será a possibilidade de passar vergonha ou sentimentos de estranheza, mas vou fazer o meu melhor para evitar essas situações.

Quais serao os beneficios? Com as informações coletadas a partir do grupo de entrevistas, observação e atenção, vou tentar proporcionar aos designers de tecnologia e formuladores de políticas com informações personalizadas e importante para melhor a tecnologia pode ser desenvolvida e implementada para as comunidades marginalizadas.

Será que vou receber o pagamento para a participação neste estudo?

Você, sua família e da criança não vai ter nenhum dinheiro para estar nesta pesquisa.

Se eu tiver dúvidas ou preocupações sobre esta pesquisa, a quem posso chamar? Para perguntas sobre o estudo, em contato com o estudante, David Nemer, em Indiana University School of Informática e Computação, 901 E. 10 quartos Rua 305, Bloomington, IN 47408, (765) 960-0515, e dnemer@indiana.edu. Telefone no Brasil: (27) 3225-1372

Para perguntas sobre seus direitos como participante da pesquisa ou para discutir problemas, reclamações ou dúvidas sobre um trabalho de pesquisa, ou para obter informações, ou entrada de oferta, em contato com o Escritório de Assuntos IU Humana

Curriculum Vitae

David Nemer

dnemer@indiana.edu • <http://dnemer.com>

Research and Teaching Interests

Social informatics, information and communication technology for development (ICT4D), human-computer interaction (HCI), science and technology studies (STS), community informatics, and development studies.

Education

Ph.D. Candidate, School of Informatics and Computing – 2015

Indiana University

Specialization in Social Informatics; Ph.D. minor in Information Science

Dissertation: “Rethinking Digital Inequalities: The Experience of the Marginalized in Community Technology Centers”

Committee: Prof. Eden Medina (Informatics; advisor and chair), Prof. David Hakken (Informatics), Prof. Mary L. Gray (Media School) and Prof. Hamid Ekbia (Information Science; minor advisor)

M.Sc. in Computer Science – 2010

Saarland University / University of Kaiserslautern, Germany

Advisors: Prof. Dieter Rombach (University of Kaiserslautern), Prof. Andreas Zeller (Saarland University)

Thesis: “Analyzing the Impact of Source Code Changes on Software Execution Behavior”

Committee: Kim Herzig, David Schuler, Prof. Andreas Zeller, Prof. Sebastian Hack and Prof. Reinhard Wilhelm

B.Sc. in Business Administration – 2007

UFES – Universidade Federal do Espírito Santo, Brazil

Thesis: “Hospital Accreditation and the Organizational Changes – A Case Study of Two Hospitals in the State of Espírito Santo”

Advisors: Prof. Dirce Nazaré and Prof. Luiz Leôncio Lorenzoni

B.Sc. in Computer Science – 2006

FAESA – Faculdades Integradas do Espírito Santo, Brazil

Thesis: “CHARMER: A Tool to Support Software Validation Tests”

Advisors: Prof. Ligia Silveira and Prof. Andromeda Menezes

Employment

University of Kentucky, Starting August 2015

Assistant Professor in the College of Communication and Information

Microsoft Research India, July 2014 – September 2014

Ph.D. Research Intern at the Technology for Emerging Markets (TEM) group
Conducted ethnography in Bangalore, India, in order to understand the experiences and motivations of Indian students when taking massive open online courses (MOOCs).

Indiana University, August 2010 – July 2015

Instructor of Record – Spring 2015 and Summer 2015

Teaching Assistant – Fall 2010 – Fall 2014

Fraunhofer Institute for Experimental Software Engineering (IESE), March 2007 – January 2010

Research Assistant at the Process and Measurement Department. Projects included QualOSS (European Consortium for Quality in Open Source Software) and SPES2020 (Software Platform Embedded Systems 2020).

International Department at University of Kaiserslautern, August 2007 – March 2010

Student Assistant responsible for coordinating the orientation for incoming international students, the social tutoring and organization of cultural events, and providing support for grant applications.

DVF Consultancies, July 2006 – February 2007

Junior Consultant charged with assisting development of Competitive Strategy Reports and SWOT Analysis for DVF's clients. Member of the PDF (Local Supplier Development Program).

MSW Metrics and Software, February 2005 – February 2006

Junior Programmer involved in developing BrazShipping's port management software using Oracle Java, and Delphi 2005.

Publications

Books

Nemer, D. (2013). *Favela Digital – The other side of technology*. Vitoria, Brazil: Editora GSA. (In collaboration with Varal Communication Agency) ISBN: 978-85-8173-059-2

Reviewed in *London School of Economics (LSE) Review of Books*, and *The Journal of Community Informatics*.

Journal Articles

Nemer, D. (2015). Online Favela: The Use of Social Media by the Marginalized in Brazil. *Information Technology for Development*. <http://dx.doi.org/10.1080/02681102.2015.1011598>

Nemer, D. (2015). From Digital Divide to Digital Inclusion and Beyond. *The Journal of Community Informatics*, 11(1). <http://ci-journal.net/index.php/ciej/article/view/1030/1131>

Nemer, D. & Zhang, G. (2015). Empowering the Marginalized: Rethinking Selfies in the Slums of Brazil. *International Journal of Communication*. 9(2015). 1832–1847. <http://ijoc.org/index.php/ijoc/article/view/3155/1403>

Parra, C., **Nemer, D.**, Hakken, D., D’Andrea, V. (2015). Deep Trust in the future of Community Informatics. *The Journal of Community Informatics*. 11(2) <http://ci-journal.net/index.php/ciej/article/view/1203>

Nemer, D. & Zhang, G. (In Press). Cross Platform Impression Management: A Cultural Study of Brazilians and Indians on Facebook and Orkut. *Journal of Technologies and Human Usability*.

Halabi, A., Sabiescu, A. G., Salomão, D., Vannini, S. & **Nemer, D.** (In Press). From Learning to Designing Action: Aligning Intentionality in Community-Based Research and Design. Manuscript submitted for publication at *The Journal of Community Informatics*.

Nemer, D. (2013). IMPEX: an Approach to Analyze Source Code Changes on Software Run Behavior. *Journal of Software Engineering and Applications*, 6(4). 157-167. <http://dx.doi.org/10.4236/jsea.2013.64020>

Chapters in Edited Book

Nemer, D., & Chirumamilla, P. (Submitted). Living in the Broken City: Infrastructural Inequity, Uncertainty, and the Materiality of the Digital in the Favelas of Brazil. In D. Ribes & J. Vertesi (Eds.), *digitalSTS: A Handbook and Fieldguide*.

Work-in-Progress

Nemer, D. & Hakken, D. Digital Inequalities in Brazil: A Weberian Analysis of Technology Use by the Marginalized.

Book Reviews

Nemer, D. (2015). “Digital Dead End: Fighting for Social Justice in the Information Age” by Eubanks, V. (2011). *The Journal of Community Informatics*, 11(1). Available at <http://ci-journal.net/index.php/ciej/article/view/1030/1131>

Nemer, D. (2014). “Internet Inquiry: Conversations About Method” by Markham, A. & Baym, N (Eds.)(2008). *The Information Society Journal*, 30(3), 240-242.

Nemer, D. (2014). “Coding Places: Software Practice in a South American City” by Takhteyev, Y. (2012). *Technology and Culture*, 55(2), 517-518.

Refereed Conference Papers

O’Neill, J., & **Nemer, D.** (R&R). MOOCS and the democratisation of education in India. *The 19th ACM conference on Computer-Supported Cooperative Work and Social Computing (CSCW)*.

Nemer, D. (Accepted). Resisting the “alphabet soup”: how the QWERTY keyboard contributes to the digital divide in the slums of Brazil. 2015 meeting of the Society for Social Studies of Science in Denver, Colorado.

Nemer, D. (Accepted). Technology in the Margins: The Experience of Favela Residents in Community Technology Centers. 8th Nordic Latin American Research Network. Helsinki, Finland

Nemer, D., & Freeman, G. (Accepted). Rethinking Selfies: Empowering the Marginalized Through Self-Portraits. *Internet Research 16.0*. Phoenix, USA.

Nemer D. (2015). Online Favela: the experience of the favela residents in community technology centers (CTCs). *4th CLACS Graduate Student Conference 2015*.

Nemer, D. (2014). Designing Inequalities: The Digital Artifacts of the Favelas in Brazil. *The 113th American Anthropological Association Annual Meeting*. December 3-7. Washington, DC

Halabi, A., Sabiescu, A. G., Salomão, D., Vannini, S. & **Nemer, D.** (2014). From Knowledge to Design Action: Uncovering the Obscure Process of Participatory Community-Based Research. In *Proceedings of CIRN 2014 Community Informatics Conference*. Prato, Italy.

Chirumamilla, P., & **Nemer, D.** (2014) Living in the Broken City: Favelas, Infrastructural Inequity and the Materiality of the Digital. *Annual Meeting of the Society for the Social Studies of Science*, August, Buenos Aires.

Nemer, D. (2014). LAN house Class(ification): Why are Technology Centers only Good for the Brazilian Poor? - Digital Divide Research Preconference at *ICA 2014*. May 22-26. Seattle, USA.

Rosenbaum, H., Fichman, P., Shankar, K., & **Nemer, D.** (2014). Bridging Social Informatics and Sociotechnical Research: In Honor of Rob Kling. Workshop. *iConference 2014*. March 4-7. Berlin, Germany.

Nemer, D., Gross, S., & True, N. (2013). Materializing Digital Inequalities: The Digital Artifacts of the Marginalized in Brazil. In *Proceedings of the Sixth International Conference on Information and Communications Technologies and Development: Notes-Volume 2* (pp. 108-111). ACM.

Miller, P., & **Nemer, D.** (2013). Bridging the Digital Divide and Promoting Digital Inclusion: An Update Public Access Venues and Projects. *NECoPA 2013: “Public Administration in an Information Society: Opportunities, Threats, and Intriguing Possibilities.”* Organizer and participant of the panel.

Nemer, D., Reed, P. (2013). Can a Community Technology Center be For-Profit? A Case Study of LAN Houses in Brazil. In *Proceedings of the CIRN 2013 Community Informatics Conference*. Prato, Italy.

Nemer, D. (2013). Beyond Internet Access: A Study of Social and Cultural Practices in LAN Houses. *Internet Research 14.0*. Denver, USA.

Nemer, D. (2012). Literature Review on Digital Inclusion and Digital Divide. In *Proceedings of CIRN 2012 Community Informatics Conference*. Prato, Italy.

Nemer, D., Das, A. (2012). Impression Management on Facebook and Orkut: A Cross Cultural Study of Brazilians and Indians. *Internet Research 13.0*. Salford, England.

Ems, L., **Nemer, D.**, Medina, E. (2012). Twitter as an Interactive Ephemeral Communicative Space. *Internet Research 13.0*. Salford, England.

Nemer, D. (2012). Differences Between Facebook and Orkut: a Content Analysis of Indian and Brazilian Users' Profiles. *8th International Congress of Qualitative Inquiry*. Urbana-Champaign, IL.

Nemer, D. (2011). Facebook vs. Orkut: The Battle Over Middle Aged Users in Brazil. *7th International Congress of Qualitative Inquiry*. Urbana-Champaign, IL.

White Papers

Guzman, L., & **Nemer, D.** (2008). Perspective-Based Reading: An Overview. *Fraunhofer IESE 2008 Internal Proceedings*. Kaiserslautern, Germany.

Nemer, D. (2007). Quality Assurance of Open Source Project: Literature Review and the Current State. *Fraunhofer IESE 2007 Internal Proceedings*. Kaiserslautern, Germany.

Study Cases Published in Books

“The 2013 Protests in Brazil” in *Civic Media Project*. E. Gordon, & P. Mihailidis (Eds.) (2015). Cambridge, MA: MIT Press.

“Why Telecenters failed in Brazil” in *Open Development: Networked Innovations in International Development*. M. L. Smith, & K. M. Reilly (Eds.) (2013). Cambridge, MA: MIT Press.

Other publications

Nemer, D. (2015). Digital Favelas: What Cities of Tomorrow Can Learn from the Slums of Today. *EPIC: Ethnographic Praxis in Industry Conference*. <https://www.epicpeople.org/digital-favelas/>

Nemer, D. (2013). “Will Technology Save our People From Poverty?” *Free Tribune Column in A Tribuna* <http://dnemer.com/news/DavidNemerColumn.pdf> , in Portuguese. June 13th, 2013.

Deuze, M., Lewis, N., Ems, L., Mueller, J., & **Nemer, D.** (2012). Weathering the Media, Mediating the Weather, *Under the Influence Magazine*, No. 10, Spring/Summer.

Honors and Awards

Associate Instructor of the Year (Informatics), Indiana University, 2015, \$600.

Richard Tapia Scholarship, 2014, \$1,200.

Rob Kling Center for Social Informatics Fellowship, 2013-2014, \$5,000.

Rob Kling Center for Social Informatics Travel Award, 2013, \$500.

Internet Research 13.0 Travel Stipend and Fee Waiver, 2012, \$850.

Humanities, Arts, Science, & Technology Advanced Collaboratory (HASTAC), 2012, \$300.

Indiana University, CLACS Tinker Field Research Grant, Summer 2012, \$1,500.

Indiana University, Full PhD Scholarship, August 2010-2014.

DAAD/TU Kaiserslautern, Academic Excellence 9-month stipend, April 2009.

DAAD/TU Kaiserslautern, Academic Excellence 8-month stipend, April 2008.

Invited Talks

“Favela Digital – The Other Side of Technology”

Book and Research Presentation:

- International Center of Photography (ICP), New York.
- International Institute of Information Technology, Bangalore (IIIT-B). Fields of View Research Group.
- Indiana University. Kelley School of Business.
- Indiana University. Institute for Digital Arts and Humanities (IDAH).
- University of Cape Town, South Africa. ICT4D Centre.

Book Presentation and Photo Exhibit:

- Humboldt University of Berlin, Germany. School of Library and Information Science.
- Royal Holloway, University of London, England. ICT4D Centre.
- Monash University, Prato, Italy.
- University of Kaiserslautern, Germany. International School for Graduate Studies.
- Pátio Praia. Vitória, Brazil.

Guest Lectures

“Introduction to ICT4D”, I202 – Introduction to Social Informatics, Indiana University.
Invited by Prof. Selma Sabanavic (session 1: 03/31/2014) and Jennifer Terrell (session 2: 04/01/2014)

“Digital Inclusion Practices in Vitória, Brazil”, IUB Media Arts & Sciences Speaker Series, Indiana University.
Invited by Prof. Bryant Paul, 11/30/2012

“Social Media and Crisis Communication”, T101 – Media Life, Indiana University.
Invited by Lindsay Ems, 06/11/2011

“Media Ideologies and Social Media Use”, I202 – Introduction to Social Informatics, Indiana University.
Invited by Jennifer Terrell (session 1: 03/28/2012) and Heather Wiltse (session 2: 03/28/2012)

“Qualitative Research in Informatics”, I399 – Research Methods for Informatics, Indiana University.
Invited by Prof. Geoffrey Fox, 04/04/2012

Colloquiums and Workshops

CIRN Community Informatics 2013 Doctoral Colloquium, Participant, October 2013.

iConference 2013 Doctoral Colloquium, Participant, February 2013.

Internet Research 13.0 PhD Colloquium, Participant, October 2012.

Selected Interviews and Press Coverage

Enfoque Newsletter – Spring 2015.

<http://www.indiana.edu/~clacs/about/docs/spring2015enfoque.pdf>

“Democracy Through Technology: Internet Access in Rio’s Favelas” – *Rio On Watch*

<http://www.rioonwatch.org/?p=20426> in English

“Student studies technology use in slums” – *IDS News*

<http://www.idsnews.com/news/story.aspx?id=98063> in English

New Books in Technology featuring “Favela Digital: The other side of technology”

<http://newbooksintechnology.com/2014/06/05/david-nemer-favela-digital-the-other-side-of-technology-gsa-editora-e-grafica-2013/> Audio in English

Front cover and main article of the magazine SIM: “Favela Digital”

<http://simnoticias.com.br/revista/ed70/> in Portuguese

“Researcher from Vitória launches book “Favela Digital – The other side of technology””

“Capixaba lança livro "Favela Digital - O outro lado da tecnologia"”. *FAESA Digital*

<http://www.faesadigital.com.br/artigo/categoria/noticia/capixaba+lanca+livro++favela+digital+-+o+outro+lado+da+tecnologia+> in Portuguese. October 4th, 2013.

Interview about the book launch of “Favela Digital – The other side of technology”. *Universitária FM*

<http://www.universitariafm.ufes.br/noticias/lancamento-do-livro-favela-digital-o-outro-lado-da-tecnologia> Audio in Portuguese. October 2nd, 2013.

“Book show the technology use in the peripheries of Vitoria” “Livro mostra uso de tecnologias nas periferias de Vitória”. *Sou ES*

<http://www.soues.com.br/plus/modulos/noticias/ler.php?cdnoticia=529&categoria=1&nocache=1380746128> in Portuguese. October 2nd, 2013.

“Telecentres and low-income community inspired book by doctoral candidate from Vitória”

“Telecentros e comunidade de baixa renda inspiram livro e doutorado de capixaba” *Prefeitura de Vitória*. <http://www.vitoria.es.gov.br/noticias/noticia-12440> in Portuguese. October 2nd, 2013

Interviewed by Andrea Pena, host of the Personalité TV Show (30 mins – in Portuguese):

<http://www.folhavoria.com.br/entretenimento/blogs/personnalite/2013/09/30/2909-confira-entrevista-exclusiva-com-o-cientista-david-nemer/> Video in Portuguese.

Interviewed by Thais Venancio, host of the TV Show Fala ES (15 mins – in Portuguese):

<http://www.folhavoria.com.br/videos/2013/10/fala-sustentavel-capixaba-lanca-livro-sobre-uso-de-tecnologia-em-favelas.html> Video in Portuguese.

“Researcher from Vitória wears Google Glass” “Cientista Capixaba usa óculos do Google” *A Gazeta*

<http://dnemer.com/news/DavidNemerAGazeta2013.pdf> , in Portuguese. July 8th, 2013.

“Mothers prefer their sons in the Lan House” “Mães preferem filhos na Lan House” *A Tribuna*

<http://dnemer.com/news/DavidNemerATribuna2013.pdf> , in Portuguese. January 7th, 2013

“Tinker Field Research Grantees” *Enfoque Newsletter*.
<http://www.indiana.edu/~clacs/enfoque/CLACS-Newsletter-Fall2012.pdf> in English.

“Of Note: Tinker grant goes to IUB PhD student” *Indiana Informatics*.
http://www.soic.indiana.edu/support/magazine-archive/_doc/fall-2012.pdf in English.

“Scholarships to study for free in the USA” “Doutorado de graça nos EUA” *A Tribuna*
<http://dnemer.com/news/DavidNemerATribuna2010.pdf> , in Portuguese. August 23rd, 2010

“Studying abroad: an experience of a lifetime” “Curso no exterior: uma experiência para toda a vida” *A Gazeta* <http://dnemer.com/news/DavidNemerAGazeta2006.pdf> , in Portuguese. October 29th, 2006.

Teaching Assignments

Summer 2015 – INFO-I202 – Social Informatics, Indiana University

Spring 2015 – INFO-I400 – Community Informatics, Indiana University.

Teaching Assistant Assignments

Fall 2014 – INFO-I202 – Introduction to Social Informatics, Indiana University.
Instructor: Eden Medina

Spring 2014 – INFO-I303 – Organizational Informatics, Indiana University.
Instructor: Prof. Pnina Fichman

Spring 2013 – INFO-I502 – Human Centered Research Methods, Indiana University.
Instructor: Prof. John Paolillo

Fall 2012 – INFO-I453 – Information and Computer Ethics, Indiana University.
Instructor: Prof. Nathan Ensmenger

Spring 2012 – INFO-I202 – Introduction to Social Informatics, Indiana University.
Instructor: Jennifer Terrell

Fall 2011 – INFO-I303 – Organizational Informatics, Indiana University.
Instructor: Prof. David Hakken

Spring 2011 – INFO-I453 – Information and Computer Ethics, Indiana University.
Instructor: Prof. David Hakken

Fall 2010 – INFO-I303 – Organizational Informatics, Indiana University.
Instructor: Prof. David Hakken

Spring 2009 – Advanced Software Engineering, Saarland University.
Instructor: Prof. Andreas Zeller

Spring 2005 – Calculus I, FAESA
Instructor: Prof. Maria Alice Souza

Fall 2004 – Pre-Calculus, FAESA
Instructor: Prof. Maria Alice Souza

Spring 2004 – Statistics II, FAESA
Instructor: Prof. Maria Alice Souza

Fall 2003 – Statistics I, FAESA
Instructor: Prof. Maria Alice Souza

Undergraduate Mentoring and Advising

Kevin Auble, Alex Choi, Alyssa Maurer and Adam Richardson: “The Ethics and User Perspective on Recommender Systems.” Indiana University, Fall 2012.

Tyler Roach, Brett Guiden and George Tattersall: “SocialQuake – The Role of Social Sensors for Earthquake Awareness.” Indiana University, Spring 2012 (Awarded first place at SoIC Undergraduate Research Contest).

Brittney Jones, Trent Senne, Alex Stucker and Derik Daubenspeck: “The Impact of Technology in Nowadays Business.” Indiana University, Spring 2011.

Professional Memberships and Associations

American Anthropological Association (AAA) – 2014 - present

Association of Internet Researchers (AoIR) – 2012 - present

International Development Informatics Association (IDIA) – 2013 - present

Community Informatics Research Network (CIRN) – 2012 - present

The International Network for Postgraduate Students in the Area of ICT4D (IPID) – 2013 - present

Editor and Core Author of the Social Informatics Blog – 2011 – Present

Center for Computer-Mediated Communication Fellow, Indiana University – 2014 – present.

HASTAC Scholar: <http://hastac.org/users/davidnemer> – 2012 and 2013

Graduate Informatics Student Association (GISA), Indiana University – Social Chair – 2011 - 2012

Professional Service

Review Editor for the *Journal of Community Informatics*.

Reviewer for Internet Research 16.0; SIGCHI Conference on Human Factors in Computing Systems (CHI'2015); India HCI 2014; Internet Research 15.0; 13th Participatory Design Conference; ICTD 2013; CIRN Community Informatics 2013 and 2014; and Internet Research 14.0.

Article reviewer for *Journal of Community Informatics*; *International Journal of Communication and Ubiquitous Learning: An International Journal*; *International Journal of Communication*.

Contributed and translated to Portuguese the “Community Informatics Declaration: An Internet for the Common Good - Engagement, Empowerment, and Justice for All” which was presented at the 2014 Internet Governance Meeting in Brazil.

Nominating Committee Member for the Community Informatics (CI) community.

SIG-Social Informatics 2013: Symposium Program Committee. Montreal, Canada. November 2013.

Internet Research 14.0: Session Chair – “Design Appropriations.” Denver, USA. October 2013.

Internet Research 13.0: Session Chair – “Communication, Culture and Identity.” Manchester, England. October 2012.

Beyond Imported Magic: Science and Technology Studies in Latin America Workshop: Translator and notetaker, Bloomington, IN. August 2012.

4S Conference: Student Volunteer. Cleveland, OH. November 2011.

Volunteer Activities

Instructor for the FAESA Program of Digital Inclusion. July and August 2004.

Taught basic informatics classes to children from poor areas in Monte Belo and its surroundings. Courses included Introduction to Computers, Windows, Word, Excel and Basic Internet.

Instructor and Coordinator of the Petrobras Program of Digital Inclusion. September – December 2005. Taught the low-income community of Regencia, Linhares basic informatics skills, including Windows XP, Microsoft Office and Internet.

Technical Skills

Languages: Java, Delphi, SQL, Shell Scripting, UML

Web technologies: SOA, ASP, Tomcat, Apache

Testing: JUnit

Databases: Oracle, MySQL

Development Tools: Make, Ant, Maven, Eclipse

Systems: Windows, Mac OS X, Linux (Ubuntu)

Language Skills

Portuguese: Fluent (Native language)

English: Fluent (writing, speaking and listening)

Spanish: Advanced (writing, speaking and listening)

French: Intermediate (writing, speaking and listening)

German: Intermediate (DSI Certificate)