Universidade Federal de Minas Gerais
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Socio-spatial practices in socio-technological peripheries:
the introduction of the internet in rurban communities in Brazil and the United Kingdom

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To Catarina, minha monstrinha.

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Resumo

Apesar da rápida incorporação das tecnologias de informação e comunicação (TICs) no cotidiano das comunidades rurais, especialmente na última década, ainda há uma clara lacuna relacionada ao acesso urbano/não urbano das TICs em todo mundo, sugerindo a existência e emergência de periferias socio-tecnológicas tanto exógenas quando endógenas. Este processo acontece não só no Sul/Leste Global, percebido como periférico, mas também no Norte/Oeste Global, considerado avançado e motor do desenvolvimento tecnológico. A nível local, a periferização sócio-tecnológica condiz com práticas sócio-espaciais existentes e com as formas como as TICs estão sendo introduzidas no nível cotidiano. A interação entre práticas sócio-espaciais e internet é parte de um processo iterativo que gera novas particularizações nos âmbitos sócio-espacial e sócio-tecnológico tanto no Norte como no Sul Globais. Esta pesquisa enfocou a interação recursiva entre as práticas sócio-espaciais e a introdução tardia da internet em comunidades rururbanas marginalizadas. Partiu da premissa de que existe uma relação imbricada entre a organização sócio-espacial das comunidades e a forma como as pessoas se apropriam dos diferentes tipos de arranjos sócio-técnicos, em especial, a internet. A pesquisa buscou também indícios da apropriação da internet neste contexto como forma de fomentar ações micropolíticas, fruto de "uma política situacional baseada no conhecimento e ação local", em grupos subalternos submetidos à dominação do "centro" e às consequentes relações sociais de produção capitalistas que resultam da urbanização extensiva. Para conceber a estratégia de pesquisa, foram considerados quatro requisitos: abordar o objeto a partir de diferentes níveis de análise, usando a ideia de Lefebvre de níveis sociais; Desenvolver um ferramental específico para abordar esses níveis, fundamentando a pesquisa em uma estrutura teórica baseada em teorias Marxianas e usando a Teoria do Ator-rede como uma ferramenta empírica para o trabalho de campo; investigar comunidades de países centrais e semiperiféricos na mesma escala de análise por meio de estudos de caso no Brasil (Santo Antônio do Salto e Noiva do Cordeiro) e no Reino Unido (Pendeen); e finalmente focar os marginalizados usando as lentes de uma urbanização extensiva. Noiva do Cordeiro é o principal estudo de caso, enquanto Santo Antônio do Salto e Pendeen o suportam. Os resultados da pesquisa sugerem que as relações globais de dependência e o fornecimento de internet de cima para baixo contribuem para a periferização do rururbano. Cinco apontamentos decorrem do trabalho produzido nesta pesquisa. Em primeiro lugar, existe uma relação conflituosa entre elementos rurais e urbanos nas comunidades rururbanas e estas são reforçadas com a introdução da internet; em segundo lugar, a forma como a internet é introduzida no rururbano tem um impacto sobre a forma como as pessoas se apropriam dela; terceiro, mesmo em condições marginais, há indícios de que a introdução da internet, quando acontece de baixo para cima pode levar a ou fortalecer ações micropolíticas; em quarto lugar, a apropriação coletiva da internet tem uma relação direta com as práticas sócio-espaciais existentes e, portanto, precisa de um espaço que fomente esta apropriação; e em quinto lugar, apesar das esperanças de um potencial liberador da internet, sua introdução nas comunidades rururbanas tende a mudar as relações sócio-espaciais de forma heterônoma.

Palavras-chave: práticas sócio-espaciais; periferização sócio-tecnológica; rururbano conectado; micropolítica e cotidiano.

Abstract

Despite the rapid incorporation of information and communication technologies (ICTs) in the everyday of rurban communities (those where urban and rural elements mingle), especially in the last decade, there is still a clear urban/non-urban gap regarding ICT access across the world, suggesting the existence and emergence of both exogenous and endogenous socio-technological peripheries. This can be understood as a global process present not only in the Global South/East—perceived as peripheral—, but also in the Global North/West—regarded as advanced and the motor of technological development. Locally, socio-technological peripheralisation accords with existing socio-spatial practices and with the ways ICTs are being introduced in the everyday. The interaction of socio-spatial practices and the internet, in turn, is part of an iterative process, that leads to further particularisations in the socio-spatial and socio-technological realms both in the Global North and South. This research focused on understanding the recursive interaction between socio-spatial practices and the late introduction of the internet in marginalised rurban communities. Its main premise was that there is an imbricated relationship between the socio-spatial organisation of the communities and the way people appropriate different sorts of socio-technical ensembles, in special, the internet. It also searched for indications to whether its appropriation could foster micropolitics, "a situational politics based on local knowledge and action", in subaltern groups subjected to both the domination of 'the centre' and the resulting capitalist social relations of production that stem from extended urbanisation. To devise the research strategies, four requirements were considered: to approach the object from different levels of analysis by using Lefebvre's idea of social levels; to develop a specific tooling to address these levels by grounding the research in a Marxian based theoretical framework while using the Actor-Network theory as an empirical tool for the fieldwork; to investigate communities in both central and peripheral countries in the same scale of analysis by having case studies in Brazil (Santo Antônio do Salto and Noiva do Cordeiro) and in the UK (Pendeen); and to focus on the marginalised by using the lenses of an extended urbanisation. Noiva do Cordeiro is the main case study, while Santo Antônio do Salto and Pendeen are supporting cases. The results suggest that global relations of dependency and the top-down delivery of the internet contribute to the further peripheralisation of the rurban. Five assumptions stem from the work produced in this research. First, there is a conflictual relationship between rural and urban elements in rurban communities and these are enhanced with the introduction of the internet; second, the way the internet is introduced in the rurban has an impact on the way people appropriate it; third, still, even under marginalised conditions, there are indications that the introduction of the internet, when done in a bottom-up way, may lead to or enhance micropolitical actions; fourth, the collective appropriation of the internet has a direct relationship with existing socio-spatial practices, and it needs, therefore, a fostering space to occur; and fifth, despite the hopes of a liberating potential of the internet, its introduction in rurban communities tends to change socio-spatial relations in a heteronomous manner.

Keywords: socio-spatial practices; socio-technological peripheralisation; the connected rurban; micropolitics; everyday.

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List of Abbreviations

ACNC – Associação da Comunidade Noiva do Cordeiro/Noiva do Cordeiro Association

ANT/TAR – Actor-Network Theory/ Teoria Ator-Rede

CDI – Comitê para Democratização da Informação/ Committee for the Democratisation of Information Technology

CIDEC – Centro de Informática e Desenvolvimento de Educação Comunitária / Centre for Informatics and Development of Communitarian Education

ECLAC – Economic Commission for Latin America and the Caribbean

ICTs – Information and Communication Technologies

Lagear – Laboratório Gráfico para Experimentação da Arquitetura / Graphics Laboratory for Architectural Experimentation

PNCF – Programa Nacional de Crédito Fundiário /Nacional Programme for Land Credit

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1 Introduction: the emergence of the connected rurban

1.1 UNVEILING THE OBJECT OF STUDY: THE EMERGENCE OF THE CONNECTED RURBAN

1.1.1 Introducing ICT and the rurban in the age of informational capitalism

The pervasiveness of Information and Communication Technologies (ICTs)—hardware and software, that while participating in an interaction with other people and other technologies, are able to stimulate, mediate and build dialogues—has already been acknowledged in Urban Studies and related fields. Many scholars covering economic, social, political, cultural and infrastructural issues, through different perspectives, highlight the intrinsic relationship between spatial settings and the technological systems put in place, both from the macro and micro scales of analysis and action (Amin 2002; de Sola Pool 1990; Castells 1996; Graham 2004; Graham and Marvin 2002; Massey 2004; Sassen 2001; Swyngedouw 2004).

One current field that draws technology closer to urban development is that of smart cities. Though hard to be defined, in general lines, the smart city concept encompasses both cities which are "increasingly composed of and monitored by pervasive and ubiquitous computing" and those "whose economy and governance is being driven by innovation, creativity and entrepreneurship, enacted by smart people" (Kitchin 2014: 01). Still, it has been highly criticised for its usual top-down approach, (Kitchin 2014; Paskaleva 2011), even though the social component has already been acknowledged as essential (Hollands 2008, Luque-Ayala and Marvin 2015). Furthermore, it holds a deterministic approach that sees ICTs as solutions to urban problems. This view neglects how people actually live in cities and patterns of behaviour in their everyday lives (Hollands 2008; Brenner and Schmid 2015).

ICTs are also recognised to have significant social impacts, affecting social relations at a global level and local socio-spatial practices—"social practices dense with spatiality" (Souza 2011a: 13)[1]. Such social practices are those in which space plays an essential role, and by which, in turn, space is changed. They range from where and how people socialise and carry on their everyday activities to the way they plan and manage their space.

While there is a large focus on the role of ICTs in city space, there are still limited studies on their impact on countryside spaces, commonly associated with the rural, despite the accelerated establishment of ICT everywhere[2]. The prevalence of the urban over the rural is further emphasised due to the interdependence and blurring of urban-rural boundaries brought by an extended urbanisation (Brenner and Schmid 2015; Monte-Mór 2005), which contributes to an overall neglect of specific demands and needs of the rural population, with the risk that the rural continues to play catch-up with the urban (Craig and Greenhill 2005). Such a blurring of

[1] In the original: "práticas sociais densas de espacialidade".

[2] In United Kingdom, Ofcom Report (2013) showed that at least 5% of the UK population does not have access to broadband offering speeds of 2Mbps or higher. Of this 5%, at least 60% reside in rural areas, a figure that comprises 20% of all British rural. In addition, due to technical issues, broadband access available in remote or sparsely populated location suffers from lower quality and higher costs if compared to urban areas (Townsend et al. 2013). It is believed that technical limitations of this sort have not yet allowed for the infrastructure to play its intended role, contributing to the further deprivation of poorer UK counties, such as Cornwall. In Brazil, the situation is even more unequal. According to the TIC Domicílios report (CGI.br 2015), even though in 2013 for the first time 50% of the Brazilian population had internet access, the gap in access of those with less education years, lower income and those who live in rural areas is still increasing. While in urban areas the number of internet users increased 18% in the last six years, going from 38% to 56%, in rural areas the increment was only of 6%, going from 15% to 21%, way below the national average.

boundaries has also led some scholars to call those interstitial territories where urban and rural features mingle and at the same time confront each other rurban[3].

Even though Lefebvre (1996) highlights that the social division of labour, partly responsible for the town and country contradiction, is neither overcome nor dominated[4], the author cautions us of the risk that this term, created by geographers to designate a generalised confusion of "the countryside losing itself into the heart of the city, and the city absorbing the countryside and losing itself in it" (Lefebvre 1996:120), might lead to a reciprocal neutralisation of both. In fact, Lefebvre argues for the prevalence of the urban life that "includes original mediations between town, country and nature". Drawing from Lefebvre, Roberto Monte-Mór (2005: 945) describes the urban as a "a third element in the city-countryside dialectic opposition, the material and socio-spatial manifestation of contemporary urban-industrial society extended virtually throughout the social space". The author continues to assert that

> [t]he *urban*, or contemporary urban-industrial space, a metaphor for the social space (re)defined by urbanization, extends virtually throughout the territory through the *urban fabric*, this socio-spatial form which both inherits and bequeaths the city that characterizes the contemporary urban phenomenon and urban society (Monte-Mór 2005: 945).

This research agrees with such a prevalence of the urban, but also recognises that there are some places where a set of hick elements typical from the countryside have not yet been corroded or dissolved by the planetarisation of the urban, to use Lefebvre's (1996) words. Therefore, rurban, further discussed in 1.2.3, will be used throughout the research to designate the localities investigated where such references of the rural are still extremely relevant.

Furthermore, studies of the impact of ICTs on these communities' spatial practices, for instance, are still marginal. Even when there is a focus on rurban regarding access to ICTs, most research still concentrates on an institutional perspective or investigates the role of Non-Governmental Organisations (NGOs) in an attempt to bridge the so called digital divide—the "divide between those who have Internet access and those who do not" (Gurstein 2015b: *online*; see for example the literature around ICT4D, among them Kleine 2010). Even less attention is given to less organised citizen actions that lead to positive change within local frameworks (some exceptions are Baltazar dos Santos 2009; Valladares 2005 and some authors working within the field of Community Informatics, such as Gurstein 2014).

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[3] In Brazil, the use of rurban word is associated with Gilberto Freyre in the book *Rurbanização: que é*? (Freyre 1982). For the author, the word is "defining an intermediate situation between the purely rural and the exclusive urban—because it sets it as a mixed, dynamic and conjugal position between the values that those lives represent" and a "socio-economic development process that combines, as form and content of a single regional experience—that of the Northeast, for example, or national—that of Brazil as a whole—values and lifestyles of the rural and values and lifestyles of the urban. Hence the neologism rurban" (Freyre apud Froehlich 2000: online). In the original: *"definidora de uma situação intermediária entre a puramente rural e a exclusivamente urbana — pois a define como posição mista, dinâmica e conjugal entre os valores que aquelas vidas representam" e "um processo de desenvolvimento socioeconômico que combina, como formas e conteúdos de uma só vivência regional — a do Nordeste, por exemplo ou nacional — a do Brasil como um todo — valores e estilos de vidas rurais e valores e estilos de vida urbanos. Daí o neologismo: rurbanos". For the discussion of Freyre's position in regards to the rurbanisation process, please refer to Froehlich (2000) and Santos (2013).*

[4] In Lefebvre's words: "What is more, we all know that worldwide, the town and country conflict is far from being resolved. If it is true that the town and country separation and contradiction (which envelops without reducing to itseif the opposition of the two terms) is part of the social division of labour, it must be acknowledged that this division is neither overcome nor mastered" (1996: 120).

Globally, the discrepancies of ICT access observed in the rurban suggest the strengthening and the emergence of socio-technological peripheries, geographical territories connected to centres in an asymmetrical relationship in regards to access to ICTs and production of knowledge. In the case of Brazil, this was already denounced by Marcos Dantas (1986: par. 12). "For Third-World countries forced to integrate themselves internationally, the problems become even bigger, due to the dissipation of the so-called comparative advantages, resulting from the application of new technologies in the industrial processes and in the services."[5]

This process of peripheralisation is not exclusive to the Global South and East—always perceived as peripheral and therefore exogenous to the 'developed' nations—, but also happens in the Global North and West—regarded as advanced. This highlights that even if central nations are taken as the motor of technological development, they still create peripheries within their own territories[6]. In this current stage of capitalism, the lack of access to information and the uneven production of knowledge contribute to the deepening of centre-periphery contradictions, reinforcing the existing discrepancies in productive consumption of information:

> […] information becomes valorized as a source of capital by exploiting the difference in the capacity to consume information productively in the creation of knowledge goods. These differences are the legacy of the uneven development resulting from the historical process of imperialist expansion of monopoly capital, and the global "digital divide" is the material manifestation of these differences in the capacity for productive consumption in the age of informational capitalism (Atteberry 2010: 344-5).

Locally, this form of peripheralisation presents itself in accordance to existing socio-spatial processes and the ways in which ICTs are being introduced in the everyday. These, in turn, are part of an iterative process, leading to further particularisations in the socio-spatial and socio-technological realms of communities both in the Global North and South. Among all the various digital technologies that permeate our everyday, this research will focus on the presence of the internet (and its effectiveness or not) in rurban communities. The main focus is to investigate a socio-technical ensemble here understood with Leah Lievrouw as "a constellation of interlinked and emergent platforms, uses, devices, affordances, and social/cultural resources and relations" (Lievrouw 2012: 7) and that has proven to have a major role in the maintenance of peripheral conditions (Gurstein 2015b).

1.1.2 The connected rurban: different means of accessing internet

The research investigates three rurban communities: Santo Antônio do Salto and Noiva do Cordeiro, in Brazil; and Pendeen, in the United Kingdom. These three communities were chosen for their peripheral context, economic deprivation and social marginalisation. Furthermore, the introduction of internet access in these communities occurred in the last ten years. The research revealed that Noiva do Cordeiro presented richer elements to be discussed in comparison to the other two cases, once they are appropriating ICTs in a rather conforming way. Therefore, Santo

[5] In the original: "Para os países do Terceiro Mundo forçados a se integrar internacionalmente, os problemas tornam-se ainda maiores, devido a dissipação das chamadas vantagens comparativas, resultado da aplicação de novas tecnologias nos processos industriais e nos serviços (Rada, 1985-b).

[6] The exogenous-endogenous nomenclature used here comes from the Dependency Theory. Exogenous peripheries are those historically located outside the borders of central nations. More recently, especially since the 1990s, Ruy Mauro Marini (Marini and Millán 1994) observed the emergence of endogenous peripheries, exploitation zones within the territories of central nations. This will be tackled in 2.2.

Antônio do Salto and Pendeen are presented first and provide a supporting role in understanding the role of the internet in rurban socio-spatial practices.

Santo Antônio do Salto is a district of Ouro Preto, Minas Gerais, Brazil, former gold capital in the eighteenth century. The lack of formal historical documents implies its peripherality since the gold mining era. Salto did not connect important places and it did not develop strong commerce or agriculture. In the 1930s, villagers, who had been starving and had no source of income, saw the political decision to house an aluminium industry in Ouro Preto as crucial. The job offers attracted people from nearby and contributed to Salto's timid urban development. The arrival of the aluminium plant settled the population, which was no longer starving, and thus did not have a clear reason for mobilisation. Since then, Salto depends on the private sector. There are no strong associations and most attempts to mobilise the community come from the outside and fail. One of those was a rural tourism initiative, where locals could use their own infrastructure to welcome tourists, a practice with positive response in other places. Regarding internet access, there have not been any attempts from local government for provision of the service. It was brought to the district by a commercial provider who offers low-quality and high-cost service.

Pendeen is a 656 inhabitant former mining village established in 1846 in the Penwith peninsula located 15km from Penzance, the largest village in the region. It has developed along St Ives road, which connects the village to Trewellard and Higher Bojewyan, both small settlements existing since pre-historic times and still heavily rural. In the 18th century, the village was an important mining hub in the region. Due to the large tin production, it saw a steep increase in population, with a rapid expansion of the village that became a highly self-sustainable parish on its own. The crisis in the mining industry and the cease in operation of the two most important mining companies in the 1980s led to a retraction of the village and a large migration process (both out-migration and emigration), the shutdown of many of its shops and the consequent reduction in local employment. Currently, Pendeen is amongst the 25% most deprived and isolated areas in UK. Internet access is also limited in the area, as mobile signal is poor in most of the village and the recently implemented superfast broadband infrastructure is not widely adopted yet, and even when in place, its service quality is based on the distance of the optic fibre box. The combination of these elements suggests that Pendeen is also socially marginalised[7], due to its limited economic, geographical, socio-technological and political resources. The recent arrival of the internet was the result of a massive European Union funded programme with British Telecom to wire the whole of Cornwall, bringing the fastest rural network in Europe to virtually the whole county. Nevertheless, due to its highly technocratic nature, superfast broadband has not reached most of the population yet. In Pendeen, though, the use of superfast broadband is being fostered by the local community centre, the Centre of Pendeen, with a set of different actions targeting the 'digital divide'.

Noiva do Cordeiro is a community in the fringes of Belo Vale, a 7.000-inhabitant city in Minas Gerais, Brazil. According to local accounts, the community started in the 19th century, when newlywed Dona Senhorinha left her husband for Francisco Fernandes, fleeing to the outskirts of

[7] As opposed to "excluded". "Exclusion is immobile. It designates a state or, rather, states of privation [...]. To speak of disaffiliation, on the other hand, is not to confirm a rupture, but to delay a journey. The concept belongs to the same semantic field as dissociation, disqualification or social invalidation. Disaffiliated, dissociated, invalidated, disqualified, with relationship to what? This is in fact the problem. [...]To look for the relationships between the situation in which one is and that from which one comes, not to autonomise the extreme situations but to link what happens in the peripheries and what arrives to the centre" (Castel in Matheison et. al 2008 :13).

a nearby village. As a strict catholic region, the couple was excommunicated by the church and raised their family in isolation, creating a strong bond amongst the family members. Fifty years later, Delina, one of their granddaughters, married an evangelic minister who founded a strict religion named Noiva do Cordeiro, reinforcing the prejudice against the community. Their strict rules, which included daily prayers, constant fasting and public punishments, led the community to extreme poverty. It was only in the 1990s, with the minister's death, that the community concerted to fight poverty. Its inhabitants have started to undergo a process of *critical awareness* (Demo 1995) to strengthen the community. They have reversed the isolation process by attracting attention to their own cultural ties and created traditions that bond the younger generations together. ICTs have an important role in this change, being used by the population as a tool for improvement and development. If, at first, they were digital illiterates, in 2006 they became a reference in the region when they received the first rural informatics lab in the state (CIDEC) through a partnership between the local association, the Committee for Democratisation of Informatics and Vale Foundation. Rapidly, they became known as *rural pioneers*. The internet was first installed in CIDEC in 2008; and in 2011, a governmental project guaranteed broadband internet in the community at no cost. It soon became an essential tool, being used for research and knowledge building. In 2014, for unknown reasons, internet access was cut and since then the community can only rely on mobile internet, only possible due to a community's effort to acquire a telephone mast. However, the low speed and high costs of access limits the use to mostly personal communication.

1.2 The socio-spatial-technological construction of the rurban

1.2.1 The political dimension of ICTs

It can be argued that all technologies have an on society, and therefore, are political (Bijker 2006). In fact, ICTs have assumed a prominent role in technological development and are essential to the maintenance of capitalist social relations. Therefore, understanding their political dimension becomes essential in current urban studies[8]. According to Wiebe Bijker (1997: 280), a politics of technology

> will deal with questions of value-ladenness, of emancipatory and oppressive potentials, of democratization, and of the embeddedness of technology in modern culture. In other words, it will be concerned with questions about sociotechnical ensembles and the semiotics and micropolitics of power. [...] The politics of technology in this sense will not yield the concrete policy instruments that the second route promises to produce. It will be emancipationist rather than instrumental, it will politicize technological choices rather than pacify them, and it will problematize rather than absolve.

Andrew Feenberg also acknowledges technology as site for social struggle, through and with which users may challenge "undemocratic power structures rooted in modern technology" (Feenberg 1999: 108). As such, ICTs are essential to the actualisation of renewed places for political encounters; they become *sociotechnical ensembles*—"heterogeneous ensemble of

[8] It is understood with Henri Lefebvre that the rurban is in constant symbiosis with the urban and therefore, also part of it (Lefebvre 1989).

technical, social, political, and economic elements that are, altogether, social and technical" (Bijker 1997: 249).

Two strategies illustrate how they become the material base for capital accumulation established by technological development. In the first, information and knowledge are artificially transformed in rare commodities through restriction of access, by, for example, establishing of copyright laws. More extreme examples of this strategy were SOPA (Stop Piracy Act) and the Protect IP Act (Preventing Real Online Threats to Economic Creativity and Theft of Intellectual Property Act), both dating back to 2011. In these acts, powerful corporations lobbied, though partly unsuccessfully, for the tightening of content access on the internet. In subtler ways, corporations such as Facebook associate with telecommunication enterprises to provide mobile access of their content as part of "packages". These influence consumer's choice by supplying free-of-charge content. In return, they maintain their hegemony in the market, hindering smaller companies. In the second, capital profits from leisure time of internet users, exploiting the *absolutely unpaid labour* (Dantas 2011b; Fuchs 2010)[9]. In that case, corporations profit from the voluntary work of individuals who not only consume, but also produce content online. According to Christian Fuchs (2010: 191-2), "the users who google data, upload or watch videos on YouTube, upload or browse personal images on Flickr, or accumulate friends with whom they exchange content or communicate online via social networking platforms like MySpace or Facebook constitute an audience commodity that is sold to advertisers".

Furthermore, capital influences the experience of different social groups, many times reinforcing existing socio-cultural gaps (Baltazar dos Santos 2009). In David Harvey's words,

> communicative technologies are a double-edged sword. They can be wielded by an educated and alienated youth for political and even revolutionary purposes. Or they can so absorb time (while steadily producing value for others like Google and Facebook shareholders) through idle chatter, gossip and distractive interpersonal banter (Harvey 2014: 279-80).

In this case, poorer groups suffer a process of acute exploitation. The economic restraints on knowledge access refrain a large amount of the population from capacitating themselves even to fulfil their role as audience commodity, expected by the market. And, as this exploitation process continues to be neglected in academic research (Fuchs 2010), especially in social sciences, the disparity in access to technology between centres and peripheries is still being guided by the discussion of the *digital divide,* developed at the beginning of the millennium (Kleine and Unwin 2009). Despite advances in the field (Kleine 2010; Demo 2007b), it still approaches digital marginalisation from an instrumental perspective and focuses on provision of infrastructure, due to the dominant technocratic inertia that results from technological determinism – the belief that technology alone will cater to human needs (Feenberg 2009b). In addition to disregarding the change in social relations assisted by these new socio-technical ensembles, central issues such as access, skills and opportunities divides are taken for granted (Mossberger in Demo 2007). As a result, "instead of promoting a fair and decent inclusion, it

[9] Fuchs (2010) further unravels the relationship between knowledge labour and class, which complexifies even further the discussion. He presents seven approaches and the scholars involved in each. The most important approach for this research is the first: *Internet users as a new class*. For the other equally important approaches, please refer to the author.

displaces the excluded to the margins, reinforcing social inequalities" (Demo 2007a: 165) and strengthening capitalist modes of development, production and dissemination of ICTs.

1.2.2 Socio-technological peripheries: global centres, local peripheries

The concept of socio-technological peripheries amalgamates the spatial dimension and the socio-technological differences in ICT access that characterise marginalisation. It is situated in an already defined theoretical framework: that of centre-periphery relationship. But, at the same time, it attempts to help deconstruct the dichotomy that usually accompanies the discussion of peripheralisation. Such dichotomy usually leads to an "'idealisation' of advanced societies as a realm of fair competition and effective overcoming of permanent privileges [and] the 'demonization' of peripheral societies as a realm of corruption and deception that allows its opposition to functioning rules which are fundamentally distinct from advanced societies" (Souza 2012: 46)[10]. Furthermore, it leads to the naturalisation of what João Rua (2006: 99) calls asymmetric interactions between centres and peripheries.

> One should not think urban and rural, local and global, as polarities, but rather as asymmetric interactions that should not silence the intense socio-spatial disputes which demand permanent reconfigurations of the scales of action. The 'urbanised' area, on a broader scale, in general, is related to spaces of domination that impose their representations. On a local scale, these representations are also present in the asymmetrical relationships therein existent. However, this is where movements of resistance and creation of alternatives and/or survival strategies are developed. These can manifest as reinterpretations of those broader movements that mark the contemporary space. The local and the general/global are integrated by the scales of action.[11]

Recognising the existence of asymmetrical (though vital) relationships of competition and cooperation between centres and peripheries (Monte-Mór 2011), it is fundamental to discuss the ways the internet is being appropriated in these peripheries.

In regards to ICT production and appropriation in the global level, centres will be understood as the decision-making poles of innovation, development and widespread access to mainstream technology. Their scope of dominance in the production of ICTs allows them to determine the pace and direction of technological development, as well as the ways technology will be trickled to peripheries. Peripheries are places whose access to formal dialogical digital technologies is dictated and limited by their relationship with the centres. These peripheries are not frontrunners in mainstream technological innovation and formal consumption is usually limited by the supply and the level of investment from their respective centres. These elements are consistent with the already established discussion of centre-periphery relations, investigated in the Dependency

[10] In the original: "'idealização' das sociedades avançadas como reino da competição justa e efetiva superação de privilégios permanentes" e "a 'demonização' das sociedades periféricas como reino da corrupção e do engodo que permite sua oposição a regras de funcionamento fundamentalmente distintas das sociedades avançadas".

[11] In the original: "Não se pode pensar o urbano e o rural, o local e o global, como polaridades, mas como interações assimétricas que não devem silenciar as intensas disputas sócio-espaciais que obrigam a permanentes reconfigurações das escalas de ação. O território 'urbanizado', numa escala mais ampla, em geral, está relacionado a espaços de dominação que impõem suas representações. Na escala local, essas representações também se fazem presentes nas relações assimétricas que aí, também, vigoram. Entretanto, é aí, que se processam os movimentos de resistência e de criação de alternativas e/ou estratégias de sobrevivência que podem se manifestar como releituras daqueles movimentos mais gerais que marcam o espaço contemporâneo. O local e o geral/global aparecem integrados pelas escalas da ação".

Theory (as discussed in Chapter **Error! Reference source not found.**). Nevertheless, contemporary development of capitalism requires that the role of ICTs in deepening this divide becomes even more explicit. Centres are not only in the vanguard of production of ICTs. Locally, there is a larger chance that individuals who live in the centres are better equipped to tailor technologies to their own individual and collective needs, affording 'distinct possibilities for action' (Leonardi 2012), though that is not always the case[12]. In socio-technological peripheries, due to a restriction on autonomy of use, rather than afford, ICTs may even constrain communities, and instead of acting as a juxtaposing level for action, they might reinforce existing power relations, and therefore, hinder action (Leonardi 2012)[13].

> If we think in the moral dimension of the international division of labour, we can conclude that our peripheral society remains in the material dimension of production, as it does not present objective conditions to adapt, while the centre holds the monopoly of the valorised immaterial. So that the structural problem of the periphery is that our structural rabble is not able to manage its self-production as expected by the system, which is the only way to reach autonomy in the market society. Therefore, it does not develop the 'vivacity' or the 'vernacular knowledge', according to Gorz, indispensable for its survival. In other words, the peripheral individuals are offered a freedom that they have no opportunity whatsoever to enjoy, because they do not hold the fundamental cognitive passport to incorporate it. Therefore, progressive discourses, such as that of the digital inclusion, are part of the large ideology of equality of opportunities, but it omits the starting points defined by the habitus. It is like giving a foreign book to someone who has never seen a word in that language (Souza 2006a: 312).[14]

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The pattern of television usage in Brazil is an interesting example in the discussion of the hegemony of the centres over peripheries. Television sets arrived in Brazilian rural areas much more recently than in cities. According to Vilmar Faria and Joseph Potter (2002), in three decades (from 1960-1990), the exposure to television has increased from virtually nil to 78% in urban areas and to 38% in rural areas. According to the IBGE census 2015 (2015), 97,3% of the population currently owns a television set. Due to the country's sociocultural context, characterised by poverty, income inequality, high levels of illiteracy, strong oral tradition and high levels of geographical mobility (Faria and Potter 2002; Trigueiro 1999) this ICT has had an important role to "influence and homogenise values and preferences of the population" (Faria and Potter 2002:

[12] Yurij Castelfranchi and Victor Fernandes (2015: 173) underscore that technologically advanced societies are ruled by "governmental rationality and technocratic legitimisation of the politics" and that is also an element that limits individual and collective agency in those societies.

[13] refer to, for example, to Mbarathi and Diga 2014; Randhawa 2014.

[14] In the original: "Se pensarmos na dimensão moral da divisão internacional do trabalho, concluiremos que nossa sociedade periférica permanece na dimensão material da produção, por não apresentar condições objetivas de adaptação, enquanto ao centro cabe o monopólio do imaterial valorizado. De modo que o problema estrutural da periferia é que nossa ralé estrutural não tem condições de gerir sua autoprodução esperada pelo sistema, o que é o único caminho para a autonomia na sociedade de mercado. Assim ela não desenvolve a "vivacidade" e o "saber vernacular", como usa Gorz, indispensáveis para sua sobrevivência. Ou seja, é oferecida aos indivíduos periféricos uma liberdade que eles não têm nenhuma possibilidade de usufruir, pois não possuem o passaporte cognitivo fundamental para incorporá-la. Sendo assim, discursos progressistas como, por exemplo, o da inclusão digital, fazem parte da grande ideologia da igualdade de oportunidades, omitindo os pontos de largada diferenciados pelo *habitus*. É como dar um livro em uma língua estrangeira de presente para alguém que nunca viu uma palavra naquele idioma".

23)[15], including matters of family planning, patterns of internal migration (Trigueiro 1999), as well as eating habits, practices and behaviours (Santos et al. 2012).

In the Brazilian rural, the television has also reinforced the superiority of 'the centres': globally, for example, by selling the success of the 'American dream' based on individual effort and success, which is a fallacy[16]; and in national productions, such as telenovelas, by reinforcing the belief that life in the city centres is much more attractive, rather than emphasising the countryside's own qualities. By doing so, television programmes in Brazil contribute to devaluation of local culture (or its caricaturising) and, through advertisement, they encourage the consumption of the urban. Using a newspaper article from 1984, Osvaldo Trigueiro (1999: 04), illustrates the increasing role of TV in the countryside.

> Beside the old illusion of life improvement – and a quick one – in the big city, what has impressed the social assistants in the station (Rio de Janeiro has a station for assisting new Migrants in the Novo Rio bus station), in these six months of operation, is the penetration of TV in the countryside. People are already talking about Final Feliz [Happy Ending], Paraíso [Paradise], A Festa é Nossa [The Party is Ours/Brazilian TV shows] and soon want to know where the people from TV are so they can get a job and a house to live in"[17].

The television is still very important in rurban communities, as the fieldwork in this research revealed. In Noiva do Cordeiro, for example, a lot of investment was made towards the furnishing of the TV room, where different groups congregate in various times throughout the day. Visitors are also taken to this room to watch a piece created by the inhabitants advertising the community. In Santo Antônio do Salto, having a Sky antenna is a sign of distinction (as broadcast television signal is quite poor), and the houses that have it become meeting places for those who are close.

In summary, if on the one hand technological development provides tools with which people can develop their own rules deriving from an emancipatory praxis, on the other, it is possible to observe the strengthening of a heteronomous logic of development, production and dissemination of ICTs, especially from the global level, and television is an important example. If the social relations of production are "those relations which are constitutive of capitalism and which are increasingly (and increasingly effectively) sought and imposed as such" (Lefebvre 1991b: 32), these are more and more in line with the asymmetric development, ownership and enjoyment of ICTs, drawing a new international division of labour from the access (and production capacity) to informational capital and knowledge (Marini 1997; Dantas 2006).

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Thus, the gap of access to ICTs that is originally created on a global scale and defines producer and consumer countries, turns into a socio-technological gap that occurs in the interaction between the various scales—from global to microlocal—acquiring an everyday dimension that

[15] In the original: "influenciar e homogeneizar os valores e as preferências da população".

[16] Refer to Gray 1989 for an interesting account of the role of TV in selling the American dream for Afro-Americans in the USA.

[17] Author's translation, in the original: "Ao lado da velha ilusão de melhorar de vida—e rápido—na grande cidade—o que tem impressionado as assistentes sociais do Posto (O Rio de Janeiro conta com um Posto de Atendimento ao Migrante na Rodoviária Novo Rio), nestes seis meses de funcionamento do Posto é a penetração da TV na roça. As pessoas já chegam falando em Final Feliz, Paraíso, A Festa é Nossa e querem logo saber onde fica o Povo da TV para conseguir um emprego e casa para morar.

limits the horizon of individual and collective action. This process is reinforced by peripheral socio-spatial processes that consolidate dependency; and by the maintenance of what Pedro Demo (1994) calls political poverty, the inability of a given community and its individuals to mobilise in the various spheres of common and individual life. This phenomenon is historically typical of capitalism and affects especially peripheral countries, though it is gradually being observed in central ones as well.

> The political face of poverty appears in its excludable character. In the social exclusion phenomenon, the most characteristic substance is political, not precisely or exclusively economic, since what is at stake is more than not having, it is not being. The most compromising exclusion is not that one linked to the poor access to material goods, but that which is embedded in the repression of the subject, with the most deleterious result being subalternity. The deepest level of political poverty is thus the condition of *ignorance*: the poor cannot even know and are restrained of knowing that they are poor. Because of this, they attribute their poverty to external, incidental or fortuitous factors, not realising that poverty is a produced, maintained and cultivated historical process. They do not come to the crucial idea that, to leave poverty, it is necessary firstly to understand that it is about injustice and social imposition, and, secondly, to devise their own solution, in which the essential piece are the poor themselves (Demo 1999: 01-2).[18]

Having highlighted the asymmetry of access to ICTs—and therefore to knowledge—and the maintenance of political poverty in peripheries, it is important to not dichotomise the discussion between have and have-nots (Gurstein 2015b), as people will appropriate the technology available, even if in ways that may be seen as unusual (Valladares 2005). Therefore, much more than assuming that people living in peripheries do not have access to every tool and device available, it is important to understand how they appropriate the ones at hand and whether they are able to modify them as to adapt to their own everyday. Furthermore, it is important to understand with which level of criticality such an appropriation happens.

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Lefebvre (1976) saw in the peripheries an alternative to the totalising order of capital. These lack the required conditions for the hegemonic order of capitalism to be fully established, i.e. the production of space and the integration of the society into the system through (directed) consumption and (formal) citizenship (Cunha et al. 2011). Therefore, peripheries would have the necessary openness to tactical gestures that the sociologists Yurij Castelfranchi and Victor Fernandes (2015: 191) call insistence practices (*práticas de insistência)*. These act as a means to react to the power relations of which people participate, both in the micro and macro levels:

> Rather than naming an enemy, the 'insistents' accept their impurity, the discomfort and the unpleasant responsibility of being part of a totality. They win, in turn, the possibility to not only put obstacles in the way of the machine of

[18] In the original: A face política da pobreza aparece em seu caráter excludente. No fenômeno da exclusão social a substância mais característica é política, não propriamente ou apenas econômica, já que, mais do que **não ter**, está em jogo **não ser**. A exclusão mais comprometedora não é aquela ligada ao acesso precário a bens materiais, mas aquela incrustada na repressão do sujeito, tendo como resultado mais deletério a subalternidade. O nível mais profundo de pobreza política é, assim, a condição de ***ignorância*: o pobre sequer consegue saber e é coibido de saber que é pobre**. Por conta disso, atribui sua pobreza a fatores externos, eventuais ou fortuitos, sem perceber que pobreza é processo histórico produzido, mantido e cultivado. Não chega à ideia crucial de que, para sair da pobreza, é mister, primeiro, compreender que se trata de injustiça e de imposição social, e, segundo, de desenhar projeto próprio de solução, no qual a peça fundamental seja o próprio pobre.

> which they feel victims (the 'capital', the 'patriarchy', the 'racism', etc.), but also to dedicate themselves to the attempt to create, from within the system, bottom-up and inside out actions that can re-format it[19].

The next section will further unpack the idea of rurban, so that the socio-spatial and socio-technological elements of the rurban can be further discussed. This will be done by situating this particular set socio-spatial processes in the context of planetary urbanisation (Lefebvre 1989) or extended urbanisation (Monte-Mór 1994, 2005; Brenner and Schmid 2012).

1.2.3 Extended urbanisation and the emergence of the rurban

So far in this thesis, the rurban has been defined in accordance with a growing body of research around the world that focuses on the rural-urban interface (such as Buciega et al 2009; Cimadevilla 2010; Grazuleviciute-Vileniske & Vitkuviene 2012) with a critical view on how current social, spatial, cultural and economic changes are re-shaping territories formerly labelled as rural (Xerardo & Prado 2013).

This research understands that the rurban reflects a socio-spatial restructuring triggered by the capitalist reproduction that, through modernisation and the widespread use of technology, leads also to the restructuring of social relations of production (Campos and de Jesus Santos 2008)[25].

> Even though there are commonalities of the *rurality*, with the vehement introduction of the capital and its integration to the global economy, there emerges a new spatial reorganisation that produces identities and sociospatial practices with their own characteristics bound to the territory through the materialization/construction of the memory and their own history (Campos and de Jesus Santos 2008: 61)[26].

To further explore what the use of rurban entails, let us first understand the idea of planetarisation of the urban discussed by Lefebvre. Back in the 1970s, the author already denounced that the process of a complete urbanisation of society was on the making with the risk of the "homogenization of space and the disappearance of diversity," so that "in a short time, no land will on the face of the Earth other than islands of agricultural production and concrete deserts" (Lefebvre 1989: 23)[27]. This thought culminated with the article *"Quand la ville se perd dans une métamorphose planétaire,"* (Lefebvre 1989). In this article, Lefebvre asserts that the planetarisation of the urban, if successful, would destroy any hopes of deconstruction of capitalism. Furthermore, it would mean that conventional categories that conform bounded

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[19] In the original: "Em vez de nomear um inimigo, os 'insistentes' aceitam sua impureza, o desconforto e a desagradável responsabilidade de serem partes de uma totalidade. Ganham, em troca, a possibilidade não apenas de colocar obstáculos na trilha da máquina da qual se sentem vítimas (o 'capital', o 'patriarcado', o 'racismo', etc.) mas de dedicar-se também às tentativas de inventar, de dentro desse sistema, de baixo para cima e de dentro para fora, ações que possam reformatá-lo".

[25] Even though it is essential to understand the rurban as the complementarity of the countryside and the city, characterised by occupational diversity, permanence of land tenure, displacement of agricultural activity as main support of families, demand of public service, and urban expansion in rural land (Sobrino 2003: 105), for this research it is even more important to investigate the socio-spatial practices that result from such a process.

[26] In the original "[…] embora existam traços comuns da *ruralidade,* com a inserção mais veemente do capital e sua integração à economia global, emerge uma nova reorganização espacial produtora de identidades e práticas socioespaciais com características próprias vinculadas ao território através da materialização/ construção de memória e de sua própria história."

[27] In the original: "Bientôt, il ne restera plus à la surface de la Terre que des îles de production agricole et des déserts de béton".

territories and their oppositions, such as city-countryside, would be no longer adequate to describe the capitalist encroachment in every corner of the planet.

The main issue here, as Neil Brenner and Christian Schmid (2012: 12) point out, is that "while the process of agglomeration remains essential to the production of this new worldwide topography, political-economic spaces can no longer be treated as if they were composed of discrete, distinct, and universal 'types' of settlement". The authors challenge the "existence of a relatively stable, putatively 'non-urban' realm as a 'constitutive outside' for its epistemological and empirical operations" (Brenner and Schmid 2012: 13).

Questioning the authors' position, Kate Shaw (2015: 591) underlines that "while the urban can indeed be framed theoretically, in some places it is also subject to a powerful demarcation between land inside and outside boundaries—arbitrarily drawn, socially constructed, but not at all theoretical—which produces profoundly different land valuations". For the author, no matter how contentious the urban category might be theoretically, its practical effects are being felt in the everyday by a number of people whose inclusion is defined by a matter of location.

Andy Merrifield (2016) also spatialises the struggles resulting from the planetarisation of the urban drawing from Lefebvre's notion of residue. For the author, residues generated from the expansion of the urban over the territory, on the expense of people and goods, capital and information, also constitute the space or resistance: "residues come from the city as well as the countryside and congregate in a space that's often somewhere in-between. I call this somewhere in-between the global banlieue; I mean it literally and metaphorically, as a potential space of real encounter, one not yet fully glimpsed" (2016, *online*). The author further qualifies residues as "remainders who live out the periphery, who feel the periphery inside them, who identify with the periphery, even if sometimes that periphery is in the core" (*ibid, online*).

It is in this context that the rurban will be discussed in this thesis. Assuming that extended urbanisation, as a process, implies an overall urbanisation that renders further qualifications of space ineffective, means disregarding specific socio-spatial arrangements that product of an uneven capitalist framed urbanisation that need further attention. Characterising them just as part of an extended urban blurs the singularities of this setting: the rurban fails to comply with normative descriptions of territory and at the same time falls in between the cracks of planetary urbanisation. The forces played at the global level—resulting from the reproduction of social relations of capitalism[29]—and urban level—translated into a heteronomous 'urbanised' production of space with all the infrastructural changes—clash with the everyday socio-spatial practices previously built, territorially speaking.

This research thus focuses on rurban communities which could be, until recently, defined as rural and whose socio-spatial practices are being more and more influenced by urbanities (Rua 2006)[33]. It acknowledges that the discussion urban-rural goes beyond the dichotomised view of

[29] According to David Harvey (1985: 87) "The reproduction of the social relations of capitalism requires the production of a population which, from the standpoint of employment opportunities and the wages system, will ultimately become fragmented into subjective classes, each prepared to take on certain social roles and to acquire certain technical skills appropriate to its particular position within the overall social structure of a constantly expanding capitalist society.

[33] This research acknowledges the existence of rurban communities that are being formed through the converse movement, that is, urban communities which are being influenced by ruralities, albeit not focusing on them. Even though the framework developed in this research might shed some light on similar issues present in both forms of the rurban, a full account of this specific sort of forming needs to be devised.

the rural as the locus of agricultural production, understanding it as part of a continuum where "productive processes are, often, similar to urban processes of social reproduction, territorial division of labour, and sociospatial formation" (Campos and de Jesus Santos 2008: 58). Therefore, to understand the rurban stance means investigating its socio-spatial practices.

The interest in rurban spaces lies exactly in the urbanity-rurality conflict, even when still latent. Increasingly colonised by the polis, these spaces still retain rural representations constantly put to the test by an urban image—both romantic as a space for success; and sceptical, as the space for failure for rural residents—on the one hand; and by the predominance of the city over the countryside—"in this sense, a vacation home, a highway, a supermarket in the countryside are all part of the urban fabric" (Lefebvre 2003: 4). Thus, extended urbanisation seems to unfold itself onto a non-urban conformation and what interests here is exactly these traces and the specific socio-spatial practices and processes it seeks to absorb. These practices at times embrace without resistance the violent changes brought by urbanisation, however, they also resist as an attempt to maintain the community as a whole. This conflictual construction of the urban image is clearly influenced by technology itself and the socio-spatial practices that are built from their interaction with rural people, suggesting that the rurban offers different arrangements among socio-spatial and socio-technological processes.

The rurban constitutes an essential part of urban networks, even when there is no clear significant economic importance for at least three reasons. From the point of view of urban planning, rurban regions are those that can potentially supply the growing demand of urban centres. "This requires a great attention to a problematic, that is, the massive sterilization of croplands in favour of real estate speculation and urban sprawl, where the urban and rural areas find themselves intertwined" (Souza 2000: 78)[34]. From the social point of view, they are home to a contingent of families whose transition from a rural lifestyle to an urban way of life—more or less intense, according to the spatial processes that there are engendered—is complex. This transition is reflected in the inhabitants' own spatial practices, with impact on their quality of life and social justice and ultimately reflected on their individual and collective autonomy (Souza 2013b). From the political point of view, the development of rurban fringes reinforces the process of peripheralisation and socio-spatial exclusion of people from the urban, denounced by Lefebvre in several of his works (such as Lefebvre 1976, 2003). Being largely heteronomous, this peripheralisation process promotes the creation of also heteronomous spaces by associating the functionalization of the territory to external demands—be it from their relating urban centres, from neighbouring towns and villages or even from wider territorial dimensions, such as national and international.

There is, ultimately, the intensification of socio-spatial processes of marginalisation of the people and the territory, with minimum investments that focus on improving the quality of life or measures to encourage the increase of social justice. Lopes de Souza (2006b: 112) highlights the importance of understanding this space that is therefore constituted.

> The inherited space of heteronomy, and not only social relations themselves, constitutes an obstacle to be overcome. The same goes for all attempts to obtain autonomy gains even within a heteronomous society: creating institutionalities and routines that encourage popular participation, greater

[34] In the original: "Isso demanda uma grande atenção para com uma problemática, a da esterilização maciça dos solos agricultáveis a reboque da especulação imobiliária e da expansão urbana, onde os espaços urbano e rural se acham entrelaçados."

> social justice and a better quality of life requires an adequate "spatialisation" in relation to the territorial mesh, spatial forms (meeting places, for example), the development and enhancement of sense of place, elimination of oppressive signs (racist, sexist, classist). [...] It is very difficult and, ultimately, impossible to unfold new social relations on the arid and rocky soil of spatial forms and heteronomous territorial meshes, built and implemented by and for this society, the capitalist[35].

In general, the rurban is a space inherited from the exclusion and, therefore, (trans)formed by heteronomous processes that are reproduced through spatial practices that originate them. For its socio-spatial heritage, these spaces may constitute spaces for resignation and maintenance of political poverty. But agreeing with Lefebvre (1976), peripheries can also become spaces of resistance and of search for greater autonomy—a socio-spatial development[36]. This research investigates whether the peripheral rurban represents a chance for resistance, for the conflictive forces that are manifest in the different social levels.

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Based on the spatial triad developed by Henry Lefebvre—spatial practices, representations of space and spaces of representation—Keith Halfacree (2007) develops a model to discuss the rural coherence, a reflection on the impermanent conditions that configure the rural, proposing the existence of three corresponding categories: rural localities, formal representations of the rural and everyday lives of the rural, as he believes that Lefebvre's theory is open enough to allow for the transposition and adaptation. Both author's triads are presented in .

The articulation among these categories will result in three formats of rural coherence: congruent and unified, contradictory and disjoint, and chaotic and incoherent, based on the level of stability among the elements of the triad. A coherent rural is dependent upon the existence of "a social formation in which economy, state and civil society [transitorily] mesh together in a relatively stable fashion" (Somerville, Halfacree, and Bosworth 2014: 279)[38].

Though Halfacree offers an interesting tool to understand the interdependence of Lefebvre's triad in the context of the rural, the conflictive nature of the rurban requires further thought. This research departs from the premise that there is no 'congruent and unified rurban'. The rurban will always result from the tension between the rural and the urban, performing either as a contradictory and disjoint or as a chaotic and incoherent construction, depending on how easy it is to identify rural and urban elements that compose it. The easier it is, the more chaotic and incoherent the rurban will be. The everyday of the rurban is produced through a set of socio-

[35] In the original: "O espaço herdado da heteronomia, e não somente as relações sociais em si mesmas, constitui um obstáculo, um estorvo a ser superado. O mesmo vale para todas as tentativas de obter ganhos de autonomia mesmo dentro de uma sociedade heterônoma: a criação de institucionalidades e rotinas que favoreçam a participação popular, uma maior justiça social e uma melhor qualidade de vida exige uma 'espacialização' adequada em matéria de malha territorial, de formas espaciais (locais de assembleia e reunião, por exemplo), de incorporação e valorização de sentimentos de lugar, de eliminação de signos opressores (racistas, sexistas, de classe). [...] É muito difícil e, no limite, impossível, fazer desabrochar novas relações sociais sobre o solo árido e pedregoso de formas espaciais e das malhas territoriais heterônomas, construídas e implementadas por e para esta sociedade, capitalista".

[36] Development is understood with Souza (1997) as the improvement of quality of life and increase in social justice.

[38] Halfacree does not focus on the role of ICTs in rurban communities, but his model contributes to understand how spatial conditions and configurations and spatial practices intertwine and contribute to the ways ICTs are incorporated in the everyday lives of the rurban.

spatial practices that need to be explored. The following section furthers the concept of socio-spatial practices of the rurban, that will inform the remainder of the thesis.

Table 1: Lefebvre's spatial triad, Halfacree's corresponding categories and the author's suggestion of categories to understand the rurban.

Lefebvre's categories (Lefebvre)	Halfacree's corresponding concepts/ Author's correspondence to rurban
Spatial practices as the actions that 'secrete' a particular society's space, and perceived in routine activities. They are associated with how we perceive 'real' space (Elden in Halfacree 2007).	Rural localities inscribed through relatively distinctive spatial practices, linked to production and/or consumption activities **Rurban localities and socio-spatial practices—that is the spatial conflicts that arise from the existence of rural spaces and urban infrastructure and their resulting socio-spatial practices.**
Representations of space. These formal conceptions of space, as articulated by technicians and expressed in technical language.	Formal representations of the rural such as those expressed by capitalist interests, cultural arbiters, planners or politicians. **Conflicts of formal representations, due to different interests (and expectations) in regards to the land—maintenance of the rural character in detriment to urban 'development'.**
Spaces of representation. Related to the way people use and appropriate space in their everyday.	Everyday lives of the rural, which are inevitably subjective and diverse, and with varying levels of coherence/fracture. They both take in and, to a greater or lesser extent, subvert the other categories. **The everyday that is permeated by rural and urban symbols, being inherently conflictive. It is based on "quotidian meanings and local knowledges" as well as references that are construed locally but are rooted in the global.**

Source: Lefebvre (1991), Halfacree (2007), and author's formulation.

1.2.4 Social-spatial practices and processes of the (connected) rurban: a socio-spatial development

Marcelo Lopes de Souza (2003; 2013b) discusses the need for a socio-spatial[40] development, which antithetical to economic development, implies the "coping process of heteronomy and having autonomy as a horizon of thought and action" (Souza 2013b: 275)[41]. Autonomy is "the basis of respect for the right of each community to establish, according to the peculiarities of its culture, the (ever-changing) actual content of development: the priorities, the resources, the

[40] Drawing from the work of Souza (2011b) and in respect of both spatial and social elements of the research, what is usually understood as spatial practices will be referred to as socio-spatial practices, reinforcing its relation to the social space and the social relations. Regarding the adjective socio-spatial, Souza writes "Both dimensions (social relations and space) are not ontologically merged neither do they overlap conceptually, because, even though it is a product of social relations, the social space can outlive the social relations that have generated it, at least as a material substrate [...] After all, social relations produce the space and 'are inscribed in it', 'talk through it' (as well), 'are exercised through its mediation' (as well), but they are obviously not 'part of the space' or a 'subset' of the space, although they are influenced and even conditioned by its spatiality; on its part, neither is space a 'subset' of social relations" (Souza 2011b: 160-1). In the original: "[a]mbas as dimensões (relações sociais e espaço) não se confundem ontologicamente, e por isso tampouco se sobrepõem conceitualmente, porque, embora seja um produto das relações sociais, o espaço social pode sobreviver às relações sociais que o geraram, ao menos como substrato material [...] Afinal, as relações sociais produzem o espaço e nele 'se inscrevem', 'falam por meio dele' (também), 'se exercem por seu intermédio' (também), mas não são, obviamente, 'parte do espaço' ou um 'subconjunto' do espaço, ainda que sejam influenciadas e até mesmo condicionadas pela espacialidade; de sua parte, tampouco o espaço é um 'subconjunto' das relações sociais".

[41] In the original: "processo de enfrentamento da heteronomia e tendo a autonomia como um horizonte de pensamento e ação".

strategies"[42] and is a construction that happens in the interaction of different groups at different scales (Souza 1996a: 10; see also 1997). Development, in turn, will be understood as "positive social change that is simultaneously a transformation of the social relations and of the space" (de Souza 2003: 101)[43]. This change is, for the author, related to the improvement of parameters related to social justice and quality of life. These, in turn, are subject to autonomy, and mutually complementary: an increase of social justice must be accompanied by an improvement in quality of life and vice versa. The pursuit of social justice takes place in the public sphere, for its ability to stimulate citizen participation in decisions regarding collective issues. The pursuit of quality of life, in turn, happens in the private sphere, since its perception is developed differently by individuals, even if there is a process of feedback between individual perception and collective processes (Souza 2000). Ideally, development, as the change in social relations and the space itself, would mean a change in the capitalist relations of production.

Development is, therefore, more than mere economic development, as economism leads us to believe. It is true that the critique of economism is abundantly present in the academia (de Souza 2003). However, common sense is still imbued with the idea of development as an economic path (reinforced by development goals such as economic efficiency and technological modernisation) that led central countries to offer the desired quality of life to its inhabitants, and therefore, needed in peripheral countries as well (Souza 2003, 2006). In Souza's (1997: 16) words

> It is obvious that no one in their right mind would propose that the goal of development is limited to growth and technological modernisation. However, precisely because the ideology of the hegemonic development encompasses interests linked to the objective (in the sense of target) which is the perpetuation of the capitalist social model and, in this context, of the benefits of certain groups or classes, it favours a concept that emphasises the means through which this model can be improved. Within this highly ideologised concept, the ethical and political discussion of the purpose is sacrificed (or even disappears) silently, in favour of an instrumental discussion of the means.[44]

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[42] In the original: "base de respeito ao direito de cada coletividade de estabelecer, segundo as particularidades de sua cultura, o conteúdo concreto (sempre mutável) do desenvolvimento: as prioridades, os meios, as estratégias".

[43] In the original: "mudança social positiva que é, simultaneamente, uma transformação das relações sociais e do espaço" In general, Souza (2006b: 133-34) defines the improvement of quality of life as "the increasing satisfaction of needs of a growing portion of the population, whether basic or non-basic [...], whether tangible or intangible". The increase of social justice implies "treating equals equally and unequals unequally". It is worth recalling one of the most famous phrases of Boaventura de Souza Santos in regards to social justice: "We have the right to be equal when difference makes us inferior. We have the right to be different when equality neuters us. People want to be equal, but they want their differences respected. In other words, they want to participate, but also want their differences to be recognised and respected" (de Sousa Santos 2003: 56). In the original: "Temos o direito a sermos iguais quando a diferença nos inferioriza. Temos o direito a sermos diferentes quando a igualdade nos descaracteriza. As pessoas querem ser iguais, mas querem respeitadas *suas diferenças. Ou seja, querem participar, mas querem também que suas diferenças sejam reconhecidas e respeitadas.".* As correctly pointed out by Prof. Marcos Dantas in the qualification process, an increase in social justice and improvement of quality of life are still compatible with capitalism, and therefore, qualifying what these elements without considering class struggles is not emancipatory. For the Professor, development means conflict and rupture, and it should "aim to free material labour from its 'natural' conditioning, being possible only when the social system is not in equilibrium" (Information from qualification notes).

[44] In the original: "É óbvio que ninguém, em sã consciência, proporia que o objetivo do desenvolvimento se limita ao crescimento e à modernização tecnológica. No entanto, precisamente porque a ideologia do desenvolvimento hegemônica recobre interesses vinculados ao fim (no sentido de meta) que é a perpetuação do modelo social

For Jesse Souza (2009) the economism fetish is a reason for the masking of class difference in Brazil which leads to a "crippled modernity". For the author, the historical construction of the identity of the Brazilian can be one of the reasons for

> countries like Brazil to only think about the material dimension that is measured in currency or GDP. Social democratic countries in Europe, by contrast, are constantly comparing themselves in terms of quality of life, medical care and education, in the assurance of individual liberties or the more or less generous ways they receive immigrants. This is because Brazil perceives itself as a 'market', and these societies perceive themselves as 'societies' (2009: 31)[45].

To overcome this narrow perspective of development, Souza (Souza 1996b; see also Souza 1997; 2006b; 2013b) proposes a socio-spatial development, which integrates the "constitutive dimensions of social processes", that is, the integration among social space, history and social relations. That means that the practices oriented towards development should always be analysed as spatial practices. Drawing from Lefebvre's theory, the author defines spatial practices as "social practices dense of spatiality" (2011a: 23). As social practices, they have been serving both heteronomy—coercion, domination, imposition—and autonomy—emancipation, self-determination and legitimate self-defence. Nevertheless, there is still the prevalence of heteronomous spatial practices that are generally directed by the dominant groups and executed by the dominated groups[46].

> Heteronomous are those types of spaces (or spatialities) produced by spatial practices that are characterised, in the level of explicit power, by the top-down or outside-inside imposition of the *nomos,* and at the level of "implicit infra-power" (which refers to 'subliminal messages', the imaginary), by the weight of transcendence (extra-social sources and justifications of power) and by alienation. (Souza 2011a: 23-4)

Roberto Lobato Corrêa (2007: 68) offers an additional explanation to spatial practices as

> actions spatially located, engendered by concrete social actors, aiming to objectify their specific projects. They constitute individual actions, not necessarily systematic and regular, characterised by a limited timescale. The timely nature in space and time establishes the distinction between spatial practice and process.

Spatial practices are essential to the definition (and therefore the transformation) of uneven socio-spatial development (or spatial differentiations), spatial variations of social phenomena. The uneven spatial development is unavoidable, "[…] constitut[ing], simultaneously, a reflex,

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capitalista e, neste contexto, dos benefícios de determinados grupos ou classes, ela privilegia um conceito que coloca em primeiro plano os meios pelos quais se pode aprimorar esse modelo. No interior desse conceito fortemente ideologizado a discussão ética e política sobre os fins é sacrificada (ou mesmo desaparece), silenciosamente, em favor de uma discussão instrumental sobre os meios."

[45] In the original: "países como o Brasil só se pensa na dimensão material que se mede em dinheiro ou PIB. Os países sociais democratas da Europa, ao contrário, se comparam constantemente em termos de qualidade de vida, serviço médico e educacional, na garantia de liberdades individuais ou na forma mais ou menos generosa com que se recebem imigrantes. Por que o Brasil se percebe como 'mercado', e essas sociedades se percebem como 'sociedade'."

[46] This aligns with the Gramscian concept of hegemony (Kipfer 2008).

means and condition for the functioning and reproduction of the capitalist system"[47] (Corrêa 2007: 63).

The rurban evinces the necessity of an uneven spatial development for capitalism, especially under an extended urbanisation process. Rurban communities feel forced to enter the circuit of capital accumulation, and do so from a marginalised position, mainly through what Souza (2013b) calls coercive practices that represent heteronomous spatial practices. That is so because the exogenous introduction of urban elements in a previously exclusively rural fabric contributes to the alienation of the population, reflecting on the spatial practices and leading to an also outside-inside differentiation of the space. Take the example of both Santo Antônio do Salto in Brazil and Pendeen in UK. Both communities were highly affected by the implementation of mining companies, which impelled a specific spatial configuration that served the production purposes of the company. The economically driven division of space affected the social division of space, and led to fragmentation, which was even more enhanced when the companies ended their businesses locally.

In face of the resulting unbalanced socio-spatial development, Corrêa (2007) highlights the need to minimise spatial differentiation. This is an essential premise for this research, as spatial differentiation contributes to socio-technological peripheralisation under scrutiny in this work. This research draws from the work of Souza (Souza 2013b; 'refer also to Souza 2011a) in which he is convinced of the need of emancipatory and insurgent spatial practices[48]—political action aiming to influence or transform power relations—for a socio-spatial development. Insurgent practices emerge and might lead to a socio-spatial development when the very individuals and interested social groups get involved in setting priorities to achieve them. This is also the only way that Demo (1994) sees to escape political poverty towards organised citizenship, or Feenberg (2011) as means to foster micropolitics.

1.2.5 Access to ICTs: the internet as a sociotechnical ensemble in rurban communities

The previous section aimed at positioning globally the power relations related to the production and consumption of ICTs. It suggests that the asymmetrical access to ICTs reinforces the already existing peripheralisation patterns and allows for the surge of socio-technological peripheries. It also highlighted that sheer ICT provision cannot improve marginalisation, due to the way technology is being made available for deprived groups—as a

> 'welfare dependency model', where we beneficent and generous (rich and from the global North) folks are going to give those poor and needy people living on the 'other side of the Digital Divide' some sort of (pale and poorly equipped) version of the Internet in return for which they will be suitably and demonstrably grateful and in our eternal (figurative or even quite material) debt (Gurstein 2015b: *online*).

The concept of technical agency, developed by Andrew Feenberg, contributes to an understanding of access beyond infrastructure provision.

Technical Agency

[47] In the original: "[…] constituem simultaneamente reflexo, meio e condição para o funcionamento e reprodução do sistema capitalista".

[48] For Souza (2011a), insurgent practices are possible in a state-critical framework, which understands that it is impossible to ignore the state, or even admit its possible positive role in the struggle towards emancipation.

Technical agency is the possibility of political action within the technical domain. It reinforces the contextual relationship between social struggles and technology appropriation. In that sense, this concept is particularly relevant for socially and geographically marginalised communities, as it highlights the possibility of ICTs to contribute to social change, provided individuals who use it have the agency or the 'capacity to act' on it, and most importantly, beyond it. This considers technology and its various applications based on local knowledge and actions that address local problems when top-down strategies fail (Feenberg 2011).

For the author, there is a possibility of technical agency when three conditions are met: knowledge, power and appropriate occasion. By knowledge, the author refers both to the 'specialised knowledge' and the 'knowledge from below', "unexploited potentials of technology that have not been identified by the technologists themselves but which users can imagine and even in some cases implement" (Feenberg 2011: 3) reinforcing that the latter is often ignored by those who produce the technologies we use in our everyday.

Power is related to people's struggle to appropriate technology to their own needs, once in technical actions in which operator and objects are human beings, there will always be power involved (Feenberg 2009b). Resisting these relations may lead to individual and collective empowerment, and is, therefore, directly connected to agency. Castelfranchi and Fernandes (2015: 172) assume this empowerment happens only in reticular processes in which citizenship is called upon. "If a citizen is not only equipped with rights and duties, if she, by making everyday decisions (as consumer, mother, voter), puts citizenship in movement through tactics and interactions, then citizenship is not only the ownership of rights, or the fight for them"[49]. For the authors, citizenship[50] can only be seen as an interactive process that involves the subject, their environment and the connections that are built among them. Being empowered is an essential condition to fight what Demo calls non-citizenship. "The non-citizen is, overall, the one who, restrained of creating a critical conscience of the marginalisation that is imposed onto them, does not reach the opportunity to create an alternative history and to organise themselves politically for such" (Demo 1995: 02)[51].

Finally, Feenberg argues for the need of an appropriate occasion for agency to flourish: a favourable circumstance in which knowledge and empowered citizens may enact social transformation. Appropriate occasion requires some sort of collective engagement that permeate different scales of action.

Together with Katharine Willis, I have argued elsewhere (Melgaço and Willis 2015) that technical agency also needs a fostering space, that is, a set of socio-spatial conditions that contributes to its furthering, or that are, at least, open enough for such an agency to be enacted. That is also true for the implementation and use of ICTs, such as broadband internet. This thesis argues that,

[49] In the original: "Se uma cidadã não está simplesmente equipada com direitos e deveres, se ela, ao tomar decisões cotidianas (enquanto consumidora, mãe, eleitora), coloca a cidadania em movimento por meio de táticas e interações, então a cidadania não é apenas a posse de direitos ou a luta por eles".

[50] Citizenship is a contended concept, and in this research is understood with Pedro Demo, as "one's human competence to transform themselves in subjects, to make their own history as well as a collectively organised one" (Demo 1995: 02). The author argues the importance of access to information and tools for communication, among other elements, for it to happen, and focuses on the emancipatory process that realises itself through the intervention in reality in alternative ways.

[51] In the original: "Não-cidadão é sobretudo quem, por estar coibido de tomar consciência crítica da marginalização que lhe é imposta, não atinge a oportunidade de conceber uma história alternativa e de organizar-se politicamente para tanto".

in order to befit as a tool for agency, ICTs need to be embedded in a set of socio-spatial conditions that enables them and triggers political engagement towards social transformation. The lack of those conditions in our urban spaces, as it will be discussed in chapter 3, renders ICTs, such as large urban digital displays, a sterile role (despite high hopes of social transformation with their use) and reinforces the status quo. Chapters 4 and 5 will investigate whether rurban communities potentially have socio-spatial conditions for ICTs to actively participate as a political tool with a focus on the use of the internet in their everyday lives.

Furthermore, technical agency may only thrive in a context of democratisation of technology (Feenberg 2009a). The author counters the tendency of conservation of hierarchy—where social hierarchy is preserved and reproduced despite the introduction of new technologies—with the need of a democratic rationalisation—a process in which the introduction of new technologies leads to a change in the existing social hierarchy. That means a change in the process from its inception to include those once subordinated to the heteronomous production of socio-technical ensembles. There is little evidence that the way urban displays are being implemented in cities around the world encompasses this democratisation dimension (please refer to chapter 3). As in large cities, finding these conditions for technical agency in the peripheral rurban is still very unlikely, as most people are being marginally included in a set of assemblages that have been heteronomously defined. Both infrastructure and content being offered do not consider local knowledge and specific needs. Note that there is an intentional unilateral perspective, assigning rurban inhabitants the role of passive consumers of technology (Viero and Souza 2008). There is also the continuity of a dependency status that permeates social and political spheres, reflecting the lack of empowerment strategies. Rurban inhabitants are often subject to either subordinate (*tutelada*) or assisted (*assistida*) citizenship (Demo 1995), forms of citizenship that reinforce existing power relations and do not foster the development of political critical consciousness, needed for emancipation.

Access and effective use

The concept of technical agency resonates with the work of Michael Gurstein wherein the author highlights how the digital divide debate is highly laden with corporate values. For Gurstein (2003), it focuses more on the market value of 'access', rather than the potential of the internet as a 'network of networks'—a technology with the capacity to engage and enable interaction across geographies and boundaries, both physical and cultural, and to support initiatives from the 'bottom up' as well as the 'top down'" (Gurstein 2003: online). This discourse focuses on 'access' rather than on 'effective use'.

In order to overcome the simplistic discussion of 'access'—immediate availability of the internet or technological devices—, Gurstein proposes we focus on 'effective use', "the capacity and opportunity to successfully integrate ICTs into the accomplishment of self or collaboratively identified goals" (Gurstein 2003: online). In that sense, it expands the idea of how availability "fits into larger concerns for 'use' or 'uses' that will ultimately benefit individuals and communities" (Clayton and Macdonald 2013a: online) in a contextualised manner (Clayton and Macdonald 2013a; Mossberger, Tolbert, and Anderson 2014; Demo 2005)[52].

[52] Cornella Flora and Jan Flora (1993), in the research context of entrepreneurship, identified that rural areas were not benefiting from 'access' to internet. Rural areas face insufficient infrastructure and lack of individual leadership that results from low density communities (and unwillingness of the private sector to provide services

Summarising, for an 'effective use' of the internet to take place, it is important to focus on how local connections are spatialised in the rurban. Said differently, it means including a socio-spatial perspective to the socio-technological discussion of digital access; that is, understanding the role of socio-spatial arrangements in relation to existing socio-technical ensembles to support the social and contextualised appropriation of the internet. This investigation will be done in chapters 4 and 5.

The focus on the internet

The impacts of the introduction of the internet on current socio-spatial practices in rurban communities became clear during the fieldwork. Let us recall the distinct ways in which the internet was made available in the three communities studied. In Santo Antônio do Salto, the internet was commercially introduced, mainly through mobile access in an individual basis. Pendeen was equipped with superfast broadband internet through a European Union granted project in association with British telecom, but it is still based on individual subscriptions. Nevertheless, Pendeen's community centre has arranged a telecentre, so that members of the community can access the service at no cost. In Noiva do Cordeiro, the internet was acquired by the community through a governmental project that aimed to provide rural internet for remote locations, but since the interruption of the service, inhabitants have been accessing it through individual mobile subscriptions.

The clear empirical relevance of the internet is corroborated with a growing body of academic research, which critically discusses the potential and shortfalls of this socio-technical ensemble. In the words of Michael Gurstein

> What is evident […] is how commonplace and necessary has become access and use of the Internet for very large proportions of the population. It has become part of the very substance of their participation as citizens, consumers, voters, social beings in the modern digitally enabled world. Even those without such Internet access are increasingly integrated into the seamless digital environment through the use of the digital by those with whom they do have regular contact whether through trade, cultural interactions or in the domestic/personal sphere (Gurstein 2015a: *online*).

The central role of the internet in contemporary capitalism, as "both medium and outcome of the capitalism's globalization tendency" (Fuchs and Dyer-Witheford 2013: 788), requires an understanding of its potential for mobilisation and activism, which Richard Kahn and Douglas Kellner (2004) describe as globalisation-from-below. Similarly, other scholars highlight how the internet enables renewed opportunities for 'resistance, democratic participation and emancipatory change' (Lievrouw 2012: vii). Andy Merrifield (2013a), for example, states that the internet offers a new 'political agora' where individuals can exercise their citizenship.

Another important element to be considered is the internet's potential for community building, through networking. Feenberg (2012: 06) states the advantages of networking as "the first successful technical mediation of small group activities", underscoring the importance of information exchange and communication among different groups. The openness to dialogical relations between participants contributes to the development of a 'community model' for the

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to those areas) and high levels of out-migration. They also lack organisations and facilities that support social relationships within the community, and that these are essential for 'purposive community action'.

internet, based on reciprocity that can only happen if it continues neutral as to accommodate "unprofitable and politically controversial communication" (Feenberg 2012: 12)[53]. The community model also requires that the internet remain a commons—a "resource that all in a specified community may use, but none can own" (Fuchs and Dyer-Witheford 2013: 790). Nevertheless, as already stated, there is always the danger that the internet exacerbates the conflicts that arise from capitalism's "use of a rhetoric consisting of ideals such as participation, self-organization and cooperation – but without realizing them" (Fuchs and Dyer-Witheford 2013: 786)

1.2.6 Objectives

This research focuses on the interrelationships between existing socio-spatial practices and the appropriation of this socio-technical ensemble (Bijker 1997; 2006), the internet. It investigates whether, under particular socio-spatial circumstances, internet may foster collective social transformation processes in those groups subjugated to, on different levels, their respective centres and the resulting capitalist social relations of production that stem from the process Henri Lefebvre calls *planetary urbanisation* (Lefebvre 1989) and currently discussed by Andrew Merrifield (2013b) as well as by Neil Brenner and Christian Schmid (2015) and Roberto Monte-Mór (2005) as extended urbanisation, among others. Planetary urbanisation is also a technological urbanisation—still virtual—that, according to Lefebvre, is yet to be completed (Lefebvre 1989). Therefore, this research challenges the current techno-scientific approach to ICTs proposing that the structural role they have in defining centres and peripheries is also socio-spatial.

The main objective of this research is to build a socio-spatial-technological critique towards the late access of ICTs in marginalised contexts by investigating the correlation between the recent introduction of Internet in rurban communities and their socio-spatial practices in the context of socio-technological marginalisation. The research is situated in the intersection between the socio-spatial, socio-technological and political dimensions of the discussion of ICTs as socio-technical ensembles and their relation to socio-spatial practices (Figure 1).

It is important to understand whether the increasing access to ICTs in socio-technological peripheries—those places where the *socio-cultural access to technology* is still marginal—is fostering everyday practices that defy the heteronomous *status quo* towards the construction of a *socio-spatial autonomy*. Such a collective autonomy calls for an overarching realisation that the access to information is foremost a political issue; that the peripheralisation process is not only geographical but also socio-technological; and finally, that the marginalised access to ICTs consolidates *political poverty*—the inability of a community and its individuals to mobilise themselves in various spheres of individual and common life.

The research also aims to uncover how the introduction of the internet contributes to changes in everyday socio-spatial practices in these communities. The everyday is the social level with room for 'tactical actions' that contribute to the reinvention of technology, as pointed out by Yurij Castelfranchi and Victor Fernandes (2015) and often neglected in macro analysis of internet use. By doing so, the research intends to find indications to whether these changes can foster

[53] Conversely, the increase in use of internet for commercial purposes may lead it towards a 'consumption model', threatening its neutrality and potential for community building (Feenberg 2012).

micropolitics—"a situational politics based on local knowledge and action" (Feenberg 2002: 105)[54]. These are taken here as bottom-bottom quotidian interventions that depict agency and might lead to more long-lasting subversive impacts.

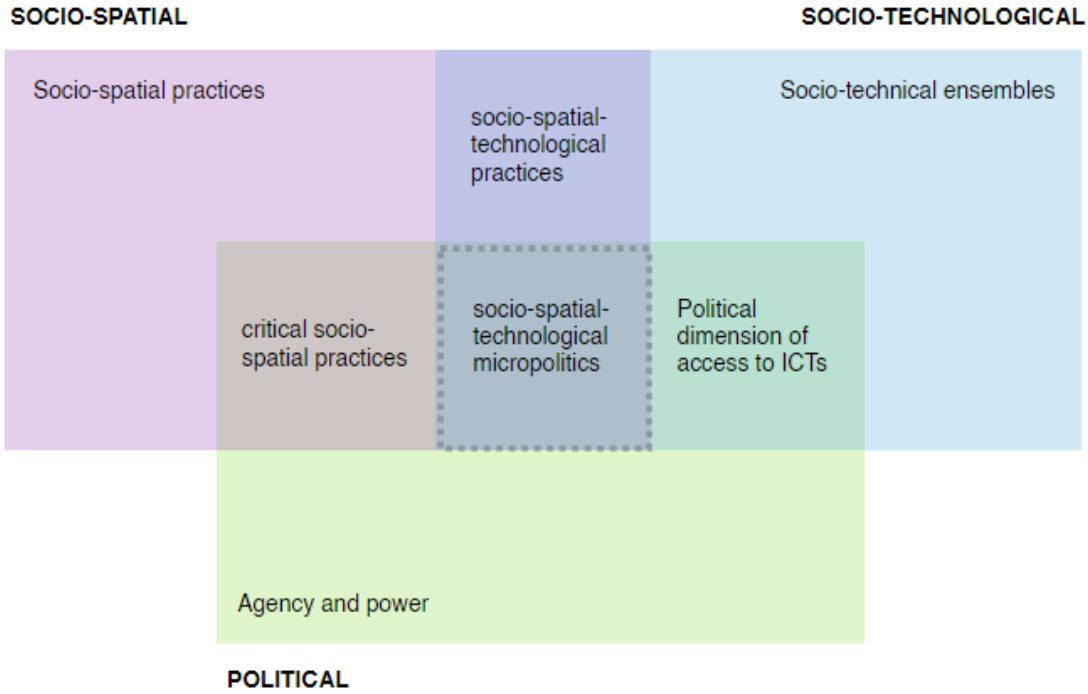


Figure 1: Defining the Research Focus. Source: the author, 2016.

1.3 THE APPROACH TO THE OBJECT: METHODOLOGY

1.3.1 Introduction: a personal stance

This research departs from my interest to understand the relation between the use of information and communication technologies (ICTs) and socio-spatial practices. It is a continuation of the work already initiated during undergraduate studies in Architecture and Urbanism, when, as a scientific initiation intern supervised by prof. Ana Paula Baltazar, I participated in research groups at EVA (Virtual Architecture Studio) and Lagear (Graphics Laboratory for Architectural Experience) research groups, both at the School of Architecture at Universidade Federal de Minas Gerais (UFMG). In the first research group, I took part in the researches RSV-Residencial Serra Verde and HBH-Inhabiting Belo Horizonte, discussing and formulating digital and hybrid interfaces for negotiation in space and digital inclusion in urban and residential areas in Belo Horizonte. In the second, I participated in two actions that exploited the spatialisation of image: Ocupar Espaços e Vale-Vozes e visões: A arte universal do Jequitinhonha. Both proposed the remote connection between two different groups as a way of fostering dialogue and bodily engagement in a shared space for fun, created from the existing physical space and digital interfaces. These events showed both the potential and the gaps in the use of digital technologies to promote exchanges through action (Baltazar do Santos and Cabral Filho 2006).

[54] Even though Feenberg develops this concept within a socio-technical framework, it is taken here as a much broader concept, embedding the possibilities of socio-spatial practices energised by ICTs that conform not only a socio-technical agency, but also a socio-spatial one.

Already as a Masters student in the same institution in 2009, supervised by Prof. José dos Santos Cabral Filho, I developed a research focused on the discussion of the tools and strategies used by museums to promote interaction of participants with digital interfaces. At the same time, in my second Masters, held in cooperation between the Technical University of Darmstadt, Germany and the University Pierre Mendes France, in France, my work questioned whether the application of so-called urban screens—displays arranged in the urban space and whose use privileges cultural content—favoured encounter and interaction between people located in the places where these structures were found. These two dissertations raised a number of questions that went beyond the technical scope to highlight the fragility of the potential of ICTs for social transformation.

The criticism of the discourse of social transformation through ICT use is already being developed by the researches in Lagear (coordinated by Prof. José dos Santos Cabral Filho and Ana Paula Baltazar) and MOM (Living in Other Ways, coordinated by Prof. Baltazar and Prof. Silke Kapp). This thesis is based on my experience specially with the first research group. The research here presented was further influenced by my participation in the research Digital Neighbourhoods, coordinated by Prof. Katharine Willis in Plymouth University, UK, as a research assistant. Digital Neighbourhoods focuses on the impact of the implementation of superfast broadband in rural communities in Cornwall, UK.

1.3.2 Limitations of the existing tools to understand the everyday in the peripheral rurban

The tacit understanding of a singular path to development permeates the fields that try to overcome the 'digital divide', ignoring "the world epistemological diversity [and] the conflictual plurality of the knowledges that inform social practices" (Santos, Meneses, and Nunes 2004: 19) and taking an EuroAmerican (that is, central) perspective to the issues of the consequently reinforced peripherality. Furthermore, there is a disregard to the particular socio-spatial configurations that frame local practices, often leading to short-sighted strategies that tackle the unequal access to the internet (and that can be extended to most ICTs) that go as far as to 'include in the margins'. There is little regard to micro-scale alternative paths that are based on specific socio-spatial practices: literature fails to value local initiatives that may lead to local transformation, regardless (or even in spite of) the oppressing forces played in the everyday life. The lack of interest in what I call bottom-bottom tactics—those that will happen at a microlocal scale and in the everyday level of a given group—reinforces shortsighted approaches to 'one solution for all' such as the One Laptop per Child project (that will be presented in 2.4). Two important reasons explain the limited research on the role of space for equitable access to technologies under marginalised conditions. Firstly, neither regional nor urban planning offer appropriate tooling to investigate such bottom-bottom initiatives. Even when focusing on the local scale, there is often a neglect of the interplay of local practices and ICTs. Secondly, and even more important, planners interested in issues related to ICTs tend to focus on cities, failing to grasp the benefits of their expertise in the countryside.

1.3.3 The theoretical framework

Methodological referential

The research's object departs from the macro-relations that are established on a global level to focus on the everyday implication of ICTs in local socio-spatial processes and practices, much

less researched. Even if aiming to show the importance of the local in a globalised world (Latham and McCormack 2010) by focusing on local issues imposed by such relations, most scholars do not investigate the local networks that are formed, reflecting what Souza (2011c) describes as "knocking on the doors, but not entering the houses", as researchers do not delve into the everyday. Furthermore, when research does investigate it, what usually happens is the adoption a central viewpoint, resorting to EuroAmerican theories to further explain peripheral phenomena, such as the case of most ICT4D research (Kleine 2010).

Thus this research draws from the critical standpoint of postcolonial studies to produce a theoretical framework appropriate for the conditions encountered in the context of a semi-peripheral country, such as Brazil. For Jamie Peck (2015: 166)

> "[…] postcolonial urbanism had to entail more than turning conventional treatments upside down, flipping over the 'time chart of urban theory' by promoting Southern urbanisms as alternative universals or premonitions of an alt-global norm; instead, the goal was to be one of 'decentring [rather than inverting] the reference points for international scholarship' (pp. 169, 91). Along the way, this would have to involve '"dislocating" the EuroAmerican centre of theoretical production', while recognizing that the regions of the 'centre' may also be 'exceptional from a [truly] global perspective' (ROY, 2009, p. 820; SEEKINGS and KEIL, 2009, p. vi; SHEPPARD, 2014). The project of postcolonial urbanism is consequently marked by an attitude of principled wariness concerning most (if not all) pre-given conceptual or classificatory formulations, especially universals made in the North and masquerading as stylized facts, policy paradigms or conceptual abstractions"

Nevertheless, postcolonial studies have been critiqued for their excessive particularism, that though "enabl[ing] the opening up of new spaces in and for urban theory, and new ways of thinking about urban theory" (Peck 2015: 162), does not yet advance in developing common grounds in which Southern Urbanism and EuroAmerican established theories can dialogue. There is the danger of an inversion of egocentrism (Peck 2015; Vainer 2014). Such particularism also hinders the potential of postcolonial studies to reconcile the global and the local in research, scales that for Peck (2015) are only growing apart. Another question raised is the fact that many postcolonial studies tend to take the peripheral particular and counter it against a generalised EuroAmerican theoretical framework (Peck 2015; Brenner and Schmid 2015).

Research strategy

In order to overcome the limitation in Postcolonial studies to operate in different scales, local issues should be addressed while situated within a macro-structure[55], fostering a dialogue between the planetary and the particular (Peck 2015), that is, for example, the claim of comparative urbanism. Taking such an approach means considering the 'globalising power' but also highlighting peripheral 'counter-narratives' (McFarlane 2010). This is of course easier said than done. Most research produced in the intersection of the different scales of analysis still tends to concentrate on either the global South or North, reinforcing already existing academic divides (Peck 2015). To tackle the North-South and general-particular dichotomies highlighted during the research, the following elements are addressed:

55 For Peck (2015) and Brenner and Schmid (2015) urban political economy is an essential field for such a theoretical reconstruction.

1. Considering the different levels of analysis

The research was devised considering Lefebvre's social levels: global, urban and the everyday. For the author, the concept of levels accommodate much more movement than that of scales, as they are a social extension of social relations, rather than a hierarchy of spatial relations. "wherever there is a level there are several levels, and consequently gaps, (relatively) sudden transitions, and imbalances or potential imbalances between those levels" (Lefebvre 1991a: 119). Therefore, the research has recursively considered the generalising and particularising elements that compose the object of research. The interrelation between the levels was done heuristically throughout the research. There was the need to resort to different tools to deal with both the global and the everyday levels in the analysis of the socio-spatial micro-relations and their interaction with socio-technical systems, as described below.

2. Devising a fitting tooling to address the different levels

The theoretical research that informed the global and the urban levels was based on a Marxian framework, while the empirical research was strongly influenced by the Actor-Network Theory (ANT). ANT was used as a methodological tool to approach and analyse the communities, and the use of this set of tools evolved throughout the research to meet the requirements found on the fieldwork.

Both stages of research were developed in parallel, feeding back to each other in the process (Figure 2). It might be argued that Marxian-based theories, such as Political Economy of Information and Communication, Rent and Dependency theories and Critical Urban theory, to name but a few that informed the research, and a poststructuralist theory such as ANT are, in the least, antagonistic in nature. Nevertheless, many scholars have already seen the complementarity of these approaches when attempting to bridge macro and micro analysis. Brenner et al (2012), for example, discuss the benefits of ANT as a methodological tool to investigate urban issues, as opposed to ANT as an ontology[56]. Feenberg (2005) also highlights the complementarity of Critical Studies of Technology and ANT[57].

The recent experience during the discipline PRJ062/2016-2 called 'Spatial practices and the introduction of ICTs in rurban communities', developed to further test and mature the crossing of a Marxian based theoretical framework with an Actor-network method of approaching the community, corroborated the tooling developed for this research. The objective of the discipline was to encourage students to investigate the existing socio-spatial practices and their role in the appropriation of technology in rurban communities. In groups, students should choose a rurban community in Minas Gerais as a case study and then understand the spatial elements that

[56]Bruno Latour's (Latour 2005a) flat ontology proposes the disappearance of borders that separate the macro structure and everyday interactions. It is one of the most controversial issues when it comes to the use of ANT in urban studies, here represented by Urban Critical theory. Discussing what would be a Critical Urban theory, Brenner (Brenner 2011) shows the importance of critique, derived from the Enlightenment and re-signified by Karl Marx in Political Economy, as means to question capitalism. One of its primary functions is to expose "the forms of power, exclusion, injustice, and inequality that underpin capitalist social formations" (*Ibid*, p.20). Such criticism is systematically used as a methodological, theoretical and political problem since Frankfurt School. Due to the planetary character of urbanisation and its importance in the reproduction of contemporary capitalism, Brenner suggests that an "urban reorientation of critical theory" (*ibid* p. 20) is necessary.

[57] I have also to thank the fruitful discussions with Malcolm Miles and Krzysztof Nawratek during my research time in Plymouth University. Both scholars, whose work is situated in the Urban Studies and has strongly influence of Marxian theories, similarly pointed out the possible benefits of adopting an ANT approach in the field work.

compose the rurban, the socio-spatial practices that were to be found there and the role of ICTs in the community's everyday.

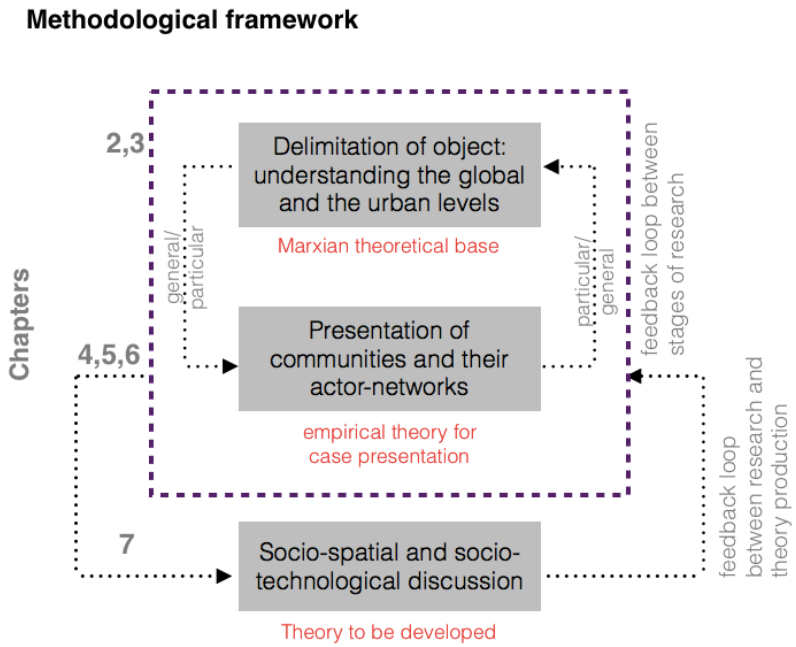


Figure 2: Diagram-summary showing methodological referential and the relating chapters in the thesis.

After understanding how these relations were built locally, they should focus on how they related to the wider socio-political, socio-spatial and socio-technological conjuncture. Students were exposed two sets of bibliography. The first was comprised of a theoretical framework based on Marxian authors and the second comprised of ANT as a methodological tool. They were asked to devise their own plan on how to analyse the case study selected (using either framework or a combination of them). I will focus on the two groups that investigated Arturos, a reminiscent quilombola[58] community in Contagem, metropolitan region of Belo Horizonte.

Figure 3: Arturos relations built through a critical urban perspective. Source: PRJ062 students group 1, 2016.

[58] Quilombola is the designation of slave refugees and their descendents that fled the sugarcane mills, farms and smallholdings where they performed various menial jobs to form small villages called quilombos, today a symbol of resistance of the black culture and fight for equality.

Error! Reference source not found. shows the approach of group one, whose field work approach was based on the Marxian based theoretical framework given, and Figure 4 shows group two, which used ANT as methodological approach and the Marxian-based theoretical framework to analyse and discuss the results found. While the first group results focused on general elements[59], the second group was able, by using ANT as the method for fieldwork, to explore the different nuances within the community.

By using ANT as an approach to the community, they could observe a set of social relations that were not made clear by the first group, especially the roles and levels of engagement of different generations in the community. The students considered family generations as different actors, attributing a node to each of them. They used post-its to represent each of the nodes and then attempted to draw on a board, the relations they identified in the fieldwork. This first attempt to organise the network of nodes and relations was not very successful. There was a difficulty to organise the high amount of information (the relations built among the nodes) without their own appraisement of the actors identified.

The students decided to use GEPHI, an open source software and platform to devise and visualise networks and complex systems, to create a network based on the relationship of the different elements they found on their fieldwork. The main benefit of using this software is that it does not organise the network according to relations of power as they are perceived by the researcher. The layout chosen by the group positioned the nodes in accordance to attraction and repulsion calculated by the relations among them (Jacomy et al. 2014).

By exploring the relation between the nodes, this method illuminated relations of power that would not be so easily processed otherwise because they are not perceptible on the first sight[60].

The relationships between the nodes also defined different 'clusters' in the network (groups of nodes with a similar pattern of attraction and repulsion), in different colours. This feature revealed that different generations had different relations with the elements in the network, and they were organised in two communities: in one group were located the matriarch and patriarch and their siblings were allocated (in orange), but the grandchildren and the greatgrandchildren were located in another one (represented in pink). While the first cluster connected to traditional elements of Arturos, such as the congado (a local typical festivity) and religion; the second cluster connected to elements recently introduced in the community, such as the internet, mobile phones and television (which is quite sensible, if one ponders the relationship between younger generations and technology, for example).

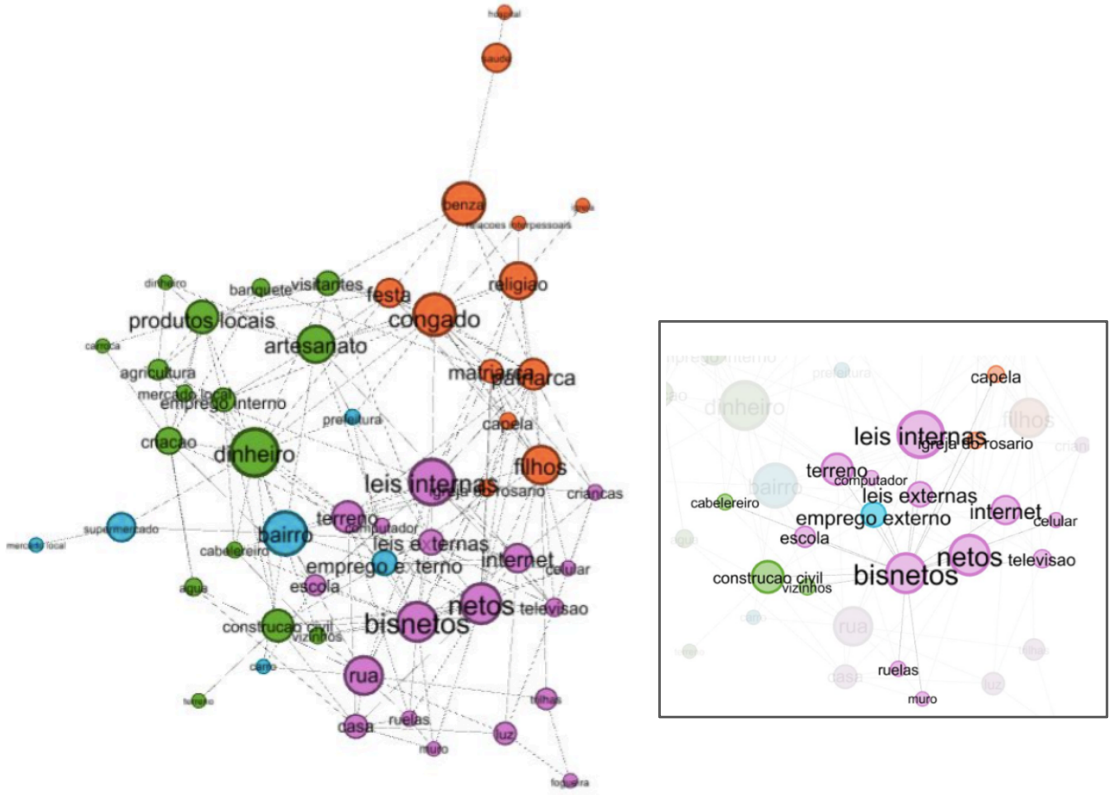
The most important discovery though, is that the node they named 'internal laws' is also part of this last cluster. The students understood internal laws as a set of rules that do not necessarily conform with the formal legal system, one of them being child labour. In Arturos, child labour was never seen as an exploitation of minors, it was rather a means to teach the young the value of work and, most of all, a way to reproduce the community's values and pass them down through generations. A recent episode and the fear of being charged with the crime of child

[59] For instance, highlighted in grey, some examples are family, field, house, access, conviviality, etc. and in white, values, religion, cattle, etc. The only specific element that can be tied to the community and only the community is Mario, the patriarch of the community.

[60] Initially, I had similar difficulty when establishing the networks of the case studies, because of the number of nodes and the number of connections among the nodes. The different attempts to visualise and represent the relationship among the actants were not comprehensible, they were either too complex or too simplified, and did not reveal extra information.

labour (which did not become clear through the students' research) made the community change their posture regarding the education of the youngsters. By doing so, the so-called internal laws, which were introjected into the members everyday life, became a visible element in the network the students represented. The students' work did not advance much further than that in the discussion, but this outcome highlights foundations of the relations of production in the community and how those reflect in the space that is being produced in Arturos.

Figure 4: Arturos network built with GEPHI based on ANT methodological approach. Source: PRJ 062 students group



2, 2016.

It is important to note that both groups of students showed similar levels of engagement in the discipline, exposure to the community and time to produce their final work. By using ANT as a methodological tool to understand the social relations that were present there (or actor-networks, in Michel Callon and Latour's terms (1992)), they could unveil expeditiously some of the crucial elements to understand the community.

3. Investigating communities in both central and peripheral countries in the same scale of analysis

The three case studies that compose the research were selected because they are all peripheral in their context: geographically isolated, socially and economically deprived and have only recently had access to the internet. Nevertheless, it is in their particular associations between socio-spatial practices and implementation of the internet that the richness of the research is found. Having cases in both a semi-peripheral and a central country, Brazil and the UK, contributes to the critical standpoint towards the existing literature. Furthermore, it contributes to bridging the academic divide with a theoretical framework that regards EuroAmerican theories from a critical standpoint. The analysis of these communities have contributed to highlighting

elements that need to be discussed despite disparities in initial socio-spatial conditions and forms of use of the internet. This was only possible because the cross-context critique was formulated respecting the microlocal scale in all three case studies.

Noiva do Cordeiro is the main case study in the research for its socio-spatial organisation and practices that disrupt capitalist forms of appropriation of the internet (though less and less so), showing, from the onset of the research, the possibility of micropolitical action. Santo Antônio do Salto, a stereotypical rurban community in Brazil, in turn, depicts how most rurban communities are assimilating technology in ways that do not allow for micropolitics to emerge. It shows uncanny similarities with Pendeen, in the UK, though to a distracted eye, they might seem completely different. Nevertheless, Pendeen, as it will be further explored, showed more complex levels of interaction and engagement, without, however, indicating the possibility of micropolitical action that would lead to any changes in its socio-spatial processes.

4. Focusing on the marginalised non-urban through the lenses of an extended urbanisation

The research addresses the gap in literature by focusing on a socio-spatial-technological framework to cater to the issues found under marginalised rurban condition. It departs from the premise that many of the issues faced by rurban communities can no longer be defined as 'rural', but cannot be managed with existing urban planning tooling, as doing so would mean neglecting some of the specificities of the socio-spatial and socio-technological context of the rurban.

After defining these elements, the research was organised in two stages: investigation and discussion, as shown in Table 4. The research was organised based on an adapted version of Comparative Political Urban research method proposed by Bas Denters and Karen Mossberger (2006), for the importance given to spatial political phenomena[61]. The authors understand that an "adequate explanation implies the necessity to understand social phenomena as a result of the behavior of individual actors in the social contexts and the more general macrossetings of its contexts" (*ibid,* 554), and propose that given analysis be done in distinct levels, "units of analysis in their relation to more or less broad social contexts" (*ibid,* 554), as means to explore the existing gaps in current knowledge.

[61] I acknowledge the contentious nature of 'comparative studies' but understand comparison with Colin McFarlane (2010) as a mode of thought and a strategy. He bases his claims on a postcolonial reading of comparison, which is open to uncertainties and differences in various contexts. According to the author, "Comparative thinking can be a strategy firstly for revealing the assumptions, limits and distinctiveness of particular theoretical or empirical claims, and secondly for formulating new lines of inquiry and more situated accounts. As a strategy of critique and alterity, comparativism depends, in part, on a continuous process of criticism and self-criticism. One route to conceiving comparison in this sense — and there are, of course, other possible conceptions—across the North-South divide is to attend to questions of comparison-as-learning and, in particular, to an ethico-politics of learning through different theory cultures" (*Ibid,* 726). Jamie Peck (Peck 2015) also highlights the opportunities of comparison for furthering the knowledge in Urban Studies. The author highlights the need to address the "apparent estrangement of significant currents in post-structuralist, postcolonial and assemblage urbanism from evolving approaches in urban political economy." (*Ibid,* 162), issues that are problematised throughout the research here presented. Finally, comparison might be a means to "confronting and problematizing substantive connectivity, recurrent processes and relational power relations, in addition to documenting difference, in a 'contrastive' manner, between cities. It must also occur across scales, positioning the urban scale itself, and working to locate cities not just within lateral grids of difference, in the 'planar' dimension, but in relational and conjunctural terms as well" (*Ibid,* 162).

	Questions	Assumptions	Objectives	Methodological approach
Investigation	How are the relations of production being influenced by ICT development?	Patterns of ICT development, production and dissemination further aggravate the uneven division of Labour in a global scale.	Understand the global processes of ICT development, production and dissemination and the unfolding in peripheral communities.	Investigation in a Marxian based theoretical framework.
	What are the interactions between ICTs and socio-spatial practices at the urban level?	There is a top-down process of implementation of ICTs that disregards local socio-spatial arrangements and benefits the capital.	Understand how the urban mediates the global and the everyday in the processes of technology appropriation, Investigate different strategies of use of ICT in cities; Define different stakeholders and their role in the process of rent extraction.	Investigate the dissemination of ICTs in the urban space, with a focus on urban screens; further understand how ICT strategies are being trickled down in smaller cities through the Marxian based theoretical framework initially developed.
	How are ICTs being introduced and assimilated by rurban communities in their everyday?	The way ICTs are being introduced in rurban communities has a fundamental role in the ways they are being used.	Understand the processes of introduction and assimilation of ICTs in marginalised rurban communities.	Definition and presentation of three case studies, in different processes of socio-technological marginalisation. Brazil: Santo Antonio do Salto and Noiva do Cordeiro and UK: Pendeen Methods: Observation, interviews, Questionnaires.
	What socio-technical ensembles are most common in the communities studied?	Different forms of socio-technical ensembles contribute to different relations to the place and different socio-spatial practices.	Complementary information regarding the access to ICTs. It is important to understand what configurations are being mostly used.	
	How do they transform the everyday? How do technologies conform and are conformed by social space?	There is an intrinsic relationship between everyday spatial practices and ICTs use.	Understand if online activities contribute to the maintenance, reinforcement, expansion or reduction of already existing offline activities	Analysis of the data gathered in the field work; Actor Network theory approach.
	How are digital networks spatialised in different contexts of marginalisation?		Understand the relationship between socio-spatial practices informed/influenced by ICTs and space.	
	How do every day face-to-face interactions relate to online interactions?			
Discussion	To which measures the socio-spatial organisation influences the different forms of individual and collective technological appropriation in different settings?	Existing patterns of socio-spatial organisations have an important role on how communities appropriate technology, specially in rurban communities where everyday practices are highly embedded in the space.	Discuss the relations between individual and collective technological appropriation and socio-spatial practices.	Critical discussion, theory building. Selection and discussion of theoretical material on Critical Urban Theory, Critical Theory of Technology, Political Economy of Information and others to develop a socio-spatial-technological framework to discuss the relation between ICTs access and spatial practices in rurban communities.
	What are the similarities and differences among technologies of the urban, technologies of the rural and technologies of the rurban?	There is a tendency of a trickle down movement in relation to implementation of ICTs, from global media cities to less prominent urban spaces and then to rurban spaces. This leads to ill-suited appropriation of technology and the reproduction of a consumer model rather than a community model (Feenberg 2012).	Discuss the similarities and differences of appropriation of technology in different socio-spatial settings.	
	How can rurban studies benefit from lessons learned regarding technologies in the urban space		Critique of the dissemination of ICTs in rurban settings drawing from the critique in urban settings, as it is a much more established field.	
	When do social-spatial practices (informed by ICTs) lead to micropolitics?	Micropolitics are an essential contestation tool and it develops from critical socio-spatial practices	Situate the socio-spatial dimension of micropolitics	
	To what extent individuals and collectives, as political subjects, can appropriate space to transform collectively their socio-spatial practices?		The main goal is to build a socio-spatial-technological critique towards the introduction of ICTs in rurban marginalised contexts by investigating the correlation between the recent introduction of ICTs in rurban communities and their spatial practices in the context of socio-technological marginalisation.	
	What is the influence of the global level in the everyday technological appropriation and the socio-spatial practices? And how do micropolitics evolve to becoming politics of contention in larger scales of influence?	There is an uneven dependency relation between these two levels (macro and micro) that need to be revisited and unveiled at the everyday level.		
	What is the role of technology in emancipatory socio-spatial practices in the rurban context? Are there general concepts and lessons to be learned in the rurban context that can lead to socio-spatial-technological conditions for agency?	Through existing experiences, it is possible to unpick some patterns of socio-technological dependency at the everyday level, as well as signs of resistance and social change.	Point important issues in the discussion to which researchers and practitioners should be aware of in the field.	

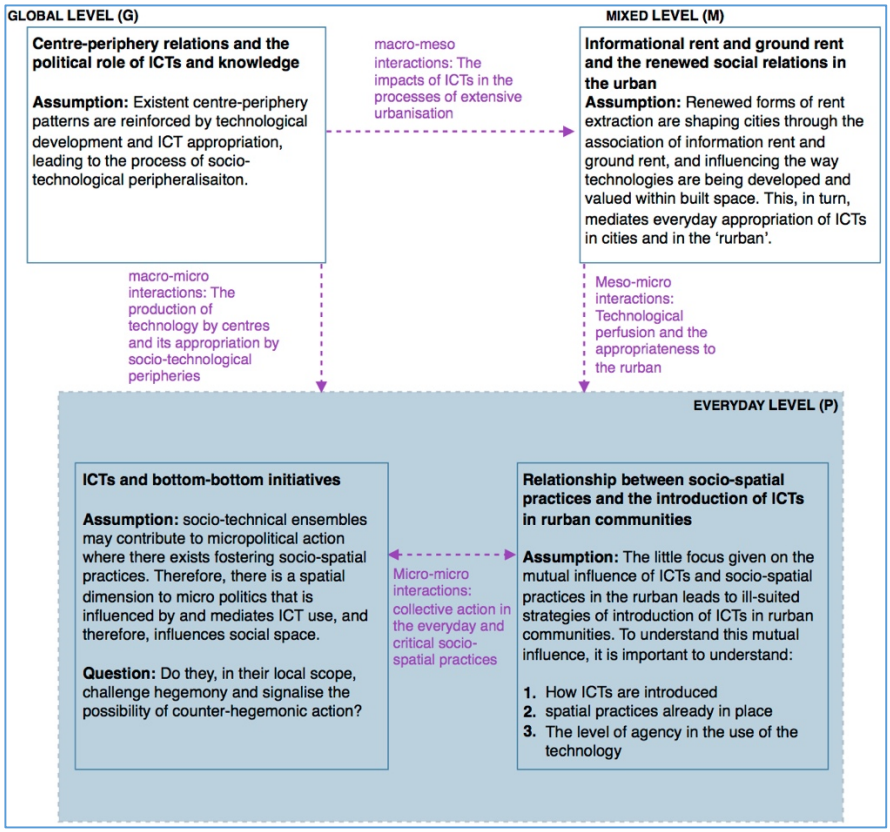


Figure 5: Model of the different levels and their connection in the research. Source: Author (2016), based on an adapted version of Denters and Mossberger (2006).

Figure 5 illustrates the different social levels used: global, urban and everyday (Lefebvre 2003). The global level is the level of the institutions, and the most abstract one, being the level of the capital markets and the politics of space. The Urban level, also called the mixed level, is the build and unbuilt domain that mediates the global and the everyday. It is composed of institutional buildings and infrastructure. The everyday is the 'inhabiting', the lived experience, but it is also where the social relations of production are reproduced, and power relations enacted. The focus of the research will be on the everyday and on the interactions of this levels with the other two other levels. It also shows the initial assumptions in each of the levels and the interactions among them.

Approaching different communities differently: data gathering and analysis

The approach in each of the community was specifically devised according to the information found on site as well as the initial perception of the relation between the community and the internet. Noiva do Cordeiro was already known by researchers at Mom and Lagear due to its singular approach to production and reproductive labour, as well as the prominent role of the women in the community. Profs. Baltazar and Kapp and the then Doctoral candidate Viviane Zerlotini had already visited Noiva do Cordeiro prior to this work, and their internal reports were used as material for research. The initial interest in the community was the fact they were the first to have a rural computer lab in the state of Minas Gerais.

Even before the beginning of the research, the community already organised guided visits, including to researchers. This practice leads to a strong control and it is not possible to 'just go there' and observe without being noticed. Therefore, such an arrangement constrains the

methods to be used and limits the opportunities for informal conversations with members of the communities. I conducted three visits to the community (2013, 2014, 2015), that due to this control, needed to be focused. In all of those, I realised semi-structured interviews that aimed at deepening the knowledge of the community and, together with informal conversations, led to the formulation of the network[62]. The research also used information collected during a field trip in the occasion of the undergraduate discipline PRJ 062/ 2016-2. An important issue to be considered in this community was the fact that people have a consonant discourse regarding the past and the future of the community, and conflicts do not surface easily.

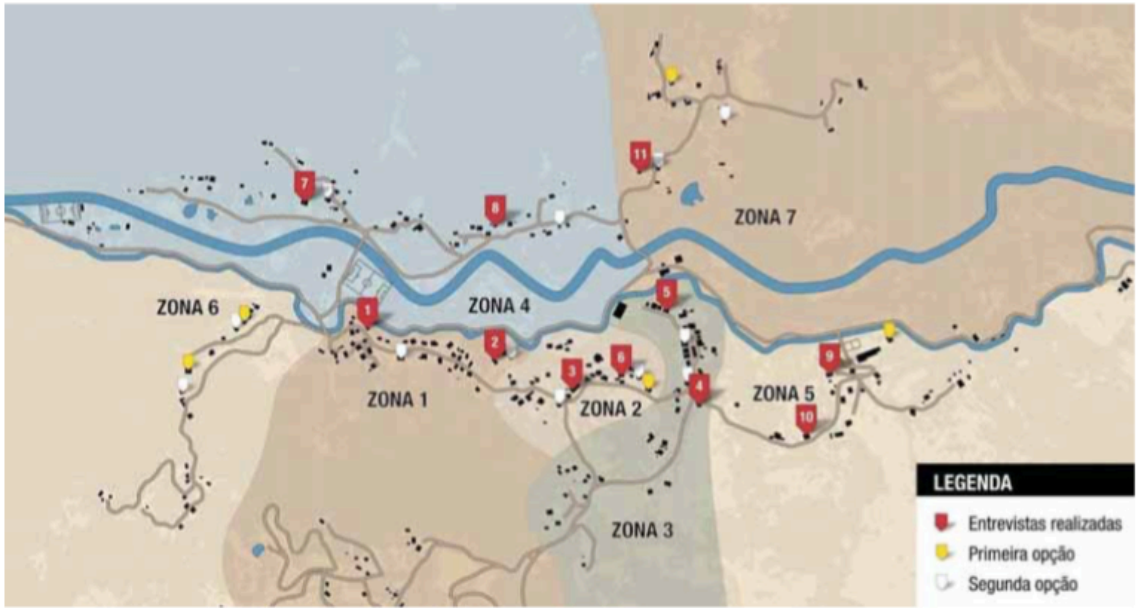


Figure 6: Map of conglomerates, houses chosen and interviews done in Santo Antônio do Salto. Source: Estevam Gomes (2013), Lagear collection.

In Santo Antônio do Salto, the interest was raised by the way women were responsible to jump-start the community when mining company Novelis, the largest employer in the region, decided to close after more than fifty years in the business. Different methods of field work were used, for the community is not as organised and its inhabitants were not used to the presence of researchers. Though very welcoming, they are avoidant of an outsider's interest in their mode of life. The first visit to the district happened in the occasion of the postgraduate module 'Urban Sociology' given by Profs. Baltazar and Frank Eckardt in 2013[63]. During the trip, semi-structured and unstructured interviews were conducted with the experts of the community. There were two other trips realised in 2013 in the scope of the research "Time-Museum", coordinated by Prof. Baltazar that aimed at understanding the socio-spatial practices and the social networks of the community[64]. For that, randomised house visits were done based on the method of conglomerates, in which the village was divided in 7 conglomerates according to the ramifications

[62] It is important to note the social control of access to the community. Due to that, the number of interviewees cannot be precisely presented. In more than one occasion interviews were realised with more than one person at a time. Full and exclusive interviews were conducted with Eliene, Élida and Rosalee.
[63] Besides myself, participated in the work the Postgraduate student Cleber Barreto and undergraduate students Lais Pizano and Rachel. In the module, we should identify possible "experts", people who, for their knowledge of the analysed subject, could contribute to our enquiries without necessarily having a formal specialisation.
[64] This part of the research was accomplished with the undergraduate students Estevam Gomes and Laís Pizano, to whom I have to thank for all the effort and support given.

of the main road, as well as number of inhabitants (). Altogether, 23 people were interviewed with the aid of a mapping exercise, thought to facilitate the understanding of the spatialised social networks.

At this stage of the research, it was clear that there was a difficulty to understand and critically approach relations of power on small communities without an ethnographic approach, which would not be feasible due to access, time and manpower limitations. In this sense, an ANT approach proved to be even more appropriate as a methodological way to draw actants and to establish the relationship between them.

The research in Pendeen was devised after most of the fieldwork in the Brazilian communities were already done and the raw data collected. The research was done in the framework of "Digital Neighbourhoods", coordinated by Prof. Katharine Willis in Plymouth University, where I conducted a one-year research visit. I contributed to the main research by using the same ANT approach to investigating the community. The village was chosen for the recent access to superfast broadband provided by British Telecom in the scope of the Superfast Cornwall governmental initiative. It was also chosen for the prominent role of the community centre The Centre of Pendeen in working as a digital hub for the community. Altogether four fieldtrips were conducted, and different methods were used in the community. Four semi-structured interviews were conducted with inhabitants of the village and members of the community centre. Questionnaires were applied in 'tea and cake' events organised by the research in the community centre, and later applied to a sampling in the village (to test against the data collected in previous occasions in visitors to the centre). Mapping exercises were also conducted to understand the extension of social networks of the inhabitants of Pendeen. The event "Link-up", in 2015, organised in the framework of ESRC – Festival of Social Sciences, connecting the Patchwork club in Pendeen to the Book club in St Breward, was also used to collect data through questionnaires, semi-structured interviews and observation.

As already mentioned, the data gathering and initial analysis of the communities followed Actor-Network theory (ANT) guidelines. ANT is best known as an approach to social theory in which not only human but also non-humans are also considered as participants in networks and socio-technical systems. Bruno Latour (1999), stresses that higher quality of ANT would be the ability to find the procedures developed by the actants in the individual process of building the world. Less known, however, is the proposal of the theory to investigate the mechanics of the power in such networks.

> If we want to understand the mechanics of power and organization it is important not to start out *assuming* whatever we wish to explain. For instance, it is a good idea not to take it for granted that there is a macrosocial system on the one hand, and bits and pieces of derivative micro-social detail on the other. If we do this we close off most of the interesting questions about the *origins* of power and organization. Instead, we should start with a clean slate. For instance, we might start with interaction and assume that interaction is all that there is. Then we might ask how some kinds of interactions more or less succeed in stabilizing and reproducing themselves: how it is that they overcome resistance and seem to become "macrosocial"; how is it that they seem to generate the effects such as power, fame, size, scope, or organization with which we are all familiar (Law 1992: 380).

The decision to employ ANT as a methodological tool to approach the case studies aimed at not overemphasising either physical or technical features related to the introduction of ICTs in rurban territories in the formulation of the networks and the analysis of the case studies. According to Latour (1996: par. 13), "[t]he notion of network helps us to lift the tyranny of geographers in defining space and offers us a notion which is neither social nor 'real' space, but simply associations". Somewhere else he explains that "it [ANT] is a theory that says that by following circulations we can get more than by defining entities, essences or provinces. ANT is not a theory of the social, it is a theory of a space in which the social has become a certain type of circulation" (Latour 1999: par.19).

Latour presents an abstract space of associations, and even though he seems to see positively the integration of ANT with the fields of architecture and urban studies (Latour and Yaneva 2008), in the latter space is still mostly seen as a stage for social encounters rather than an actant in the process (see for example, Murdoch 1998; Farías and Bender 2012). Nevertheless, space (as a non-human actant), just as Latour characterises things, besides being able to 'determine' and serve as a 'backdrop for human action', it can also "[…] authorize, allow, afford, encourage, permit, suggest, influence, block, render possible, forbid […]" (Latour 2005b: 71)

According to Latour, a great benefit of this approach (and co-construction of the network) by the observer[65] is the possibility of a temporary withdraw from structural assumptions surrounding the work of social research, once it allows for more attention to the relations found on site that are often neglected from a macro stance. For this research, it was through the careful construction of the networks that the structural power relations embedded in them were highlighted. The elements, relationships and relations of power that emerged in this empirical phase were then discussed in a Marxian framework again, closing the cycle of research showed in Figure 2. This methodological arrangement was considered the most suitable approach to deal with the problematisations at hand.

1.4 Organisation of the thesis

The thesis is organised in 6 chapters (Figure 2). The first two chapters present the Marxian-based theoretical framework. Chapter 2, entitled "**Error! Reference source not found.**" focuses on the global social level, investigating how the international division of labour is further influenced by technological development. It situates the rurban in the context of socio-technological peripheralisation, a process that informs and reinforces geographical peripheralisation. Chapter 3, entitled "**Error! Reference source not found.**", discusses the implications of the global in the urban level and critically investigates ICTs in the urban environment. It presents an excursion into the topic of urban screens that, for being the most visible collective ICT currently present in the urban, rightfully illustrates the implications of ICT development in cities. It aimed to situate the connections between socio-spatial arrangements and the development of ICTs in cities, for they often influence how the development and appropriation of technologies is trickled to smaller cities, and eventually, to rurban areas. The following two chapters explicitly shift to the rurban, by empirically presenting and analysing the case studies, their narratives and the resulting networks. In order to grasp the most elements as possible, an ANT based approach was devised. Santo Antônio do Salto and Pendeen are presented in chapter 4, entitled "Top-down introduction

[65] Although Latour uses the term observer in his work, it is difficult to think about researchers that use ANT as a methodological framework and consider themselves simple observers.

of the internet and the need of a fostering space for its collective use: the examples of Santo Antônio do Salto, Brazil and Pendeen, UK", as examples of top-down implementation of the internet and the context-specific unfolding in space. Chapter 5, "The role of ICTs in the enhancement of collective introduction of the Internet and the relationship to existing socio-spatial practices in Noiva do Cordeiro," illustrates how alternative socio-spatial practices may be essential for using the internet as means for social change. The last chapter, "The peripheral rurban: from global to the everyday and back again", gathers the evidence collected and analysed in the two previous chapters and translates these elements into a Marxian-based framework as means to expand the discussion of the implications of the internet for peripheral rurban communities in the context of extended urbanisation.

2 The global level: the role of ICTs in the current division of labour

2.1 Introduction

There is an established debate on the role of technology for development (and social transformation), focusing on the one hand on its emancipatory potential (Demo 2007b; Merrifield 2013b) and on the other on its contribution to the maintenance of the social relations of production (Lefebvre 1976; Dantas 2014b). Understanding with Henri Lefebvre that social relations are "those relations which are constitutive of capitalism and which are increasingly (and increasingly effectively) sought and imposed as such" (Lefebvre 1991b), it is possible to say that these progressively align with asymmetric technological development and appropriation, leading to renovated forms of labour division based on the access to (and ability to produce) information-capital and knowledge globally. In such a scenario, information and communication technologies (ICTs) have recently become prominent in the field of Political Economy as scholars investigate the juxtaposition of political and technological accounts. At least two important issues are focused: ICTs as the material basis for capital accumulation that results in a relative work economy established by technological innovation (Dantas 2011a); and ICTs as a means for communication between subjects and which appropriation of capital starts from the action of these subjects (Dantas 2014b; Fuchs 2010).

Less discussed is how this shift in the material basis through the implementation and development of ICTs and renewed forms of capital accumulation are being spatially enacted affecting the spatial configuration, mostly in cities. It is clear that the relationship between technological development and the production of space has already been pointed by Karl Marx and further explored by Henri Lefebvre (1976). Most recent Marxian approaches to this relationship focus on the changes in the urbanisation process (Brenner 2000; Monte-Mór 1994), regional relationships with local impact (Massey 2005), large infrastructural systems (Graham and Marvin 2002) and the shift in the relations of production (Harvey 2001), though the list is much longer than that. Nevertheless, when it comes to understanding how ICTs are being spatialised, studies focus less on their political dimension and fall into a deterministic approach to technology (Aurigi 2005b).

This chapter will delineate the basis in which the renovated patterns of centre-periphery dependence are being developed by presenting the discussion of the role of ICTs in the current division of labour produced in Political Economy. It attempts to bring the subject to the urban studies by focusing on the socio-spatial access to technology and the interrelation between the global and urban levels.

2.2 Global centres, local peripheries: the socio-spatial access to technology

2.2.1 Revising the centre-periphery discussion from the periphery: the socio-spatial access to ICTs

The centre-periphery dichotomy was introduced by the Economic Commission for Latin America and the Caribbean (ECLAC) in the 1940's, focusing on economic transactions involving these countries (Lemos 1988). From an economic perspective, until today it relates to specific spatial dynamics of peripheral economies that, due to a 'structural block' have a reduced capacity for accumulation. Maurício Lemos points out that

> While the different unities in the centre deepen their integration as means to create a unified economic space, the periphery deepens its relative disintegration, consolidating its traditional ties to the centre, that is, it only exists economically as a space embedded in the centre. […] The central question is, in reality, that the periphery characterises itself by its incapacity, vis a vis the centre, to globally integrate with the different groups of economic units (be them from the centre, be them from the periphery), that would be expressed, *grosso modo*, in its creative incapacity to export (Lemos 1988: 55-56).[1]

Still according to Lemos (1988), the definition of centre has been based on an economic perspective, while political and sociological questions have not yet been considered. In the field of Political Economy, the discussion of centre-periphery relations was weakened in the 1960s and 1970s, culminating in the Political Economy of Globalisation and other neoliberal theories—with the rise of concepts such as of *global cities*, in special during the 1990s. Furthermore, despite the increasing role of information as the central productive force during this time, the relating discussion in economic and political perspectives withered away during this time (Dantas 1999). In the 1990's this discussion was reinstituted in association with the then emerging ICTs, "but now completely disguised and misled by the mediatised and imposing ideological discourse of 'globalisation'"[2] (Dantas 1999: 218).

Also in the spatial sciences the expression centre-periphery never became a category for discussion, such as *place, scale, networks* or *territory* did, as noted by Bob Jessop et al (2008), being often discussed as territorial relations. As in Political Economy, especially in the 1990's, the importance of territory discussion gave way to the network discussion that had Manuel Castells as one of the most influential authors in the field with *The rise of the Network society* (1996)[3], reflecting the importance of the fast paced development of ICTs (as well as transportation technologies) for socio-spatial analysis even if not necessarily intending a *socio-spatial* discussion.

It is important to note, though, that centre-periphery conflictual relations had a central role for Lefebvre in the construction of his spatial theory. The author escapes economism to understand the power relations that are established in the capitalist mode of production, discussing it from a socio-spatial framework. This can be seen when the author defines urbanisation as an "articulation of central and peripheral social spaces that mediates the social order" (Kipfer, Goonewardena, and Milgrom 2008: 289). According to Lefebvre, "the centre attracts those elements which constitute it (commodities, capital, information, etc.), but which soon saturate it. It excludes those elements which it dominates (the "governed", "subjects" and "objects") but which threaten it" (Lefebvre 1976: 18).

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[1] In the original: "enquanto as várias unidades do centro aprofundam sua integração no sentido da construção de um espaço econômico unificado, a periferia aprofunda sua desintegração relativa, consolidando a sua tradicional vinculação ao centro, isto é, de só existir economicamente enquanto espaço inserido no centro. [...] A questão central, na verdade, é que a periferia caracteriza-se por uma incapacidade relativa, vis-à-vis o centro, de integração global com o conjunto das unidades econômicas (seja do centro, seja da periferia) que se expressaria, grosso modo, na sua incapacidade relativa para exportar".

[2] In the original: "mas agora completamente mascarad[a] e deturpad[a] pelo discurso ideológico mediático e impositivo da 'globalização'".

[3] We cannot say, though, that this spatial turn has been generalised among scholars. Some still question the power relations within a scale framework, such as Doreen Massey (2005), who discusses the power geometries in the context of accelerated technological development, among many others.

For the author, the interaction between centres and peripheries is so important that it supplants the dated city-countryside relations to participate in the construction of the *urban* (Kipfer, Goonewardena, and Milgrom 2008). The urban, the socio-spatial hegemonic dimension in capitalism, is a social product of the centralisation of the opposition forces that result from it, and is the level that mediates the macro (global) and micro (everyday). Centre-periphery relations happen in different scales, being embedded in the global and everyday social levels. In the global level, it reflects the social relations of production and institutional bodies, such as the State: the social relations of production in a global scale invade brutally local relations of production, producing dependent spaces around central ones: neo-colonial spaces (Lefebvre 1976: 18).

Lefebvre construes the concept of colonisation as the political organisation of territorial relations between centres and peripheries that mediate the everyday relations and the macro-structures of the global economy, distinguishing between 'distant' peripheries, associated with macro political economy that result from imperialism, and 'near' peripheries, associated with the everyday and present in the metropolitan regions (Kipfer and Goonewardena 2007).

In this conceptualisation of colonisation, Lefebvre reinforces the power dimensions inherent to the socio-spatial territorial organisation in capitalism: "Wherever a dominated space is generated and mastered by a dominant space—where there is periphery and centre—there is colonization" (Lefebvre apud Kipfer, Goonewardena, and Milgrom 2008: 294). Stefan Kipfer and Kanishka Goonewardena (2007: par. 43) alert for the openness of the concept, as Lefebvre brings *different varieties of colonisation* as well as *particular forms of determination*.

> The neo-capitalist version of 'colonization' crumbled under the pressure of resistance emerging from both "far" and "near" peripheries, ex-colonies and Parisian suburbs. But this "world-wide front" (of "women, youth, students, foreign workers, oppressed nations and regions, the (more or less engaged) working class") against the "planetary hegemony of imperial power" never consolidated and thus never managed to do more than question (rather than transform) "relationships of subordination-dependency- exploitation" in their "world-wide hierarchy".

What is essential is that current centre-periphery interrelations that are moulded in a global level unfold into the peripheral-everyday. Marcelo Lopes de Souza's (Souza 1997) questions regarding technological development become very important in this context.

> The new technologies (and the new spatialities, the new consumption patterns) stimulate creativity and conviviality of their operators and users—or, rather, coarsen the spirit and atomise the society? Modernisation truly contributes to a healthier life? Modernisation contributes to a broader participation of the population on decision-making processes, to stimulate a more democratic political culture, to form more conscious citizens, for a greater individual and collective freedom? (Souza 1997: 15)

2.2.2 Overcoming economism: the periphery as a political concept

The approach developed by ECLAC has already been highly critiqued, being the Dependency Theory, developed in the 1960s, one of the most expressive theories within the Political Economy scholarship. This theory questions the imperialist assumptions that "explained underdevelopment not only as a lack of capital, entrepreneurs and institutions (as did

modernisation theory), but also as the exploitation of developed countries and the dual character of the resulting underdeveloped societies" (Bresser-Pereira 2010: 27).

Dependency Theory, in special its superexploitation strand that had André Gunder Frank and Rui Mauro Marini as their main scholars, discusses a possible autonomy from dependent countries, part of a global periphery, of central countries[4],[5]. According to the theory, dependency in Latin America is the result of *superexploitation*—the decrease in the prices of the labour force below its real value (Martins 2013)—, an "internal national political translation of the specific conditions of capitalist development in the Latin-American periphery" (Almeida Filho 2013: 12). Among the different mechanisms that contribute to superexploitation, there are the increase in the working hours or intensity of labour with the resulting wearing of the worker, as well as a decrease in income or an increase in qualification without an equivalent increase in income (Marini 1997). These mechanisms limit national accumulation, allowing for a structural transfer of surplus value to the advanced nations. For Marini (Martins 2013), technological innovation, which initiates in the centres, and its introduction in dependent countries has an essential role in the process of maintenance of dependence.

> In these [dependent countries], foreign technology invades, concentrating in the luxurious consumer goods, drastically limiting the local response capacity. This occurs due to two factors: first technological asymmetries present in global economy and second the control of State in dependent countries by local capital segments that aim at extraordinary surplus; and to achieve it, it uses foreign technology, internalising the productive specialisation that is complementary to that established by the international capital in their original national States[6] (Martins 2013: 19).

The Dependency Theory lost academic ground from the 1970's[7], with the uprising of a repressive Nationalism in Latin America, culminating with a series of military coups and a theoretical-methodological retrogress as well as the establishment of endogenism and neodevelopmentism (Martins 2013: 31). In the 1990's, there is an advancement of neoliberal policies and globalisation, characterised by the

> progressive overcoming of national borders in the in the world market, in relation to the structures of production, circulation and consumption of goods and services, as well as to the change in the political geography and international

[4] Though not focusing on a socio-spatial discussion of development, Marini's theory is essential to understand the global context of the international division of labour and the resulting positioning of peripheral countries in the capitalist mode of production, and therefore, it anchors a more spatialised discussion of the role of ICTs in the everyday level.

[5] A second strand, most influent in Brazil was led by the sociologist and later President of Brazil Fernando Henrique Cardoso. It proposes that dependent countries associate with rich nations, rather than build their autonomy. For its reformist and resigned character, such a theory contributed to the revamping of neoliberal theories of economic growth in Latin America, and specially in Brazil, and therefore, will not be addressed in this text (for a critique to this strand, please refer to Marini (1997), Martins (2013), Bresser-Pereira (2010).

[6] In the original: "Nesta, a tecnologia estrangeira entra aos saltos, concentrando-se no segmento de bens de consumo suntuários, e limita drasticamente a capacidade de resposta local. Isto ocorre em função da conjunção de dois fatores: das assimetrias tecnológicas presentes na economia mundial e do controle do Estado nos países dependentes por segmentos dos capitais locais que buscam o lucro extraordinário e utilizam-se, para isto, da tecnologia estrangeira, internalizando a especialização produtiva complementar à estabelecida pelo grande capital internacional em seus Estados nacionais de origem".

[7] part of a process described by Marcelo Lopes de Souza as the weakening of the diverse strands that critiqued development as economic development, such as redistribution with growth, basic necessities satisfaction, ecodevelopment, endogenous development and bottom-up development (Souza 1997: 26)

> relations, social organisations, scales of value and ideological configurations which were specific in each country (Marini 1997: 248)[8].

Despite the implementation of a neoliberal agenda of economic growth and modernisation, Marini's ideas were resumed in the end of 20th century, when the contradictions of globalisation accelerated the formation of new peripheries within central countries—the so called *endogenous peripheries*—and with it, the dissemination of superexploitation of labour also in these countries[9]. In his late work, Marini (Marini 1997) considers the role of ICTs and their impact in the organisation and management of capital and of the labour force, in the context of urbanisation. According to the author,

> [the depth and spend with which these transformations present themselves] own, to a great extent, to the increase in the degree of urbanisation that characterises contemporary societies: demographic concentration accelerates knowledge transfer, standardises behaviours, homogenises thoughts. But foremost, they are the result of the revolution that is happening in communication, that increases the circulation speed of goods, services ideas and *primus intro pares*, the money, that buys almost all of these. (ibid1997: 250)[10]

Technological development results in a renewed international division of labour, with the formation of a 'globalised industrial army' defined by the degree of education, culture and productive qualification (Marini 1997: 259). Central countries, such as the USA, have been adapting to the changes in the production sector by investing in education to maintain a global hegemony through two fundamental strategies. Firstly, they guarantee the existence of a *technological monopoly* that aggravates the dependency of other countries. This, in turn, allows the control of industrial activities transfer to dependent nations by outsourcing less knowledge intensive industries to these nations. Secondly, they disperse the productive cycle as to impede the establishment of integrated industries (Marini 1997: 248). Below we can find an essential quote from the author to understand his line of inquiry.

> Dependent countries will no longer have access to technological knowledge developed from a relatively stable platform, as that of the end of the Second World War, but must deal with the rapid development of technologies that require considerable masses of knowledge investments in order to reduce the distance that separates them from the advanced centres. To that, cost with education should be added, an area in which our backwardness is enormous. All that aggravates the relations of dependence and threatens to reproduce, in planetary scale, the division of labour that created, in the past, the great industry, even

[8] In the original: "[…] superación progresiva de las fronteras nacionales en el marco del mercado mundial, en lo que se refiere a las estructuras de producción, circulación y consumo de bienes y servicios, así como por alterar la geografía política y las relaciones internacionales, la organización social, las escalas de valores y las configuraciones ideológicas propias de cada país".

[9] The North-South (or rather core-periphery) divide within developed nations became even clearer during the current economic crisis process, initiated in 2008. "This periphery was disrespectfully named PIIGS (Portugal-Ireland-Italy-Greece-Spain). Dominant classes of the North and the EU core, especially Germany, direct their crypto-colonial discourses (Herzfeld, 2002) against the South. They not only dictate ways of conduct and development in rigid neoliberal rules to countries seized by the debt crisis; they also stigmatize the whole European periphery in a quasi-Orientalist discourse as a 'burden' of laziness and corruption" (Leontidou 2015: 70-1). The divide is also made visible in the uneven access to ICTs (Leontidou 2015).

[10] In the original: e]llo se debe, en una amplia medida, al grado creciente de urbanización que caracteriza a las sociedades contemporáneas: la concentración demográfica acelera la transmisión de conocimientos, uniformiza comportamientos, homogeneiza formas de pensar. Pero, sobre todo, es resultado de la revolución que se está operando en materia de comunicación, la cual aumenta la velocidad de circulación de mercancías, servicios, ideas y, primus inter pares, de dinero, con lo que se compra casi todo eso."

> though now it requires from the new routine workers' degrees of certification much more elevated than those practised in the 19th century. It is inevitable, therefore—as it is the norm in dependent economies—that the changes that capitalism undergoes create between us much more acute contradictions. […] In other words, economy becomes a problem that must be solved essentially in the political field (Marini 1997: 260).[11]

Marini's late work situated globally the political processes that contribute for the realignment of dependency relations of peripheries from a production stance. His work only reinforces the importance to understand the interrelations between technological development and the urbanisation processes that lead to it. With effects to be felt at the everyday level (and with resistance at this level), it is in the global level that the power relationships are formed. The following section aims to address those power relations from the perspective of the Political Economy of ICTs.

2.3 The political dimension of ICTs to understand peripherality

To understand the role of ICTs in socio-technological peripheralisation while avoiding *technological determinism*[12], it is important to establish the political dimension of ICT development and use and its relation to economic, socio, spatial and cultural transformations in the 21st century. Increasingly, Marxian authors invest in understanding how ICTs have become the material basis for capital accumulation (please refer to Dantas 2011a; Lopes 2008; Redondo and Redondo 2003; Marini 1997) and the different roles information and communication play in this accumulation process to guarantee the maintenance of the status quo. Two identified forms of capital accumulation in which information and communication become central are important for this research. Firstly, there is the generation of knowledge from the appropriationß of general social production and the following strategy to transform it in a rare commodity (Dantas 2011). Secondly, there is the exploitation of absolutely unpaid labour produced in the communication networks (Evangelista 2007, Dantas, 2014, Fuchs 2010).

These two forms of accumulation play an important structural role in the uneven access to information and knowledge both in the global and in the everyday levels, reinforcing processes of socio-technological peripheralisation. Understanding them in the socio-spatial context become

[11] In the original: "Los países dependientes ya no tienen acceso a conocimientos tecnológicos concebidos sobre una base relativamente estable, como la de fines de la Segunda guerra Mundial, sino que deben hacer frente al acelerado desarrollo de tecnologías de punta que demandan masas considerables de conocimiento y de inversión, para que se pueda acortar la distancia que las separa de los centros avanzados. A ello se suma el gasto que requiere la educación, materia en la cual nuestro atraso se vuelve mayúsculo. Todo ello agrava las relaciones de dependencia y amenaza con reproducir en escala planetaria la división del trabajo que creó, en el pasado, la gran industria, aunque ahora se exija de los nuevos peones u obreros rutinarios grados de calificación muy superiores a los vigentes en el siglo XIX. Es inevitable, así, que — como es la norma en economías dependientes — los cambios por los que pasa el capitalismo engendren entre nosotros contradicciones mucho más agudas. [...] En otras palabras, la economía se convierte en un problema que debe ser resuelto eminentemente en el plano de la política."

[12] According to Sally Wyatt (2008: 168), technological determinism has two important aspects. "The first part is that technological developments take place outside society, independently of social, economic, and political forces. New or improved products or ways of making things arise from the activities of inventors, engineers, and designers following an internal, technical logic that has nothing to do with social relationships. The more crucial second part is that technological change causes or determines social change"

thus essential to discuss digital marginalisation[13] as a socio-cultural process (Baltazar dos Santos 2009) and possible alternatives for overcoming political poverty (Demo 1994).

2.3.1 Information and knowledge in the digital age: a Marxian approach to ICTs as the material basis for capital accumulation

Problematising information and communication as a social phenomenon is relatively new. It is only in the 1970's that information became a *dominant productive force* resulting from economic, social and political changes (Dantas 2011a). Nevertheless, at that time, communication did not receive enough attention in Marxian circles. With the rise of neoliberalism in the following years, Marxism itself lost ground in the social sciences, not having the chance to address the role of information and communication in the capitalist circuit. With the recent economic crisis of the late 2000's, there has been an increased interest in Marxian theories also in approaching information and communication. Some of the fields dedicated to it are Political Economy of Information, Communication and Culture (EPICC) and Critical Communication Studies[14]. These fields focus on understanding the role of communication in the 'structure of social relations and [...] social power' (Garnham 1990 in Fuchs and Dyer-Witheford 2013: 785)[15]. Although this process should not be considered an "Information Revolution" as described by Manuel Castells (2000),

[13] In this research the term *digital marginalisation* is used rather than *digital exclusion*. I agree with Pedro Demo (2007) that the current access to technologies might be better described as an 'inclusion in the margins' rather than a dichotomist position of being included or excluded.

[14] From this strand there is also a group of theorists that question the validity of Marxian thought with the emergence of new theories in Political Economy, such as theories of the economy of knowledge, of the immaterial labour, of cognitive capitalism, of the end of centrality of work (Marques and Raslan, 2014). For Rodrigo Moreno Marques and Filipe Raslan (2014), Andre Gorz is "an emblematic example of this theoretical turn". Gorz considers knowledge as the primary productive force of capitalism and defends the redefinition of key concepts of Marx's theory—value, labour and capital—in this new phase of the production process. Gorz explores the concept of immaterial labour—"work that produces an immaterial commodity, as a service, cultural product, knowledge or communication" (Hardt and Negri 2001 in Prado, 2004)—as an overcoming of the Marxian theory of labour value, understanding the job is to be measured not from the human workforce and the production time, but from the knowledge itself (Gorz, 2005). Other authors disagree with the position of authors who, as Gorz, understand information as immaterial labour, for information takes place from concrete living labour. (Dantas 2006 and Prado 2004). Per Eleutério Prado, "Marx conceptualizes concrete work, in its generality, as 'productive expenditure of human brains, muscles, nerves, hands, etc.' (Marx, 1983, p. 51). From this, it is of course possible to distinguish between manual and intellectual labour: the former is activity that materialises use values by employing mainly human bodily skills, especially their hands. The second is action that materialises goods and services that depend mainly on the inherent capabilities of the human brain. But Gorz speaks of material and immaterial labour. This distinction, however, presents a first difficulty since labour as such is always material and immaterial activity at the same time."(Prado, 2004: 03) *"Marx conceitua o trabalho concreto, em sua generalidade, como 'dispêndio produtivo de cérebro, músculos, nervos, mãos, etc.' (Marx, 1983, p. 51). A partir disso, é evidentemente possível distinguir entre trabalho manual e trabalho intelectual: o primeiro é atividade que materializa valores de uso mediante o emprego, principalmente, das habilidades corporais do homem, em especial de suas mãos. O segundo é ação que materializa bens e serviços que dependem, principalmente, das capacidades inerentes ao cérebro humano. Já o texto de Gorz fala em trabalho material e imaterial. Essa distinção, entretanto, apresenta uma primeira dificuldade já que o trabalho enquanto tal é sempre atividade material e imaterial ao mesmo tempo".* (Prado, 2004:03). For further discussion regarding the materiality of information, please refer to Dantas (2010), a critique of Lopes (2008) and Lopes's response (Lopes 2011)

[15] For a comprehensive literature review on the role of a Marxian perspective on the use of internet and the role of communication in capitalism, refer also to Fuchs and Mosco (Fuchs and Mosco 2015) and Fuchs (Fuchs and Dyer-Witheford 2013).

but rather a "twist of the productivist paradigm" (Lopes 2008: 26), the cycle of production of information becomes crucial for capitalist expansion[16].

> To assert, hence, the economic centrality of ICTs, information and knowledge these days is to recognise that capitalism—driven by its own crises and conflicts between capital and labour and no longer able to be valued in the industry sphere itself as before—was forced to expand itself for more intangible areas such as culture and services, or to see in the financialisation an excellent opportunity, albeit episodic, of easy gains. That the need of a new material base be supplied by the so-called Third Technological Revolution was a situational opportunity which the capitalists have fully benefited from and have encouraged. It is though, to the confrontation of these temporalities, diverse and many times ambiguous, that we should direct our attention if we are to grasp the relationship between technology and society[17].

Marcos Dantas defines information as an action-oriented vector that results from the interaction of agents able to perceive it and extract meaning from it. "It will be neither the object's nor the agent's attribute, rather there will always be a *relation* between them" (Dantas 2011a: 15)[18]. Information is a work relation, energy expenditure oriented to an end, and as such, it is an action guided by a knowledge given *a priori* (subjectivity-objectivity relation). Its result is a further built knowledge accomplished in the subject-object identity. Thus, information is always labour, and the resulting knowledge, a socio-cultural construction. Living labour, then, deals with machine interaction, and its use value rests in "significant codes of techno-science grasped at work, at school and through technical training, in social life" (Dantas 2006: 56)[19], it is imbricated in the mediated and immediate communication between human agents and non-human objects.[20]

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[16] Lopes (2008: 26-7) points out the importance of not forgetting that "today as before, it is a capitalist type of labour, essentially a wage-based labour, aiming at capital appreciation. To forget about this power relationship or to transform embryonic powers in historical reality is to relapse into fetishism". In the original: *"hoje como dantes, trata-se de trabalho de tipo capitalista, essencialmente trabalho assalariado, objetivando a valorização do capital. Esquecer-se dessa relação de poder ou transformar potências embrionárias em realidade histórica é recair no fetichismo"*.

[17] In the original: "Afirmar, pois, a centralidade econômica das TICs, da informação e do conhecimento nos dias atuais é reconhecer que o capitalismo – movido por suas próprias crises e conflitos entre o capital e o trabalho e não podendo mais valorizar-se, como antes, na esfera da indústria propriamente dita – foi obrigado a espraiar-se para áreas mais imateriais como a cultura e os serviços, ou a ver na financeirização uma excelente oportunidade, ainda que episódica, de ganhos fáceis. Que a necessidade, para tanto, de uma nova base material fosse suprida pela assim chamada Terceira Revolução Tecnológica foi uma oportunidade conjuntural da qual os capitalistas souberam tirar proveito e em grande medida incentivar. É, pois, para o confronto dessas temporalidades, diversas e por vezes ambíguas, que devemos dirigir nossa atenção se quisermos apreender as relações entre as tecnologias e a sociedade".

[18] In the original: "Não será nem atributo do objeto, nem do agente, mas será sempre uma relação entre ambos".

[19] In the original: "[a]os códigos significativos da tecnociência apreendidos na empresa, na formação escolar e técnica, na vida social".

[20] Productivity starts to be measured not only by the production time, but by the improvement of working time so that production comes close to the artistic and intellectual work (Prado 2004: 15-6): "what produces value is still labour, but this now, as concrete labour, has been transformed into creative, intelligent, cognitive labour, etc., i.e., productive activity that requires the mobilisation of knowledge, which, in turn, is part of the social productive force—the collective intellect of society. Thus, given the irrelevance of working time and the prominence of the quality of this time, science and technology become producers of 'value' through work. So even if the socially necessary labour time is suppressed as a measure of capitalist wealth it is still must be measured. The undue value remains dependent on a social process of reduction—but this is no longer a purely quantitative operation. In the original: "*quem produz valor é ainda o trabalho, mas este agora, enquanto trabalho concreto, transformou-se em trabalho criativo, inteligente, cognoscitivo, etc., ou seja, atividade produtiva que exige a mobilização de conhecimentos, os quais, por sua vez, são partes da força produtiva social – do intelecto coletivo da sociedade. Em*

> Living labour has become, by its very nature, a combined process of informational work articulated through random and redundant moments. That is, on the one hand, labour is not individual; rather it is collective, combined, interactive. Each worker, be them a scientist or a workman, is nothing but a link in a total system that is not contained within the limits of the individual firm, but includes a number of units of capital that, differentially, contribute for a total production of knowledge that can be made valuable and of use values that can be marketable by spreading work among themselves (Dantas 2006: 60).[21]

Two strategies for capital accumulation and their contradictory nature

To understand the role of information and communication in the process of capital accumulation, let us further develop on the two strategies presented above: the generation of knowledge from the appropriation of general social production and the transformation in rare commodity; and the exploitation of absolutely unpaid labour produced in the communication networks.

1. Generation of knowledge from the appropriation of general social production and its transformation in rare commodity

The first strategy worth noting is the transformation of information and knowledge in exchange value[22]. As an attempt to transform information and knowledge in exchange value, at least two tools are explored: the materialisation of information for consumption and the transformation of knowledge into rare commodities. These two will be further discussed in the following paragraphs.

To materialise information into a marketable commodity, capital arrogates general social production—"the arrangement developed in the early 20th century to appropriate information and to materialise it in the production of brands and ideas and in the production of consumption" (Dantas 2006: 60)[23]. By articulating these two productive moments that constitute informational production, random labour (*trabalho aleatório*) involved in research leads to the development of moulds, that, when replicated, will be commercialised (redundant labour). Technological development has led to the reduction of redundant labour time, as such a development has ensured the almost immediate access to use-values produced by random labour. Capital commercialises brands profiting from a political-cultural system that is based on images that represent life-styles, and in such a process, technology has the role of catalysing the most

consequência, dada a irrelevância do tempo de trabalho e a proeminência da qualidade desse tempo, a ciência e a tecnologia tornam-se produtoras de "valor" por meio de trabalho. Assim, mesmo se o tempo de trabalho socialmente necessário é suprimido como medida da riqueza capitalista, está tem ainda de ser medida. O valor desmedido continua dependente de um processo social de redução – mas este não é mais uma operação puramente quantitativa".

[21] Random labour can be understood as decision-making processes, while redundant labour is associated with dead labour-related processes that will ensure the removal of uncertainties related to the living labour. The latter is essential to "consummate the establishment of redundant information in their proper material supports" Dantas (Dantas 2006: 60). In the original: "o trabalho vivo tornou-se, por sua própria natureza, um processo combinado de trabalho informacional que se articula através de seus momentos aleatórios e redundantes 48. Ou seja, por um lado, o trabalho não é individual, mas coletivo, combinado, interativo. Cada trabalhador aí, seja o cientista, seja o operário, não passa de um elo num sistema total que, inclusive, não está contido nos limites da firma individual, mas abarca o conjunto de unidades de capital que, diferenciadamente, contribuem, repartindo trabalho entre si, para a produção total de conhecimento valorizável e valores de uso mercantilizáveis"

22 To understand different positions on how knowledge is transformed in value, please refer to Dantas (2010) and Fuchs (2012) as well as (Gorz 2010).

[23] In the original: "arranjo que se desenvolve no início do século 20 para se apropriar da informação e materializá-la na produção de marcas e ideias e na produção do seu consumo"

effective production trademarks and ideas. Figure 7 shows the most influential brands worldwide in 2011.

Figure 7: world's 100 most influential brands in 2011 sized by worth and influence in world market. Source: Dailymail (2011).

The influence of these brands in defining life-styles has become ubiquitous either through television—advertisement, merchandising during soap operas and series and during broadcast events—; internet—on the websites and by using the information of previous navigation patterns; or the urban space—ad-scapes being the most violent sort of branding in the everyday (discussed in 3.4). This movement establishes what Ivan Illich (1992) has described as the mutation of the *homo economicus* into the *homo miserabilis*, a product of the western development model that has been systematically applied in the South.

> Thus, the human phenomenon is no longer defined by what we are, what we face, what we can take, what we dream; nor by the myth that we can produce ourselves out of scarcity, but by the measure of what we lack and, therefore, need. And this measure, determined by systems analysis thinking, implies a radically new perception of nature and law, and prescribes a politics more concerned with the provision of professionally-defined requirements (needs) for survival rather than with personal claims to freedom which would foster autonomous coping. (Illich 1992: online)

A second tool is to transform knowledge into capital by ensuring the rarity of knowledge developed by living labour. Both popular and formal knowledge—main productive forces, but that in themselves do not have exchange value—can currently be more easily shared over the internet. Being unable to appropriate the knowledge itself, capital appropriates the *means of access* to knowledge, especially the means of access to the internet to prevent widespread dissemination (Dantas 2011a), in more or less successful and more or less explicit ways.

Control of the dissemination of information and knowledge has always been a strategy used by governments and the market to maintain the power networks into play at different scales both in the market and governmental spheres[24]. Cornelius Castoriadis discussed the relationship between communication channels and power relations inculcated to them:

[24] In the governmental sphere, the restriction information is strategy used by governments, such as China, which controls the material that can be accessed online. It is also worth remembering episodes of revolt in 2011 that

> channels of communication from the base to the summit transmit only information, whereas channels from the summit to the base transmit decisions (plus, perhaps, that minimum of in-formation deemed necessary for the understanding and execution of the decisions made at the summit). The whole setup expresses not only a monopoly of power by the summit—a monopoly of decision-making authority—but also a monopoly of the conditions necessary for the exercise of power. The summit alone has the 'sum total' of information needed to evaluate and decide. In modern society it can only be by accident that any individual or body gains access to information other than that relating to his immediate milieu. The system seeks to avoid, or at any rate it does not encourage, such 'accidents' (Castoriadis 1992: 56).

Clear attempts of internet control were SOPA (Stop Online Piracy Act) and the PROTECT IP Act (Preventing Real Online Threats to Economic Creativity and Theft of Intellectual Property Act) both from 2011. These were, at least initially, backed by a large portion of the entertainment industry, and sought to create tougher laws on the online flow of copyright material.

More subtly, large companies like Facebook and Google, in association with telecommunications companies, offer 'zero rating' services, where the operator offers the bandwidth for clients to access their services. By doing that, these companies guarantee the monopoly of the market at the expense of production of new software and applications by smaller companies or individuals. Secondly, the service selectively displays the websites and advertisers that have paid prime price for being in their first page, increasing the rates and limiting the online horizon (Murthy 2015).

Facebook has taken one step further, by not only bundling with internet providers, but also becoming a provider itself. Since 2013 it has been developing a project for providing internet for those two-thirds of the world who are still not connected through Internet.org. Currently, in India for example, at least 800.000 people have already subscribed to its services (Smith 2015).

Since its launch, it has received criticism towards its true intentions (Buchanan 2013; Costa 2015). Firstly, the initiative is a conglomerate of giants of telecommunications: Facebook, Ericsson, MediaTek, Nokia, Opera, Qualcomm, and Samsung, covering all the nodes in communication online: the world's largest social network, the world's largest wireless-network equipment maker, one of the world's largest phone makers, a browser company, a wireless-industry titan, and one of the world's largest and most successful technology conglomerates, respectively. "One can imagine a perfect end product of this partnership: a Nokia phone packed with a Qualcomm chip and Samsung memory, connected to Ericsson networking equipment running Facebook and the Opera Web browser. Everybody wins" (Buchanan 2013: online). Secondly, Internet.org will not tackle the need of infrastructure or devices, the main responsible for the lack of access in countries of the South, such as in Africa, where the disparity in access is even greater. According to Mark Zuckerberg, the founder of Facebook and Internet.org, "Over time we'll need to connect them too, but for now we don't yet have a plan for delivering internet to people who don't have phones or computers, so we're not covering that here". Nevertheless, the most important issue is that Internet.org is spreading a biased internet, not respecting net neutrality. Net neutrality means that every user should have access to the same internet, with no bias towards any specific sites (Murthy 2015).

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became known as the Arab Spring, when the Internet was cut down to prevent the protesters communicate with each other and share information. Even when relevant, this issue is not directly related to the research and will be not discussed.

2. Appropriation of free time and the absolutely non-paid labour by the capital.

A second form of capitalist accumulation which relies on information and knowledge involves both the appropriation of free leisure time and the exploitation of the *absolutely non-paid labour* by the capital (Fuchs 2010; Dantas, Canavarro, and Barros 2014). Two intertwining strategies can be identified. While the first consists in the extraction of work capital and surplus value through user's online practices—the exploitation of user-generated content; the second consists in the dispossession of the concrete labour of artists and other workers by limiting access and generating profit from users' access to the so-called 'walled gardens'—"business model[s] that chain the enjoyment of the semiotic use value (in its forms shows, video games, news etc.) to an access terminal connected to an encrypted channel of communication" (Dantas 2014b: 92)[25].

The exploitation of user-generated content means that "spaces and experiences are appropriated and thereby expropriated and exploited by capital to accumulate capital" (Fuchs 2010: 179). According to Christian Fuchs (2010), corporations such as Google, YouTube, MySpace, or Facebook do not only exploit their direct employees—responsible for "programming, updating, and maintaining the soft and hardware, performing marketing activities, and so on" (Fuchs 2010: 191—to obtain surplus value. They also need that the users produce content that is going to guarantee more visibility of the platform, and therefore, allow for higher advertisement rates. That is done through the availability of free-of-charge platforms. "While no product is sold to the users, the users themselves are sold as a commodity to advertisers" {Fuchs, 2010 #17). Advertisers also are granted premium advertisement space tailored according to the users' navigation and email history, such is the case of Gmail users.

It can be said that the use value of the technologies developed by major business corporations is in the cultural, economic and political action that these technologies allow. As the object of these specific actions is the language, it is language that becomes a source of value on the internet for the capital. For Dantas (2014b), this is a semiotic labour of which product is communication, interesting much more the act of communicating than the material support that might eventually support it. As such, the author reinforces that culture has become a direct object of valorisation: "culture […] much before even the internet, became directly economy. And economy, directly culture" (Dantas 2014b: 89)[26]. Cultural production has long been monetised through the payment of copyright to knowledge producers converting the use value produced by concrete labour to exchange value. With the internet, the material support alone cannot guarantee control of capital over access, as much content can be acquired through 'alternative' sources, often found in the edge of legality—as it is not possible to always identify the responsible parties for the management and distribution of the content. To overcome this shortcut in access, capital puts in place mechanisms such as 'walled gardens'. In so doing, large corporations reduce the time of communication between producers and consumers while conforming citizens to pay for services rather than join the available alternative sources, such as torrent sites, book databases, among others (Dantas 2014b).

Both forms of accumulation and their strategies reinforce the attempt of corporations to fully dominate the internet and therefore need to be discussed in the light of ICTs ubiquitous role in

[25] In the original: "um modelo de negócios que acorrenta o desfrute do valor de uso semiótico (nas suas formas de espetáculos, videojogos, notícias etc.) a um terminal de acesso conectado a um canal criptografado de comunicação".

[26] In the original: "A cultura […] muito antes de sequer saber-se da internet, tornou-se diretamente economia. E a economia diretamente cultura."

contemporary capitalism, as the use value of the technology made available is related to the cultural, economic and political action that these technologies allow (Dantas 2014b). This process leads also to a reformulation of the individual, not only as an online user, but also as labour force.

> [T]he employee is invested in the non-salaried character, becoming someone who must always be willing to improve their own work force, running all the risks inherent in maintaining this strength in good use condition, as a necessary condition in order to become exploitable by the venture capitalist (Prado 2004: 08)[27]

Access to knowledge and information becomes prime condition for individuals to prepare themselves to the globalised economy (Demo 2007b), establishing a process of individual struggle for capacitation and living conditions in the patterns of meritocracy and reinforcing the dependence relationships at the global scale (as presented in 2.2).

2.4 The need to go beyond the global level to understand the peripheries

2.4.1 How ICTs are being introduced in peripheries

Major corporations are being successful in implementing the consumer model (Feenberg 2012) and extracting as much surplus value as possible all over the world. But it is in the peripheries that this process becomes even more evident. Internet provision in these regions is seen mostly as a market to be explored, rather than a right. Companies provide low quality services with often high costs, and will only do so, when there is the possibility of profit. In the communities investigated for example, Santo Antônio do Salto has only one mobile provider mast, that provides poor 3G access, and broadband internet is almost inexistent; Noiva do Cordeiro inhabitants needed to mobilise their own means to buy a signal repetitor so that they can have mobile signal, and now also the internet; and Pendeen inhabitants suffer from many blind-spots in coverage in their community while affording broadband individually is hard.

This is also clear even in attempts to inward-outward initiatives, such as those developed in the ICT4D context. They tend to reproduce the dependence pattern already established in different scopes of daily life, by not incorporating the socio-cultural dimension of technology use. That may lead, on the everyday level, to collective disempowerment through a biased access to information. One example is the One Laptop Per Child project.

This project idealised by Nicholas Negroponte develops low cost, resistant, open-source computers for children living in the poorest areas on Earth (Figure 8). Regardless the best of intentions and despite being open-source, the project still tackles the lack of access to technology, whereas the lack lies in the access itself (Souza 2006a; Souza and Grillo 2009)—a skills, economic opportunities and democratic divide (Mosberger et al, 2003 in Demo 2007b). Technology provision, though welcome, is not sufficient to overcome the socio-cultural gap that reinforces the lack of access to digital technologies and increases the distance between those in the centre and those in the periphery of technological access (also refer to Baltazar dos Santos

[27] In the original: "[O] assalariado é investido do caráter de não-assalariado, tornando-se alguém que deve estar sempre disposto a se lançar no melhoramento de sua própria força de trabalho, correr todos os riscos inerentes à manutenção dessa força em boas condições de uso, como condição necessária para poder se tornar explorável pela empresa capitalista".

2009' where the argument is developed). Processes such as this result in the maintenance of political poverty, as opposed to organised citizenship (Demo 1994). Therefore, to not be short-lived, organised citizenship has to be developed in the base—by and with the oppressed. Currently, when knowledge is playing an even more important role, political poverty becomes also a result from a marginalisation process that finds in the digital divide one of its most striking aspects[28].

Figure 8: One Laptop per Child being used in Armenia. Source: OLPC (2016).

Digital inclusion strategies often mean including in the margins, that is, in the periphery of a society based not only on geographical connections, but also on digital networks; and where central groups define both the strong geographical ties and the rhythm of technological formal advancement. Digital and spatial networks are not watertight separate realms (Graham 2004; Sassen 2005), in a way that digital and physical (dis-)connections reinforce and reflect one another. Even if ICTs have the potential to provide alternative places for exercising citizenship, without organised citizenship and its offline, spatial dimensions, those digital territories would most likely be hierarchised by similar rules applied to the physical space.

2.4.2 The spatial dimension of networks: from centres to centralities, from peripheries to peripheralities

These new physical-digital networks create far more complex dialectical relationships between centres and peripheries than those lit by Manuel Castells in *The Rise of the Network society* (Castells 1996). For Castells, in the globalised world

> […] all societies to some extent are network societies because their dominant sectors and functions everywhere are connected to the global network of networks from where they obtain access to wealth information, and power. Furthermore, those who are not included in the networks are nonetheless defined in their existence by their exclusion and their drive to survive by creating

[28] For more extensive critique of the project, refer, for example to Kraemer et al (Kraemer, Dedrick, and Sharma 2009).

> alternative networks, be it the global criminal economy or networks of resistance to the dominant order (Castells 2009: IX-X).

If seen from a distance numbers show an increasing access to the internet and horizontal forms of networking (Castells 2007), at a closer distance, such access can reveal itself just as impairing, as it collides with the lack of access to the access. The problem is that, even when presenting local issues, the network society discussion is still framed within the global. The digital divide is then understood as an infrastructural issue and regarded as a technical system, in which access is statistically measured.

However, this approach fails to recognise its socio-technical aspects when it does not differentiate between stronger and weaker ties and does not question how literate people involved in the communication process are to enjoy the access. It, therefore, reinforces centres in the network: fixed points in a web that *determines* the flow of elements, thereby also defining the fate of peripheries. For peripheral regions, that often means fading in simplification processes implied in network visualisation with the consequent blurring of control processes imposed on them from centres. For researchers, it means mistaking the network as the object to be studied, rather than the relationships it is supposed to help unveil (Latour 2005b).

Digital marginalisation has to be spatialised, i.e., seen as a socio-technical process, it should be analysed as one of the juxtaposing elements of a network which configure centralities rather than determine fixed centres, in a movement similar to that proposed by Lefebvre regarding cities and urban space, as pointed by Andy Merrifield (2013b: 40-1)

> If one loses the right to the city, or voluntarily gives up that right, if one desists from thinking in terms of a solid "city" as an absolute, then one gains renewed capacity to forge a politics based on something else, something more open-ended and dynamic; riskier, perhaps, because it lacks a clear basis of a definitional space. Yet, this risky, open ended politics is more apt for our age of formless urbanisation and more attuned to a political landscape in which less contiguous modes of communication are subversive tools for organising new kinds of centrality and horizontal concentration.

For Merrifield, centrality is no longer being at the centre of things, '[it] calls out for people and acts, for situations and practical relationships' (2013:41). It is therefore never fixed, needing negotiation and mobilisation and reflecting an encounter of citizens. Currently, associated with ICTs and transportation technologies, space contributes to the definitions of centralities, and consequently peripheralities. Focusing on peripheries and the constant definition of peripheralities is essential, for digital connectedness does not mean places are necessarily networked.

2.4.3 The need to go beyond the global level: overcoming the dichotomy centre-periphery

There is a need to overcome the dichotomy centre-periphery, that as Souza points out, contributes to an "'idealisation' of advanced societies as the realm of fair competition and effective overcoming of permanent privileges […and] "the 'demonisation' of peripheral societies as the realm of corruption and enticement that allows their opposition to functioning rules which are fundamentally distinct from those in advanced societies" (Souza 2012: 46).[29]

[29] In the original: "'idealização' das sociedades avançadas como reino da competição justa e efetiva superação de privilégios permanentes" e "a 'demonização' das sociedades periféricas como reino da corrupção e do engodo

The existence of such a dichotomy allows for the naturalisation of what João Rua (2006) defines as asymmetric interactions between centres and peripheries.

> It is not possible to think the urban and the rural, the local and the global as polarities, rather as asymmetric interactions that should not silence the intense socio-spatial disputes that force permanent reconfigurations of the scales of action. The 'urbanised' territory, in a broader scale, in general, is related to domination spaces that impose their representation. In the local scale, these representations are also present in the asymmetric relationships that also prevail there. Nevertheless, it is there that resistance and alternative creations and/or survival strategies that can manifest ate themselves as re-readings of those more general movements that make contemporary space. The local and the general/global appear integrated through the scales of action (Rua 2006: 99).[30]

Seen as asymmetric, though, the interrelationship can be further nuanced and worked in the scale they pertain and in which specific dependence relations are established, so as to be discussed in the level they are felt the most—the everyday. Agreeing with Lefebvre on the importance of the periphery—both as social and spatial—to the reproduction of the social relations as well as of capitalist space, this chapter aimed at understanding how, at the global level, such relations are being imposed and refuted in a socio-technological framework and their political implications. The next chapter discusses how ICTs are being incorporated in the urban space to ensure the flow of capital, as means to understand how the global permeates the urban level.

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que permite sua oposição a regras de funcionamento fundamentalmente distintas das sociedades avançadas". Similarly, Marcelo Lopes de Souza considers that "a multi scalar thinking can even help the better perception of the true magnitude of the 'development challenge': if, on the one hand the 'dependists' have already demonstrated, long ago, that the 'underdevelopment' historically arises with the 'development', in the midst of capitalist expansion and of the process of conquest and colonisation championed by Europe, it is important to note, though, that 'developed countries' are far from constituting an island of social perfection surrounded by imperfection; not to mention in the constant challenge of a greater individual and collective autonomy and in the eminently anti-ecological character of the capitalist civilisation model, one has to consider the deepening problems such as unemployment and poverty in the 'third industrial revolution' and the transformation towards the production relations typical to the post-fordist mode of regulation (Souza 1996b: 16-17)

[30] In the original: "Não se pode pensar o urbano e o rural, o local e o global, como polaridades, mas como interações assimétricas que não devem silenciar as intensas disputas sócio-espaciais que obrigam a permanentes reconfigurações das escalas de ação. O território "urbanizado", numa escala mais ampla, em geral, está relacionado a espaços de dominação que impõem suas representações. Na escala local, essas representações também se fazem presentes nas relações assimétricas que aí, também, vigoram. Entretanto, é aí, que se processam os movimentos de resistência e de criação de alternativas e/ou estratégias de sobrevivência que podem se manifestar como releituras daqueles movimentos mais gerais que marcam o espaço contemporâneo. O local e o geral/global aparecem integrados pelas escalas da ação".

3 ICTs in the Urban Level: informational capital and space or how technological devices appropriate the urban space in the age of the smart

3.1 Introduction: ICTs in the urban level

In Lefebvre's construction of social levels, the urban has a decisive role as it mediates the global and the private levels, the distant and the everyday orders. As a mediator, the urban allows for a "superimposition and interlacing of networks of production and of communication channels, as a combination of social networks in everyday life, as places of encounter and exchange that are amenable to surprises and innovations." (Schmid 2012: 50). But for being a mediator, the urban might succumb from the pressures exerted upon it from both 'above' and 'below'

> In urbanized society, however, the urban level is in danger of being whittled away between the global and the private levels. On the one hand, industrialization and the logic of the global market produce a universal rationale shaped by technology, and thus a tendency towards homogenization. The unique traits of the place and its location thus seem to disappear. On the other hand, space is parcelled out and submitted to a corporate, individual logic. (Schmid 2012: 47)

Drawing from Lefebvre's theory, Christian Schmid (2012) highlights that cities are a spatial response to the social construction of what is urban, and such a construction is closely linked to the production of knowledge and the definition of power structures. If we are to agree with that, it is virtually impossible to discuss cities without considering the central role of ICTs in the current patterns of spatial development.

Such a role is being discussed and analysed in the last two decades in diverse academic fields, such as architecture (Baltazar dos Santos 2009), Urban sociology (Eckardt 2008), urban geography (Massey 2004) and urban studies (Graham and Marvin 2002) to name but a few. Specially in the end of the 1990s and beginning of 2000s, scholars have focused on the relationship between ICTs and urban space through different lenses, such as those working with cybercities (Graham and Aurigi 1997) or digital cities (Aurigi 2005a), as well as 'wired cities', 'intelligent cities' and 'sentient cities' (Kitchin 2014). Others focused on how large technical systems—among those, big communication infrastructure—came to shape our urban environment (Graham and Marvin 2002). Finally, some research society's response to the changes in communication brought by the development of ICTs, being *network society* and the work of Manuel Castells (2010) one of the most widespread concepts in the field. More recently, the creative and smart agendas are being implemented throughout the world in cities of different dimensions, while academics try to critically address the issues related to it. Even though the 'creative city' has been already scrutinised, it now associates with the smart city concept, still on the making, to revamp the role of capital in cities.

The goal of this chapter is to identify how ICTs and socio-spatial processes are being coupled in cities and to discuss the implications of this association for the citizens. To explore this thematic, it first highlights how capital appropriates the urban through the contemporary discourses above mentioned by using Bristol, UK as an example. It also investigates how informational rent associates with ground rent in creative strategies, exemplified by the study of urban screens, the most visible 'creative' and why not 'smart' products in the urban space. This investigation informs the overall research by unpacking the ways capital is encroaching space through technological development, and therefore influencing socio-spatial processes not only in large cosmopolitan cities, such as New York and Melbourne, presented through their famous Times and Federation squares, respectively; but also imposing itself onto smaller cities, by colonising

the imaginary of visionary stakeholders, such as the case of Congonhas, also presented in this chapter.

3.2 Mediatised urban space: creative, digital, smart?

3.2.1 Bristol is creative

In 'The rise of the creative class', Richard Florida (2004) advocates the need for urban planners to think of a new urban structuring process that uses creative forces for economic development. Since then, many urban planners around the world have adopted his method, transforming the urban space and providing the infrastructure to attract people who fit this pattern to emerging creative hubs. The 'creative city' approach is now widely spread (Malanga 2004; Krätke 2004; Peck 2005), and it is also fostered by national governments, institutions and by international organisations[31] for world recognition

> The new "creative city" policies make use of (sub)cultural milieus in their branding strategies and harness them as location-specific assets in the intensifying interurban competition. […]. At the same time, alternative youth and cultural centers, affordable housing, local exchanges, and self-managed, projects have also come under pressure and in many places given way to chic new designer stores, trendy bars, and expensive condos (Mayer 2012: 76).

Creative cities usually thrive when they invest on the three T's—technology, talent, and tolerance (Peck 2007). The strategies focus on cultural industries that will bring local economic development and urban regeneration (Griffiths 1995). To make it viable, Florida (2004) argues, urban space is adapted to attract creative workers, a new class that responds to the needs of a distinctive phase of capitalism that focus on the human being. Nevertheless, there are those urban theorists that see the creative city approach with scepticism,

> for such liberal-populist blockbusters on creativity and diversity offer little hope for radical urban theory, beyond small fortunes to be made by rebranding Bohemia or the occasional amendment of North American planning by-laws to accommodate a mosque here and a temple there in the "mongrel" suburb (Goonewardena 2012: 89).

These scholars highlight its neoliberal agenda that achieves urban regeneration by neglecting local needs and often leads to gentrification (Malanga 2004; Krätke 2010; Peck 2005, 2007; Brenner 2009), so focusing on the human being means focusing on specific classes that may work well within the capital framework. Peck reminds us that "no less significantly, though, they also work quietly with the grain of extant 'neoliberal' development agendas, framed around interurban competition, gentrification, middle-class consumption and place-marketing" (Peck 2005: 741).

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[31] The Brazilian Ministry of Culture, for example, invested some of Brazilian cities with the Creative city seal, as an attempt to include them in the international circuit of creative cities. This strategy is further fostered by Embratur, the Brazilian agency for Tourism (http://escoladecriatividade.com.br/2013/06/embratur-vai-ampliar-divulgacao-de-cidades-criativas/). In 2014, Curitiba just entered the UNESCO list of creative cities in the world http://www.curitiba.pr.gov.br/noticias/curitiba-e-eleita-para-a-rede-de-cidades-criativas-da-unesco/34976, http://en.unesco.org/creative-cities/creative-cities-map. In the UK, the 'Creative cities Initiative; created in 2015 also aims to define and promote UK creative cities internationally.

Often called little London for its emergence in the European scenario, Bristol has long invested in the media industry and high technology development. Until the 1980's, its strong economy was based on aerospace and finance services. In the 1990's, the national recession and the downturn on the aerospace sector led Bristol to focus on the creative industry (Griffiths 1995). Benefiting from the presence of one of the major regional production centre of the Public Broadcast Services (BBC), different stakeholders, such as the city council, Hewlett Packard and the University of West of England, joined to "'de-provincialise' the city and facilitate the emergence of a new image of forward-looking place" (Aurigi 2005b: 104), in the late 1990's Bristol became known as a 'digital city' (Aurigi 2005b) and also the 'second media city' in UK (Bassett, Griffiths, and Smith 2002), only behind London.

Cultural led development contributed to the economic recovery of the region. The investments in culture related activities paved the way for the city to continuously explore its potential as a 'creative city' and it currently features as one of the most creative cities in UK. "[It] is a great place to do business, it is strong in digital skills. It's also a great place to live and do this kind of work—it is a vibrant creative hub" (Blackwell 2014: 04). Bristol today offers 1,3 and 1,2 the UK average jobs in the creative industry and high tech industry, respectively (The Drum 2015).

If on the one hand, creative Bristol brought economic growth to specific group, already in the late 1990's, even before the results of Bristol strategy for cultural development could be fully accessed, concerns about the focus on property development were raised:

> [g]iven the continued collapse of public funding sources for urban renewal in the UK (notably the Urban Programme and City Challenge-recently consolidated into the Single Re- generation Budget) it is hard to avoid the suspicion that the cultural strategy may come to be used essentially as a vehicle for attracting private sector funds for the redevelopment of underused sites in the city centre, and that wider cultural development issues may become secondary. In other words, there is a possibility that, under certain configurations of balances of forces at work, the support and goodwill that emerged around the cultural strategy could lead to it (and the partnership arrangements cautiously constructed to carry it forward) being used as a smokescreen, or legitimizing device, to conceal a harsher property development agenda, whatever the original intentions of its authors and sponsors. (Griffiths 1995: 264)

In fact, a study carried out in 2005 shows that the post-recession urban residential development in the area focused on high density real estate developments in central Bristol rather than in its suburbs to maximise the profits for corporations. Little social housing was made available in those areas, despite UK national policy. Furthermore, there was little provision of community facilities and infrastructure, such as schools, health, and welfare and communal spaces. Instead, focus was given to elements that create a 'stylish city living', such as squares, boulevards, and vistas (Boddy 2007). This process of gentrification targeted specific consumers, allowing for "strategies of middle-class reproduction in preserving social distinction" to occur also in the city centre, as a way of reproducing social capital altogether (Bridge 2007: 32). The issue of housing above presented only depicts a much larger problem, the sustained poverty in some of the areas (even included in the 10% poorest in UK), as the 'Bristol – ambitious about fairness' report shows (Commission 2014).

3.2.2 Creative goes smart, Bristol is now smart: a 'Smart City is a Smart Connected Creative City'[32]:

Robert Hollands (2008) highlighted the similarities in smart and creative discourses, especially in regards to the use of ICTs in arts, culture and media. As such, the creative city agenda adjusts itself to the smart city one, for its similarities in objectives and tools (). Some authors regard it as the 3.0 (creative) city (Carta 2012, Landry 2016).

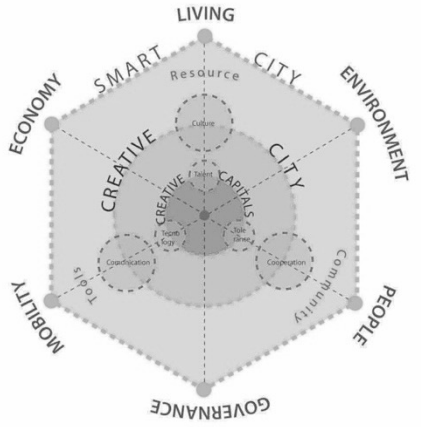


Figure 9: The smart city and creative city agendas, Maurizio Carta (2012)

Robin Kitchin defines 'smart cities', term now used in the academia, business and government, in two different ways. It firstly encompasses both cities which are "increasingly composed of and monitored by pervasive and ubiquitous computing" and, secondly, those "whose economy and governance is being driven by innovation, creativity and entrepreneurship, enacted by smart people" (2014: 01). For the author, while the former presents a more technocratic perspective, the latter focuses on how such human and social capital can be enhanced by ICTs[33].

Though this last definition of smart cities is quite sensuous[34], it is arguable whether these two approaches produce clear different outcomes. Firstly, both still prioritise data capture that lead to top-down, technocratic governance (Kitchin 2014); the smartness of a city is measured through a series of technical requirements that will, hopefully, improve urban life. Secondly, smart cities, as a fashionable subject, tends to reproduce a "conservative and depoliticised understanding of 'culture', in which the latter appears deprived of a consistent or clear connection with power relations, the interests of classes and groups, and the (re)production of the material world"

[32]According to SPECIFI project "Focal areas that Smart Cities try to overcome are the reduction of pollution, traffic, or crime, and the introduction of models for public data. However, it is SPECIFI's guiding principle that Smart Cities need to go beyond upgrades related to control tasks and public data. They can only become a success if they also become Smart Creative Cities, by employing open, Future Internet infrastructures to become thriving centres of arts, media and leisure". http://www.specifi.eu/about/objectives#sthash.Ot8VGB4d.dpuf, last accessed 20.04.2016

[33] It is not the goal of this research to exhaustively research 'smart cities'. Though gaining attention in the academia, industry and governments for the last fifteen years, there is a building body of research that analyses the topic. For a historical account of the smart cities, please refer to (Shelton, Zook, and Wiig 2015). For a critical perspective, please refer to Kitchin (2014), Fernandez Gonzalez (2015), Greenfield (2013), Hollands (2008). The focus will be on understanding how the smart city discourse, coupled with the creative city one impacts on the urban level, exemplified by Bristol.

[34] This definition also aligns with the concept of 'human smart city' (Oliveira and Campolargo 2015).

(Souza 2012: 316). Finally, the smart city agenda, just as the creative city agenda, still functions under a neoliberal agenda, that prioritise market led solutions for urban development (Kitchin 2014, Paskaleva 2011). As Neil Brenner and Christian Schmid (2015: 157) point out,

> Contemporary discussions of 'smart cities' represent an important parallel strand of technoscientific urbanism, in which information technology corporations are aggressively marketing new modes of spatial monitoring, information processing and data visualization to embattled municipal and metropolitan governments around the world as a technical 'fix' for intractable governance problems (Greenfield 2013; Townsend 2013). In the current context, technoscientific aspirations to reveal law-like regularities within and among the world's major cities often serve to naturalize the forms of socio-spatial disorder, enclosure and displacement that have been induced through the last several decades of neoliberal regulatory restructuring and recurrent geoeconomic crisis (Gleeson 2014). Despite their more elaborate methodological apparatus and their capacity to process huge data assemblages, these technoscientific urbanisms replicate, and indeed reinforce, the basic urban age understanding of cities as universally replicable, coherently bounded settlement units. The law-bound understanding of urbanization it embraces is used not only for epistemological purposes, to justify a universalizing, naturalistic research agenda, but as part of a broader technoscientific ideology that aims to depoliticize urban life and thus 'to assist the cause of sound management' (Gleeson 2014, 348).

***

The neoliberal character of such an approach becomes clear when investigating Bristol[35] that now accumulates both titles of creative and smart. It is currently the second smartest city in UK for its "integration of technology into a strategic approach to sustainability, citizen well-being and economic development" (Woods and Bloom 2011: 10). 'Bristol is open' and 'playable cities'[36], two current projects being implemented in Bristol give a dimension of how these strategies are being exploited in the city.

Bristol Open Programmable City vs. city-as-a-service

Bristol is open is a joint venture between University of Bristol and Bristol City Council and aims at the collaboration between technology, media and telecommunications industry, universities, local communities, and local and national government, towards the creation of what they call an 'open programmable city region'[37]. One of its research arms is 'Open programmable city' (Figure 10), that, according to its managing director Paul Wilson, is a reflection of the 21st century being 'the century of the city' and the resulting need to design cities to embed the richness allowed by new forms of (digital) networks.

[35] This is not to say that there are examples of ICT appropriation of technology in the urban space that lead to non-neoliberal outcomes. One interesting example is the account of Lila Leontidou (Leontidou 2015) of the counter-hegemonic use of internet that led to mobilisation in Mediterranean during the 2000's international crisis.

[36] This discussion is based on the work produced within the framework of the CONFAP/Newton Fund project called "Augmented urbanity and smart technologies: how 'smart' are our cities becoming", coordinated by Rodrigo Firmino (PUC-PR) and Simon Marvin (Durham University), and the reflections from the Plymouth Team (Prof. Alex Aurigi, Prof. Katharine Willis and myself). Nevertheless, any material produced here is my full responsibility.

[37] http://www.bristolisopen.com/about/

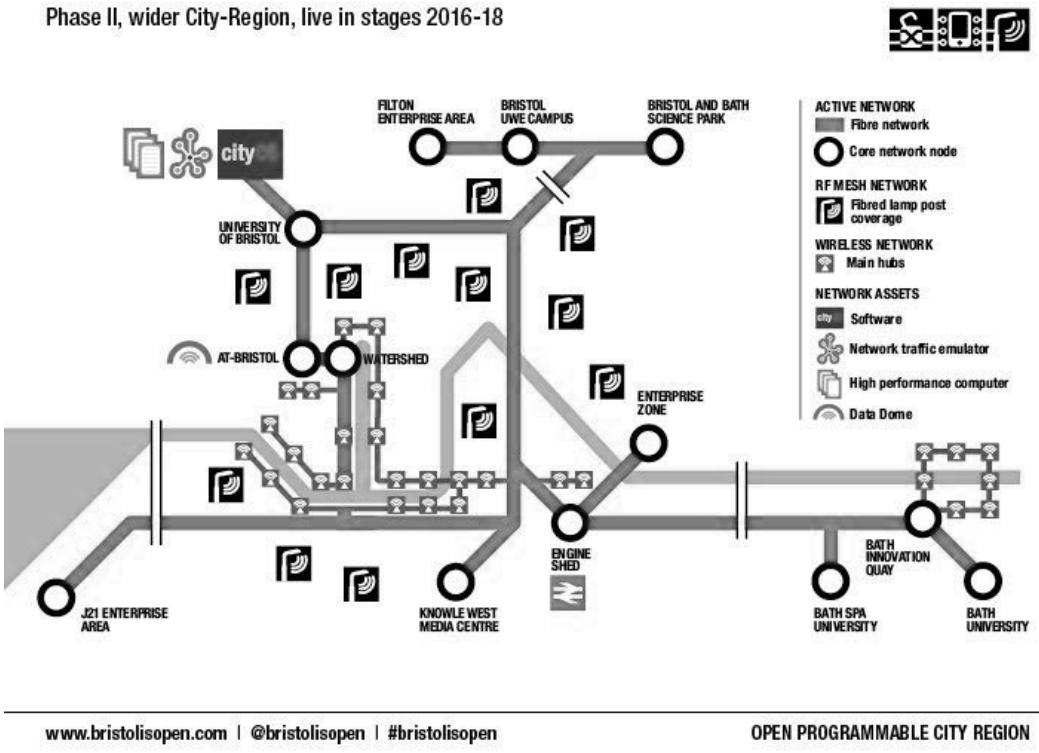


Figure 10: One of the implementation stages of Bristol is Open, with a focus on infrastructure. Source: Bristol is Open (2015).

For Wilson, for the city to become open-programmable, there is a need to 1. increase connectivity, 2. engage people and 3. engage different business. The aim is to provide a self-service approach to services, by providing a gridded network all around Bristol, with transposable nodes and option for remote control.

The underlying notion of the project is for Bristol to offer a 'flexible fluid playground' where companies and institutions worldwide can experiment smart solutions in Bristol, by re-programming it as wished before the intended solutions are implemented in their original locations. Bristol is open bets on the possibility to design the city-as-a-service, through the establishment of a CityOS and tailored packages of infrastructural access exclusively for research and development projects. All data gathered from the sensors installed in the centre of Bristol will be made available in the website Open Data Bristol[38].

> Those principles have been defined by terms like "programmable", "open", "playable" city, all of which refer to a fundamental dimension of interactivity that is seldom present in official speeches. Of course the word "interactivity" is obsessively repeated, but in pragmatic terms, most part of time referring to simple channels of communication, scheduling services, or opinion polling, entirely controlled by the government (Holanda, in Internal report, p.6)

Bristol is open is currently presenting two main strategies for citizen's engagement. The first one is the 'citizens' sensor box'. Instead of installing infrastructure boxes as external objects to people's everyday, they will be assembled, managed and repaired by the community and placed at eyesight. The idea is that, by making them visible, citizens will not feel surveilled. It is

[38] https://opendata.bristol.gov.uk

reasonable to say that the initiative is more like a way of engaging the citizen to accept technology by vaguely 'appropriating' it, rather than giving them a true voice of which and how technology is welcome.

The second strategy is the open data project where all data collected in the city is made available online. Open data access, although interesting (and why not say, necessary) is still a long way to being even readable (or useful) to the disengaged citizen. Open data will probably empower those already engaged, but a political involvement goes beyond having access to information, it implies understanding the implications of the data collected. The question that remains is how to involve the disengaged citizens, and 'Bristol is open' does not seem to have tackled this issue yet.

Playable cities: an anti-smart agenda?

Playable city[39] is one of the projects from Watershed[40], a social enterprise focusing on film culture and digital media in Bristol. Described by Wilson as an anti-smart initiative, it brings many projects that engage people, the city and digital technologies involving artists, governmental instances and academics. The initiative aims to address "citizens with agency and imagination in space" working as 'a framework to think differently about the city, generating a social dialogue by creating shared experiences through play'[41].

Figure 11: Shadowing Project, by Playable City, 2014. Source: Playable City (201-).

One of the projects is Shadowing, carried out in 2014 (). For this intervention, the city's lights were equipped to record and play back the shadows of the people that passed underneath it, bringing elements with which the next passers-by can interact within the space (Playable City 201-).

The urban interventions promoted by 'Playable cities', such as Shadowing, though aiming to involve the citizens in engaging activities, are not powerful enough to question the economic driven smart city agenda. In fact, it seems too ambitious to claim an anti-smart position, when most of the interventions produced are very punctual and have no lasting effects in the space/citizen relationship in the long run. Furthermore, as it often happens with urban

[39] http://www.watershed.co.uk/playablecity/overview
[40] http://www.watershed.co.uk/about/about-us
[41] http://www.watershed.co.uk/playablecity/overview

interventions in the urban space, there is no methodology to measure and critique them in regards to the breadth of technology ubiquity in Bristol. It is not known whether these initiatives could, in fact, empower individuals to become "citizens with agency and imagination in space".

3.2.3 Smart cities for whom?

The lack of association between Bristol is Open and Playable Cities illustrates how the smart city agenda is being pushed in urban centres, where even though local initiatives can be spotted, there is a prevalence of top-down mega operations. On the one hand, 'Bristol is open' is a very ambitious project, encompassing different sectors of civil society, and it relies on a series of labels that sell the image of a green, sustainable and digital city. There is a strong focus on economic development and systematisation of the grid that grant the citizens with a marginal role in the 'city-as-a-service' model. On the other, initiatives such as 'Playable cities' offer fun interventions that play with digital technologies and the urban space. Nevertheless, they do not yet empower citizens towards a more active role in the 'open-programmable-city'. It is evident that there is little convergence among them. Furthermore, genuine grassroots initiatives are still very rare, and most of what is depicted as bottom-up is still very innocuous. The research on Bristol raised three main issues: the deterministic approach towards the technical solutions, the exclusivity of the smart agenda and the different degree of importance of actors, further developed below according to Aurigi, Willis, and Melgaço (2016).

Firstly, technical solutions are based on reconfiguring existing assets as means to attract investors and innovators based on economic development goals. Bristol is de-contextualised when it is seen as a neutral testbed for other places to test their technological solutions, and socio-cultural singularities of the cities are flattened in the process. The focus on infrastructure limits the breadth of initiatives, and the whole Bristol is Open becomes a series of black boxes for its inhabitants. The artistic interventions, on the other hand, allow for some degree of interaction with the black box through fun, but not necessarily its de-codification, and more importantly, its re-codification. In both cases, technology becomes central rather than people, even when it is intended otherwise.

Secondly, the definition of a smart agenda (boosted by the previous creative one) grants the corporative bodies the opportunity to experiment on the physical space, but not experiment with the local community, as a co-production and shared learning approach. Even in 'Playable cities' citizens are given "permission to play" in particular (often prefigured) ways.

The role of the citizens brings to the third issue raised: the role of the citizen in the initiative. Citizens are rendered a supporting role in the narrative being constructed in the city, as they are considered service-receivers or an audience. Some of the services envisaged do not target the local needs of the population. Bristol is open

> seems to be open only in certain, commercial or semi-commercial directions. As citizens are considered end-users of services, or an audience to seduce, and do not engage with the production of data, they can end up disengaged from the political and social spheres of technological development. Some of the service envisaged will not even directly impact on citizens in their everyday, as it is mainly outward-oriented, aiming at renting tech real estate and establishing Bristol's position as a global player" (Aurigi, Willis, and Melgaco 2015).

The initiative does not focus on the social, implicating in a trickledown effect to benefit the citizens. In this case, reinforcing a 'digital' vocation means the redirection of public investments in smart technology to generate private sector innovation (and profit). It illustrates that

> technoscientific aspirations to reveal law-like regularities within and among the world's major cities often serve to naturalize the forms of socio-spatial disorder, enclosure and displacement that have been induced through the last several decades of neoliberal regulatory restructuring and recurrent geoeconomic crisis (Brenner and Schmid 2015: 157)

Bristol illustrates how technoscientific approach to urban planning and development is leading to a focus on the private section. The following section will further develop how, in the context of creative and smart cities, informational rent associates with ground rent, to favour new patrons—those retaining information rights.

3.3 Informational rent is associated with ground rent: Times Square and Federation Square

3.3.1 Creative smart cities meet collective symbolic capital

As the previous session aimed to highlight, 'digital', 'media', 'smart' and 'creative' are adjectives that define cities that, essentially, attempt to market themselves by exploring information and knowledge produced under the flags of culture and technological development.

Nevertheless, as David Harvey argues, there is a strong link between the increasing value of cultural production and ground rent, through the production of collective symbolic capital (Harvey 2001). In his article "The art of Rent", the author refers to the work of Bourdieu (symbolic capital) which is applied to individuals to define collective symbolic capital as "special marks of distinction that attach to some place, which have a significant drawing power upon the flows of capital more generally" (Harvey 2001: 103). The commodification of culture reinforces monopoly rent extraction as social actors control and foster cultural activities and exploit those 'desiring' to use it. In the process, the land itself is also traded upon, further generating monopoly rent.

Harvey furthers his argument highlighting that such urban endeavours need the provision of public investments for inter-urban and interregional competition, thus being deeply spatialised. Consequently, it is a mistake to ignore landed capital and the long term investments that are emplaced in the process, especially because those will require further investments to ensure that given strategy remains successful over time, and that the cycle of reproduction of capital within the city is maintained. Furthermore, the public investments used to attract external sources of fund will benefit specific groups in detriment to others and there is no way to assure that the private investment will remain. In the words of Robert Hollands (Hollands 2008: 314)

> This is no less true for the smart city than it was for the industrial, manufacturing city. Investment in ICTs, human capital, social learning and smart communities, while seemingly laudable aims for any city or urban region wanting to regenerate, also holds no guarantees. Public– private partnerships and investment in these areas may in fact backfire, as information technology capital may flow elsewhere depending on what advantages are available to aid further capital accumulation.

In the same vein, Matteo Pasquinelli (2010: 05) highlights how contemporary forms of gentrification are linked to real estate speculation and cultural production. According to the author,

> in particular, at the twilight of the society of the spectacle, a dense material economy is discovered at the core of cultural production. Debord's controversial aphorism can finally be reversed: "The capital is spectacle to such a degree of accumulation that it becomes a skyline of cement". After decades of parallel evolution, two strata of recent history have converged in a unique dispositif: the urban revolution (as Lefebvre described the city in the 1960s, a motor of autonomous production and capital accumulation) and the cultural industry (as the Frankfurt school inaugurated the transformation of culture in business and 'deception'). The name of this newborn chimera is 'creative cities' — an asymmetrical chimera, as the mask of culture is used to cover the hydra of concrete and real-estate speculation. The chimera of cultural cities is a complex machine, no longer based on the opposition between high and low culture that was central to the Frankfurt School canon of the culture industry. Specifically, culture production is today a *biopolitical machine* where all aspects of life are integrated and put to work, where new lifestyles become commodities, where culture is considered an economic flow like any other and where, in particular, the collective production of imaginary is quickly hijacked to increase the profits of corporate business.

Added to the cultural dimension, digital technologies further contribute to the commodification of the urban space. That is certainly the case of Digital Out of Home technology (DOOH) that, more and more, has gained space in cities around the world, with the promise of providing a place for excitement and novelty.

Nevertheless, what is at stake is much more than selling new experiences in the model of the creative city. It is the reproduction of capital through technological innovation and the embedded fetishisation of technology. Harvey (2003) believes that the fetish of technology is established by creating fantasies, which are conveyed through advertisements and 'other technologies of persuasion'. Those, in turn, transform the consumer in a 'passive spectator of the spectacle'. The author further develops his arguments drawing from Guy Debord's (2012) argument that technologies of representation and communication play an important role at endless capital accumulation through manipulation of consumer desires. For Harvey, this is more so in 'affluent classes living in privileged territories', as these groups fail to "register, let alone react to, material threats and dangers in a socially and politically cogent way" (Harvey 2003: 17).

In that sense, a double fetish can be observed by the use of DOOH in urban spaces under the pretence of them being a cultural manifestation of the 21st century. Firstly, the fetish of the technology itself and secondly, the fetish of the urban experience provided by such a technology. The latter reinforces the process of reproduction of capital through the production of space, already denounced by Henri Lefebvre in the 1970's (Lefebvre 1991b, 2003).

Moreover, the fetishisation of technology and of the urban space enables the uncritical spatialisation of the exploitation of informational rent (as discussed in 2.3.1), especially since the turn of the millennium. In the case of DOOH, this process unfolds as information and knowledge (though it may be argued that it is more of the former than of the latter) are conveyed in a material support that is monopolised by a handful of corporations. As a result, their presence qualifies the urban space, thus producing differential ground rent. Technology functions as the

modern "conditions which permit enhanced future rents to be appropriated" through land (Harvey 1982: 21)[42].

The section that follows critically illustrates the strategy of coupling informational rent to the ground rent by presenting Times Square, in the US and Federation Square, in Australia. The former was chosen for its importance in setting up the scenario of using DOOH in the urban space—opening up the everyday experience to media, with the implementation of Spectacolor (Figure 12) in the mid 1970's (McQuire, Martin, and Niederer 2009a). The latter, for its high influence in contemporary strategies that couple public spaces and digital technology (Brennan, McQuire, and Martin 2009). Though seemingly different at their origin, both squares respond to the capitalist appropriation and privatisation of public space by providing an exciting, technological experience.

Figure 12: Jenny Holzer. "Truisms," 1977–79 in the Spectacolor electronic sign, Times Square. Source Holzer (n.d).

[42] It can be said that DOOH reflects the contemporary discussion of ground rent proposed by Harvey: "Landowners can coerce or cooperate with capital to ensure the creation of enhanced ground rents in the future. By perpetually striving to put the land under its 'highest and best use,' they create a sorting device which sifts land uses and forces allocations of capital and labor that might not otherwise occur. They also inject a fluidity and dynamism into the use of land which would otherwise be hard to generate and so adjust the use of land to social requirements. They thereby shape the geographical structure of production, exchange and consumption, the technical and social division of labor in space, the socio-economic spaces of reproduction, and invariably exert a powerful influence over investment in physical infra-structures (particularly transportation). They typically compete for that particular pattern of development, that particular bundle of investments and activities, which has the best prospect for enhancing future rents. (Harvey 1982: 21-2)

3.3.2 Times Square and Federation Square: the association of ground and informational rent

Times Square: corporate space for an international class

New York is one of the most dynamic cities in the world. One of its most iconic spaces is Times Square, build in the end of 19th century as a business and real-estate speculation for entertainment. The name of the square was given because of the relocation of *The New York Times* headquarters. "Times Square was, in short, created as a representation of everything that could be commercial, gaudy, promotional and speculative in the political economy of place construction" (Harvey 2012: 17).

The establishment of Times Square as such is the result of a 'private dream publicly shared' and was made possible through the dispossession of important social actors inhabiting the square at that moment: squatters were displaced, prostitution fought hard. Hotels and brothels were closed (Figure 13). It was in that moment that there was the shift from participation to speculation in the Square (Senelick in Makagon 2004).

In fact, for Harvey, until the 1950's and before its decline, Times Square became the heart of New York, an 'authentic place of representation' despite its character of speculation and commodified spectacle. A different sense of community was built there. The author notes that "community in this instance was not shaped by face-to-face interaction: it was achieved by the act of a common presence in the face of the spectacle, a spectacle which was shamelessly about the community of money and the commodification of everything" (Harvey 2012: 18).

Figure 13: New York's Times Square in the 1950's, image of the film "The Glass Wall". Source: The Bleat (2013). Figure 14: New York's Time Square today. Source: Huffington Post (2014).

In the 1990's, a major renovation of the area responded to a general view of the city that public spaces should be improved through consumption, and led to the second wave of gentrification (Smith 2006). It was marked by the privatisation of the Square, which is now controlled by Times Square Alliance, a partnership between government and local businesses (though they are more global corporations). This privatisation process began with a second wave of 'cleansing' of the Square promoted by the government, closing pornographic theatres and displacing actors who practiced what was seen as illegal activities. There were no regards to the fact that these were the conditions linked to the liberation of sexuality and freedom of sexual orientation which first gave visibility to the square as a place that challenged moral and social boundaries of the early 20th century. Currently, the Square is highly controlled by a complex security system, that attempts to control both users and uses (Nevárez 2009).

With more than thirty-nine million tourists, Times Square was the most visited site in the world. Such a spectacular figure reflects its effort to provide a "public space for world-class" (Nevárez 2009), whose needs differ from those of local people. It is, utmost, a place for consumption: of goods, of brands, and of the space boosted with a technological aura. The modern looks is achieved by reinforcing policies dating back to the 1980's that requires the implementation of light panels on the facades of the buildings, as it can be seen on (Nevárez 2009)[43].

Federation Square: a new identity for Melbourne?

Federation Square (), in Melbourne, was built in 2006 as part of the Southbank urban regeneration plan, that aimed at transforming a garden city into a creative centre for Australia. It is currently run by the private company Fed Square Pty Ltd organised around a civic charter. In the global context, with the slogan Victoria "On the Move", the local government invested in market-led initiatives for world class facilities and consumption, leading the state into the information age (Yue, McQuire, and Papastergiadis 2014)[44]. Besides the big screen, the regeneration of the area encompassed small business and social enterprises, on the south; and a film production facility, Dockland Studios, on the west.

Figure 15: Federation Square in response to the attacks at Paris in 2015. Source: Fed Square (2015).

The Square was built in the beginning of the 2000's, when the use of technology in the urban space started to be feasible. Based on the viewpoint of Kate Brennan, one of the professionals involved in the design and management of the square, it is appropriate to say that the square was envisioned in almost a technological deterministic way driven by fascination with the rapid development of digital technology. "Fed Square was built at a time when every telecommunications provider in the country would have had you believe that you were going to be ordering your lunch of the front of your fridge in twelve months' time" (Brennan, McQuire, and Martin 2009: 127). As the city's urban development converged to investing in creative strategies, the decision to install a large urban display along with a series of smaller screens around the complex was a local response to the idea of Australia becoming a creative nation.

[43] New York approach clearly differs from other metropolises in the world, such as Berlin, where installation of screens is strongly regulated .

[44] Such a plan resonates with the Australian government framework of incentivising the creative class and promoting urban economic development by building consumption spaces, such as café districts, retail shopping strips, landscaped parks and public spaces (Barnes et al. 2006).

The controversial media architecture was soon embraced by the population and it became a local media hub (Yue and Jung 2010; Brennan 2010).

Differently from the screens in Times Square, Fed Square big screen was designed to deliver no-advertisement content. Some mechanisms for public interaction with technology were put into place, such as the SMS Fed TV, an interactive product that allows visitors to send text messages to the screens and determine the images to be shown (Brennan 2010). For Brennan,

> [p]art of establishing a sustainable creative agenda at Federation Square is simply drawing the focus back to people as creative leaders in a space – rather than buildings or institutions. This involves encouraging people to think, plan and act imaginatively, whether they are visitors, staff or collaborators, and the management team approaches this aim with three distinct tactics (Brennan 2010: 4).

Nevertheless, the model developed by Fed Square is gradually showing signs of fatigue. The high cost of infrastructure maintenance and the lack of resources for unique content production are some of the reasons its administration body is opening the screen to advertisers[45].

3.3.3 Informational rent associates with ground rent: urban exploitation in the 21st century

Times Square and Fed Square seem to have been developed from opposed views. Times Square was conceived in the late 19th century to accommodate the increasing needs of consumption and since then, it has gone through different gentrification and commodification waves over last century, which allowed the Square to be always in the forefront of the tourism and consumption industries. The diverse technological apparatus was used to enhance this experience. Fed Square was built in the beginning of the 2000s, as an attempt to cast Melbourne globally as a creative city while creating a needed centrality for its inhabitants. Technology was seen as a means to foster culture and creativity, while producing a modern view and allowing Melbourne to enter the information age.

However, such differences tend to overlook the fact that both rely on the fetish of technology (Harvey 2003). It can be said that such a fetish produces a whole field for rent extraction: that of large corporations that hold monopoly over screens technology (and that would also include all sorts of technological apparatus, which are not being discussed in this thesis). The producers of this very specific infrastructure are taking advantage of this moment to secure their place in public spaces and jointly potentialise the rent of those who own the land. Infrastructure providers benefit from urban approaches that invest in creativity as a tool for capital reinvention and global projection in a second circuit of capital. "As the principal circuit—current industrial production and the moveable property that results—begins to slow down, capital shifts to the second sector, real estate" (Lefebvre 2003).

The space is transformed into a symbolic good which refers to the idea uniqueness, significance and authenticity, typical of the idea of the creative city. It revamps the urbanisation processes (spatially saturated) by creating a new layer based on new patterns of consumption and the fabrication of different social wants and needs (Harvey 1985), associated with a new international class. As marketing strategies, highly mediatised architectures promote the construction of

[45] http://fedsquare.com/screen-advertising

reputation of both locations (cities and districts) and brands advertised. This is the case for both squares, that are now widely known for their architecture and feature themselves as one of the most visited places in the world; they are both traded upon through the marketing practices of the tourist industry, as described by Harvey (2001).

There is a second layer that needs to be analysed in such a scenario, i.e., how the infrastructure providers also extract informational rent by limiting the social actors that have access to such an infrastructure. As Marcos Dantas (2008: 09) points out, Informational rent is "obtained from the lawfully guaranteed monopoly of a knowledge that underwent a right to property". Both Dantas and Christian Fuchs reiterate the need of the material support for such and information to be conveyed for capital accumulation (Fuchs 2002). Therefore, monopoly rent is guaranteed by owning the high-cost technological infrastructure and its ensuing bargaining power. In the case of DOOH, infrastructure allows the association of ground and informational rent acting as a mediator of the different social actors involved in each of the processes. In many cases, those who want to convey any message in given place need to comply to the rules established by the infrastructure owners. In others, the owner of the screen is also the one who is going to locate information, such as the 'McDonalds' screen in Piccadilly circus, London, in which monopoly is guaranteed by exclusivity of use.

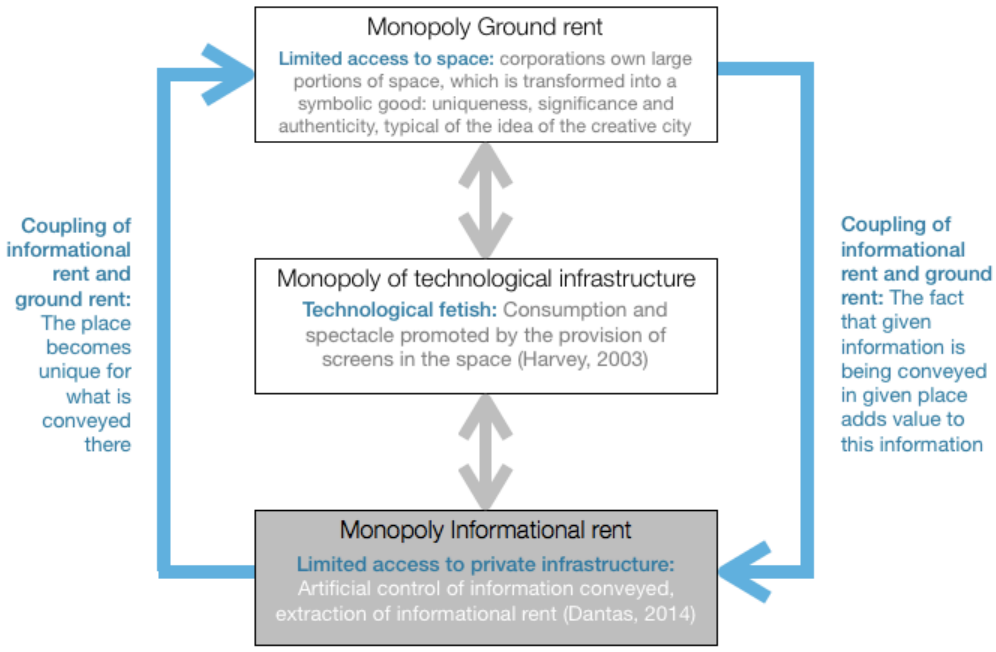


Figure 16: Diagram of how informational rent is coupling with ground rent to increase surplus value of land and of information itself. From the author.

In both Times Square and Federation Square, screen space (and time) is rented to corporations that, in turn, have their brands associated with the squares. As a result, both squares are regarded as modern technological scenarios, being traded upon as touristic places, as pointed by Harvey (2001) and enter the capital circuit as showed in (Figure 16). Their difference lies on how self-evident the market strategies are. While Times Square underplays the impacts of advertisement in the urban space, reinforcing consumerism as means of tourism and distinction, Fed Square relies on the same technology to also create a local community. For its success, the Big screen on the square has raised a series of unprecedented discussion of the social role of urban displays as community building tools (Struppek 2006) becoming an inspiration for other

places in the world which now use the same premises, without taking the specificities of the Australian context into consideration (Brennan, McQuire, and Martin 2009).

The use of screens nicely complements 'smart' and 'creative' cities agendas, for they "provide new interfaces for human interaction and trigger new forms of participation, engagement and bottom-to-top activism" (Pop, Susa inHemment and Townsend 2013: 75). Different scholars and practitioners refer to this type of screens as 'urban screens', simply put, large digital screens in the cities with cultural purposes. For being a recent phenomenon, most of the discussion of DOOH (and of urban screens) is still very superficial, and the intricate interaction between informational capital and real state is hardly addressed in social terms or politically contextualised, failing to expose the inherent process of surplus extraction.

So far, this chapter aimed to characterise such interdependence between DOOH and urban space under capitalism. Before approaching the everyday level through the case studies, the following section will be an excursion on the topic of urban screens, as a means to unveil this category of technology that embraces and reinforces smart cities. Nevertheless, unlike most of its strategies that perversely deny agency to its inhabitants, urban screens are a very visible site of the struggles that permeate the discussion of the excessive technologisation of the urban space. To enlighten this conflictual relationship, the concept of 'urban screens' is expanded as to discuss it as a socio-political construction.

3.4 Urban screens as a symbol of a city's technological status[46]

3.4.1 Urban screens as a construed concept

The term urban screens was coined by Mirjam Struppek in 2005 during the first conference of the kind called "Discovering the Potential of urban Screens for Urban Society". The aim of this conference was to explore "the opportunities of employing the growing infrastructure of large digital displays in Public space, currently used mainly as a tool to influence consumer behaviour through advertising, and expand them by displaying cultural and artistic content, with the purpose of revitalising public space and generating public engagement and interaction" (Bounegru 2009: 199).

> URBAN SCREENS defined as various kinds of dynamic digital displays and visual interfaces in urban space such as LED signs, plasma screens, projection boards, information terminals but also intelligent architectural surfaces being used in consideration of a well-balanced, sustainable urban society - Screens that support with their content the idea of public space as space for creation and exchange of culture, strengthening a local economy and the formation of public sphere. Its digital nature makes these screening platforms an experimental visualization zone on the threshold of virtual and urban public space (Struppek 2005:*online*).

Since then the term was quickly assimilated by the academia, particularly in Europe, and it is used to figure initiatives that aim to extend the digital infrastructure already installed in urban space for commercial to cultural and artistic purposes. Examples of the growing importance of the subject were the special issue of First Monday journal entitled 'Special Issue #4: Urban

[46] This section was produced based on my active participation in the Innovationsforum Urbanscreens, held in Berlin between February and Mai 2011 and following research.

Screens: Discovering the potential of outdoor screens for urban society' (Boeder et al. 2006) and the Urban Screens Reader (2009b) launched in 2006 and 2009 respectively[47].

3.4.2 Understanding what is at stake with urban screens: two ideal groups

The prominent role of digital technology in the contemporary shaping of cities reveals a structural spatial transformation emerging from post-industrial social relations of production. As knowledge becomes a prime commodity and ICTs the material basis for capital accumulation (please refer to Dantas 2011b; Lopes 2008; Redondo and Redondo 2003; Marini 1997), urban space is restructured to respond to global competitiveness, translated in rankings such as global cities (Kearney 2015), global media cities (Krätke and Taylor 2004) and more recently the smart cities (Science 2007). These different hierarchisations share the focus on information exchange, connectivity and worldly cultural provision as drivers for economic development and world projection. In this context, urban screens become one of the front runners in depicting cutting-edge urban centres, assuming not only an economic, but also a socio-political role. To construe the argument of the socio-political and spatial role of ICTs, two ideal groups actively working on the implementation of urban screens were devised in this research: those who support the potential of the screens for social transformation and those who benefit from the widespread of this socio-technical ensemble.

The first ideal group: supporting the social potential of the screens

The first group comprises of those who support the potential of urban displays for social transformation—such as artists, architects and urban planners. Given that the urban digital infrastructure is already in place and that there is a clear tendency of them being even more ubiquitous, this group advocates for a democratic development of the media industry, currently concentrated in the hands of large corporations. They assume that the use of such displays for cultural purposes is always more beneficial to society than the usual messages conveyed in these means—basically private advertising—because, in a way, it would enable an everyday access to culture.

A closer look at the subject, however, reveals that this approach is based on a misconception, especially for three reasons. Firstly, most of the strategies currently explored propose contemplative experiences, reinforcing what Henri Lefebvre (1991) calls the logic of the visual[48]. Similarly, Vilém Flusser (Flusser 2002) reinforces that the over consumption of images reflects

[47] It is important to note that experimentation with digital technologies in the urban space was happening before that, and one special project was essential for the buildout of the concept of Urban Screens: Blinkenlights—a temporary installation that happened in 2001 in the heart of Berlin (http://blinkenlights.net/blinkenlights. Last accessed: 05/05/2013). Functioning as a digital display, *Haus des Lehrers*, an eight-story building at Alexanderplatz, was equipped with 144 lamps individually computer-controlled. Initially, the interface was based on the classic game pong. Through a telephone call, two people played at once by moving vertical bars to reach a ball, in a simulation of the tennis game.
During the 23 weeks of exhibition, Blinkenlights evolved, allowing for the participants to contribute to the content that was being exhibited. In the second and third interfaces, *Loveletters* and *Blinkenpaint*, videos could be created by participants in the project website (from open source software created by the artists) and transmitted to the facade through a phone call. It is also important to note that Berlin has been in the forefront of the discussion of Urban screens, specially through the work of Susa Pop and Mirjan Strupek, through Public Art Lab—a lab for experimenting with digital technology in the urban space with world penetration.

[48] For a more comprehensive discussion of the logic of the visual and the use of digital technology for spatialised experiences, please refer to (Baltazar dos Santos 2009; Baltazar dos Santos et al. 2014)

the third stage of society: the post-industrial employees and their children become programmable by images to which they are exposed and have their critical sense operating to a minimum. As such, they become producers and consumers of views established by others.

Secondly, and linked to Flusser's statement, the concept of culture being systematically reduced what Sharon Zukin (1995) calls 'Culture'—a collective of products manufactured in accordance to the demands of patrons who compete to create not only symbols, but the spaces in which they are exhibited—, ignoring other equally important local elements of the cultural production of a community.

Lastly, in spite of having interest in the (urban) space, there is a disregard of the social processes that define its production and a general predisposition to believe that digital technologies alone can contribute to the social transformation this first group predicates. The separation of spatial practices and technological growth is strengthened by a technological deterministic view, which, according to Andrew Feenberg (2010a: 08) "rests on the assumption that technologies have an autonomous functional logic that can be explained without reference to society", thus ignoring the power of its immediate social impact.

Some authors try to escape this deterministic approach, but still ignore that content is produced within a framework of 'Culture', reinforcing capitalist social relations of production already in place. Mirjam Struppek (2005), for example, recognises the need to focus towards a production of socially oriented content, but does not question the possible problems arising from the predetermination that she herself suggests by not discussing what would be 'cultural'. Although not dictated by the technology itself but by a 'social orientation,' the result tends to be pre-defined content, reinforcing the uncritical production and consumption scenario foreseen by Flusser already in the end of the 1980's (Flusser 2002) and therefore, favouring the heteronomous production of capitalist space.

The second ideal group: colonising the urban space

The second group comprises of those who benefit from the colonisation of urban space by the Culture Industry, as defined by Theodor Adorno and Horkheimer (2007)—infrastructure and content providers that extract informational rent from the urban space; in short, the media industry. This new urban elite will have direct economic gain, either with the production of content or the installation of the infrastructure and will promote the economic gain of other large corporations by stimulating consumption. Their actions are legitimated by the discourse of the first group on the possibilities of providing information and cultural material for the urban citizens. This model of surplus was already noted by David Harvey in 1982: "it is now production as a totality (including the production of new modes of consumption and new social wants and needs) rather than immediate production which defines the division between producers and appropriators of surplus value" (Harvey 1985: 87). Of course, individuals in the media industry are not members of a purposely evil elite mobilised to keep people in a superficial way of life (Souza and Grilo 2009). Their interest—and survival—lies in providing corporations with a medium where this process of manufacturing of needs and symbolic goods can be perpetuated. In this cycle, media vehicles themselves become symbolic goods, which in turn

> increase the value of the physical and social space by adding uniqueness, meaning and authenticity, and therefore, enhanc[ing] the status of the people experiencing it. In marketing strategies, highly medialized architecture serves for

> reputation building of both locations (cities, neighbourhoods) and brands (Stalder 2011: 05).

Some scholars see the positive dimension of urban mediatisation and its reflection in the use of the space, such as the mutual reputation building of places and brands (Stalder 2011). Nevertheless, they fail to critique the social consequences of a real-state driven improvement within cities, such as gentrification[49].

Two truly opposing groups?

On the one hand, it is possible to say that the first group understands the relationship between society and technology in a technologically deterministic way: if technology is already there, it must be appropriated in the most interesting way possible so it will certainly fulfil its social role. On the other, the second takes a socially deterministic approach, by assuming that technology production and use is the result of social determinations thus denying the harms that come from the existence of this technology in the urban space.

The deterministic tone of each of these groups resonates with Pierre Bourdieu's (1984) view of the role of 'cultural' goods as instruments of distinction between class fractions and social classes. The separation between cultural production and its linked social effects contributes to an increasing lack of understanding of the social function of the groups responsible for such a production and the interests being served as a result.

> The producers can be totally involved and absorbed in their struggles with other producers, convinced that only specific artistic interests are at stake and that they are otherwise totally disinterested, while remaining unaware of the social function they fulfil, on the long run, for a particular audience, and without ever ceasing to respond to the expectations of a particular class or class fraction (Bourdieu 1984: 234)

The consensus of these two ideal groups towards the importance of DOOH in the urban space stems from a general uncritical view of the Culture Industry and its hegemony over digital communication. Culture industry is substantially incorporating digital media and communication but still manages to keep

> the economic structure and the ideological political behaviour of the production instances [...], so that its coercive power remains virtually the same as it was in the early 1920s, having only adapted to the technological changes and the new geopolitical situations as, for example, in the so-called "globalisation", which was nothing more (and still is) the universalisation of capitalism in its non-competitive or monopolistic mode (maybe oligopolistic, to be exact) (Duarte 2012: 81)[50].

It actively contributes to a *hyper mediatisation* of the urban, strengthening a consumer relation towards the space already exploited with analogue media since the beginning of the 20th century. Thus, the exchange value prevails over the use value, reflecting what John Thackara (2001) calls

[49] This is the case of places such as Times Square, in New York (3.3.2) and the new Potsdamerplatz in Berlin, among many others.

[50] In the original: "a estrutura econômica e o comportamento político ideológico das instâncias de produção [...], de modo que o seu poder de coerção permanece praticamente o mesmo do que era no início da década de 1920 tendo apenas se adaptado às transformações tecnológicas e às novas situações geopolíticas, como, por exemplo, a chamada "globalização", que nada mais foi (e é) que a universalização do capitalismo na sua modalidade não concorrencial ou monopolista (talvez oligopolista, para ser mais exato)".

the dilemma of innovation: devices and their applications are produced by the impulse of technological development and not by social demands. Their production, thus, is dictated by those who make them available[51]. In this respect, there is little reflection—a scant academic research that critically analyses the use of digital technologies in space—and little public mobilisation for a comprehensive discussion that includes other stakeholders, such as civil society (Melgaco 2012). The following sections aim to discuss how the embedding of digital technologies in the visual fabric of the city has socio-spatial, socio-technological and political implications that need to be scrutinised.

3.4.3 Understanding urban screens as socio-spatial, socio-technological and political constructions

Socio-spatial production (implications): renewed conceptions of public space informed by digital technologies

Urban screens have contributed to a rearrangement process of interpersonal relations that take place in space, suggesting new relations now digitally mediated by such an infrastructure. These relations have social and spatial dimensions and therefore influence the production of space itself. Nevertheless, the imbricated relationship between the production of space and these technologies is highly disregarded. Screens are mostly seen as an additional layer connected to those previously existing in space.

For many, the presence of urban screens is treated as a natural development of the imbrications of audio-visual media and space—represented both by the television set in the living room or the computer in the workspace, as described by Eva Emmelauer-Blömers, secretary of the *Senatsverwaltung für Wirtschaft, Technologie und Frauen, Referat für Medien, Informationstechnologien, Kreativwirtschaft Berlin* in the Innovationsforum Urban screens. For others, it is seen as an opportunity to imprint a renewed image of the city, producing symbolic value to given space. This further naturalises the capitalist logic of consumerism that was made possible by the technological development of the early twentieth century and that is imprinted in the way information becomes a product to be consumed. The technology that conveys it is doubly exploited; firstly, as a vehicle to broadcast propaganda and encourage consumerism, and secondly, as a product that enhances the economic role of the media industry in urban space. The maxim that "a city that does not have moving images, has no investors. Dark cities have no investors because it means there is no economic power, [it means] the place is really deserted. And cities that have no advertising, are also somewhat unfruitful"[52] holds.

Thus, these hyper mediatised landscapes contribute to the "spatial structuring of new forms of consumption" (Zukin 1990), of which space itself is a commodity, as discussed in 3.3.1. Seeking world distinctiveness, these cities produce a hegemonic 'global urbanism' through urban spaces that cater for the needs of a world class, composed of high transnational investors and a transnational class of corporate consumers (Zukin 2009), but bluntly neglects the local context

[51] This argument is being developed by research at Lagear that focus on the development of digital technologies and their potential for social transformation, some of which the researcher partook between 2010 and 2014. Please refer to Baltazar dos Santos et. al. (2014).
[52] Personal notes of Kronhagel in the Innovationsforum Urban Screens, 2011.

in which they are embedded. For Sharon Zukin, global urbanism is a symptom of economic crisis and the need to accumulate capital, but also represents

> an undesirable change in urban experience, representing a different regulation of both spaces and people, creating projects and dependencies on a larger scale, eliminating the means by which poor people and ethnic minorities produce their lives, and reducing the social and aesthetic diversity that has been a historical element of city life. (Zukin 2009: 545)

As mediatised space advances, architects succeed to establish a new work niche, that as Tim Edler, leading architect in realities:United Office, points out, still lacks purpose. "A media facade is much like a modernity badge. However, I would be somewhat reluctant to say that they are of a particular significance and necessity for the inhabitants of a city. On the contrary, this today is their weakest aspect." (Edler in Pop et al 2012: 116). There is a clear lack of reflection of the impacts of such socio-spatial production: the prevalence of commercial landmarks and of the spectacle over local everyday experience.

Figure 17: Shibuya Crossing before (Llerena, n.d.) and after (KPC international 2011) the tsunami in 2011 in Japan. Source: Llerena (n.d). and KPC international (2011).

Shibuya Crossing in Tokyo, Japan, configures an interesting example of the role of advertisement in city branding. As one of the busiest sites in the city, it has become one of the main touristic sites due to the disposition of screens and the high density of pedestrians and cars, being often called the Times Square of Tokyo (Nakagawa 2011). In 2011, on the occasion of the earthquake and tsunami that struck Japan, there was the temporary need to turn off the screens to meet government recommendation for companies to decrease energy consumption by fifteen percent. 'Dark' Shibuya Crossing had definitely a different character, raising the question of the quality of the space provided with and without lights (Figure 17).

Socio-technological implications: technological development and generalisation of the use of screens

Urban displays and media facades represent the most visible elements of the growing symbiosis between digital technology development and urban space. The decrease in the production cost of screens contributed to a generalised presence of digital elements in public spaces as well as spaces for public use, as it can be seen in Berlin, for example, branded as one of the most important global media cities (Krätke 2003, Krätke and Taylor 2004). Currently, most of those still focus on advertisement. Apart from exceptional occasions, such as the Shibuya Crossing presented above, local governments are still adapting their regulations to encompass the fast growth of digital screens in the urban space. They often struggle to mitigate the harmful effects

of advertising in public space, due to a great pressure from corporate groups to accommodate advertising anywhere in the public space.

Still, because it is more economically viable and more abundant in the cities, there is a shared belief that now there is more room to use the infrastructure for cultural purposes. The view that the sole availability of the technology is an enough trigger to allow for more 'meaningful' content to be displayed, is, at the least, naive. It disregards the agenda related to the production of such a technology, taking it as a neutral container that can simply incorporate different content. It is technologically deterministic and reflects a historical moment of the production of technology as depicted by two important scholars in technology and communication studies. Vilém Flusser (n.d) refers to these technicians as programmed technicians, who, currently, rather than focus exercise their creative and critical labour focusing on the 'what for' or 'why' technology should be produced, have been programmed to seek efficiency by answering the 'how' given technology should be produced. Andrew Feenberg (Feenberg 2010a) situates historically the current technology production. According to the author,

> pre-modern societies developed their technology at a steady pace as their technical activity was always influenced by experience and social phenomena, such as religion, gender and taste. Nevertheless, modern technology development—the result of capitalism agenda—is alienated from the everyday, and therefore restricted to an elite and their technicians.

Producers of technology, software and commercial content profit from the fragmented perspective on technology and exempting themselves of the responsibility they should carry[53] . They claim that there are distinct moments (and responsible groups) for the insertion of digital technology in public spaces. First, companies with the expertise will install the infrastructure and then media/marketing companies will employ strategies to congregate the population around the infrastructure.

Socio-spatial-technological implications: interaction

Urban screens are praised for their readiness to provide in a more or less prescriptive way means for people to interact with digital technology, other people and the public space. This setting differs from the private interaction with digital devices, but benefits from the increasing familiarity with technology—such as the internet and video games equipped with sensors—and the everydayness of digital devices in domestic environments which prompts individuals to

[53] A similar perspective is adopted when it comes to media facades. Ursula Stalder, for example, advocates for the neutrality of the architecture, without questioning possible social roles it might assume when it is invested with digital devices: " […] it is actually basically all the same technology. And for what we use it and the conditions under which we use it, with what objectives, in the context of management, marketing or local development, it is actually open" [comments during the Innovationsforum Urban Screens. Internal report. In the original: "Aber es ist eigentlich im Grunde genommen alles dieselbe Technologie. Und für was wir die einsetzen, unter welchen Bedingungen, mit welchen Zielsetzungen jetzt im Rahmen von Brand Management oder von Standortentwicklung oder von Werbung oder von Kunst auch, ist eigentlich offen"]. Nevertheless, other people exploring digital technology in the urban space see the importance of holding stakeholders accountable for the interventions and their impact in the city. Claiming the political role of technology in the urban space, Torsten Bauer, founder of Urbanscreen, a company specialised in videomapping, for example, is fully aware of the political role of the ways digital technology is being exploited in the urban space, which will be further discussed later in this chapter.

engage (also bodily) with technology. Current development of interactive technologies for domestic environments broadens the possibilities to produce responsive content[54].

Interaction assumes different meanings and for those involved in marketing, at least two reasons drive the increasing interest to target individuals through interaction. Firstly, Interaction is a means to improve word-of-mouth advertising: while interacting with given campaign, potential clients tend to share the product with others, as pointed out Sonja Nestingen, from OMG Outdoor GmbH. Secondly, people remember longer the product when they 'interact' with it. For Christian Vögel, from Wall GmbH, one important example of interaction was the 2009 McDonalds campaign in Picadilly circus, when people were stimulated to engage with iconic images related to London presented in McDonalds dedicated screen (Figure 18).

In that case, interaction was understood as people taking picture with the images displayed and sharing them in the company's Flickr webpage. McDonalds described the campaign as:

> Piccadilly Circus is central to London's identity with 1.1 million Londoners and tourists passing through each week.[…] McDonald's has recently launched a new *interactive* sign where passers-by can interact with images displayed on McDonald's giant LED screen, and visitors can take an interactive role at one of London's most photographed locations. We look forward to seeing your craziest, funniest photos taken in front of the new McDonald's sign! [55].

Figure 18: People engaging with London images in McDonalds dedicated screen in Piccadilly circus and later sharing it through the company's Flickr webpage. Source: McDonalds Piccadilly Circus (2009).

[54] One of the lines of research studying the possibilities for interaction among people and digital technologies in public space is public games, that understand the city itself as a game. Games are installed in urban areas and allow everyone that share given urban space to participate—actively and passively. This concept differs from the so-called pervasive games, because these last, those actively engaged in the game (the players) have fun, but those who only attend are excluded from this world. Public games aim to explore the potential of urban displays to provide games easy to understand and enable people to play spontaneously, integrating with the surroundings.

[55] http://www.flickr.com/groups/mcdonaldspiccadillycircus/, last accessed 04 June 2012, author's emphasis.

The campaign was all about *interaction,* but interaction is, as it became clear through this example, not necessarily dialogical[56].

Following market trends, those involved in producing technology focus on the development of more cost efficient technologies for interaction. There is a clear advancement on the concept of interaction—understood as a combination of motive, content, target public and technology (as presented by Thomas Bendig, Fraunhofer Institute IUK-Technologie). For a strategy to be successful in urban space, users cannot distinguish between any of those elements and they have to be motivated enough to engage with technology and many times, with other people. Nevertheless, this approach still does not consider the individual as a co-responsible variable in the process of interaction.

Though most infrastructure producers see this sort of interaction as a market to be explored, some regard it meaningless and short-sighted. They are merely reactive and tend to be easily forgotten. Furthermore, how would anyone behave if every screen was to provide 'interactive content'? Interaction is seen as a much complex process and requires too much responsibility, especially in the urban space.

For Andreas Orth, representative of Berliner Fenster[57], screens installed in areas with high traffic of people, such as Berlin's U-Bahn stations, require a strong social control of content, as its supplier is usually legally accountable for what is broadcast. Moderating, is therefore, the safest way for the business to assure the normative standards of the content. Interaction, therefore, interferes with the possibility of moderation, and should be avoided in those situations. Furthermore, in these situations there is often a social pressure and small room for experimentation, due to high heterogeneity of social groups in the public transportation. Nevertheless, Orth sees isolated experimental approaches, such as those happening during events (Media Facade Festival, or more recently Connecting Cities, among others), as interesting opportunities to play.

Political implications: economic orientation and top-down strategies[58]

"There is, and this is now the brutality, but actually also the reason why we are sitting here [in the Innovationsforum Urbanscreens 2011]; there is only one thing, what pushes us through: money. To earn money. It [urban screens] is a market. It creates a market[59]. The decreasing costs of screen technology production and dissemination resulting from technological development transforms DOOH an ever more profitable niche of marketing[60]. Currently, various segments of

[56] Vilém Flusser describes the difference between discursive and dialogical technologies. "A formal analysis may reveal two types of communication: dialogue and discourse. Dialogue is characterized by the fact that it creates information, and discourse by the fact that it transmits information. There is a rather complex relationship between the two, and one may be contained in the other (n.d: 11).

[57] company responsible for the installation and management of 3768 double televisions installed in Berlin metro system—U-Bahn—and which targets at 1,5 million passengers daily.

[58] Based on Melgaço (2012).

[59] Christoph Kronhagel, Public Art Lab internal report. In the original: Es gibt, und das ist jetzt das Brutale, aber eigentlich auch der Grund, warum wir hier sitzen, es gibt nur ein Ding, was durchdrückt. Geld. Geld verdienen. Es ist ein Markt. Es entsteht ein Markt. Punkt. Der drückt durch. Niemand anders, so war es immer.

[60] In the 1990's they were confined within internal spaces, and outside use of technology was based in less costly alternatives. One example is BIX Kunsthall in Graz, 2003, which costs to cover a whole facade with fluorescent lamps equalled the costs of a 67" LED monitor (Edler in Pop el al. 2012).

the construction industry resort to using media facades as well as urban screens in their enterprises to find a niche in the billion-euro creative industry.

The creative industry develops methods to expand and reproduce itself in the urban space, as already discussed in 3.3 as the spatial disposition of the industry's elements is what defines their global positioning as influential creative cities. Each of the segments involved are concerned with their own activities, be them installation, technology development, content production, advertising or establishment of urban symbols.

As a result, urban space is re-qualified to house industry facilities, employees, suppliers and consumers of this creative industry. Coupled together, creative and media industries led to the development of media cities—"large, planned, highly developed urban areas designated specifically to concentrate media and creative industry production (in its broadest sense)" (Mould 2014: 163). These operate locally in small-scale urban clusters and regionally in the "divergence and convergence of ways of life in urban and rural areas as well as in the 'intermediate spaces' between them" (Krätke 2003: 605). When they exert international influence, they become known as global media cities.

As media and creative industries are seen as means to achieving economic development in the 'knowledge economy' the various forms of resistance to the exponential growth of screens, which include restrictive legislation, popular demonstrations, or budget constraint, are seen as a hindrance to the advancement of the cities themselves.

These issues become paramount when discussing urban screens, once, as said earlier, they are the most visible elements of the media cities. For some, as Eva Emmenlauer-Blömers, Secretary from the *Senatsverwaltung für Wirtschaft, Technologie und Frauen, Referat für Medien, Informationstechnolgien, Kreativwirtschaft*, the little success in transforming DOOH in proper urban screens—that is, from advertisement boards to cultural platforms—stems from the lack of a business plan which would clarify the benefits for all parties involved: governments, companies, artists and the public. Nevertheless, devising such a plan without rendering the screens the possibility of profit from marketing (or little space for it), would mean that maintenance, content production and research, to name but a few of the costs related to urban screens, would have to be disbursed without margins for profit[61]. Currently, the situation is reversed: the infrastructure tends to be used for non-commercial content only when the companies cannot fill in their slots with advertisement, as shown by Gerrit Reitmeyer, secretary of the region of Tempelhof-Schöneberg[62].

Due to its top-down organisation, screens offer much more a discursive platform than a dialogic one. As a result, there is little (political) value in information that is not related to and resonates with the interest of public, as Guilherme Arruda and Ana Paula Baltazar (2014) foreground. The discursive character is only reinforced by the high economic costs and technical expertise and

[61] It is also important to note that the production of content is also very expensive, as most material has to be produced for a determinate set of screens, as technical requirements vary from screen to screen, and most of them use proprietary software. This means that most of the times, producers of cultural contents do not possess the needed technology to produce any material or are free to offer them to different distributers, they have to wait for their work to be commissioned, or partake public competitions.

[62] This is the region in Berlin where the largest screen in Europe, called Nightscreen Gasometer, was installed in 2010. There was a big debate on the benefits of the screen to the population, and the screen was finally disassembled in 2014. Please refer to Melgaco 2012.

contributes to the alienation of the citizen in the production of information. For Flusser (n.d: 12), that means that people become subject to techno-social programs, simply interface users:

> it was suggested that ours is a period of extreme predomination of discourse. The characteristics of such a predomination are a violently dynamic and progressive climate, and the lack of access to the origins of information, therefore the lack of any control over information. One of the methods by which discourse predominates at present are the mass media. But they are not, themselves exclusively discursive [sic]. They are only used that way by those in power, but could be, theoretically, work also for dialogical communication.

Furthermore, it means the alienation of decision making regarding the use of digital technologies in the urban space as well. This can be seen in most urban screens installed, and are illustrated by the adherent use of the Façade of the Building of SESI/FIESP, da Federação das Indústrias do Estado de São Paulo, in support of the impeachment of president Dilma Roussef in 2015-2016.

The facade was assembled in 2012 and is the first of its kind in Latin America as an "open and public format [that] allows for approaching questions that interest the city in an intuitive and participative way, besides, it raises questions regarding the impact that a big metropolis has on its inhabitants lives" (Sesi SP 2016: *online*)[63]. Since its assemblage, the facade has been part of various national and international artistic and cultural events. One example was the "Smart Citizen Sentiment Dashboard" (Figure 19), project held during the Viva Cidade Festival, in 2013. Inhabitants of different social and economic backgrounds of the capital were invited to discuss some of the urban challenges faced by São Paulo and during the event, people could interact with an interface that sent information to the facade (Behrens, Valkanova, and Brumby 2014).

Nevertheless, in the midst of the political unrest Brazil is facing since the re-election of President Dilma Roussef in 2014, Fiesp, institution that supports the impeachment process, used the facade to state its position. As it can be seen in Figure 19, words such as 'impeachment' and 'renuncia já' and 'fora Dilma' were displayed during the pro-impeachment manifestations that took place in the capital in March 2016.

The decision to display its political position was understood by São Paulo City hall as a violation of its authorisation to function under the 'cidade limpa' (clean city) law, that determines the content to be publicly displayed to decrease the visual pollution of the capital, and authorised the façade to engage with cultural content. Because of that, in 12th April 2016, the Commission for the Protection of the Urban Landscape (Comissão de Proteção à Paisagem Urbana), formed by eight members of São Paulo executive and eight civil society members, unanimously decided to revoke Fiesp/Sesi rights to display any content in their facade (BAND News 2016b).

This episode illustrates how difficult it is for urban screens to engage with political content. This episode raises two important issues: firstly, who has access to the screens and secondly, how to define the contents to be made available. Fiesp, which is in charge of the screen, used it to publicly broadcast their own political agenda—as a means of an anti-government propaganda. By doing so, it can be said that it disrespected the right of other millions of inhabitants who do not agree with that view. Having said that, it also becomes clear that defining what sort of politically engaging material to be displayed will always be polemic.

[63] in the original: O formato a céu aberto e em espaço público permite abordar questões de interesse da cidade de uma maneira intuitiva e participativa, além de levantar discussões a respeito do impacto que uma grande metrópole exerce sobre a vida de seus moradores.

Figure 19: Sesi Façade being used for The Sentiment dashboard (2013) on the left and for the Impeachment process

(2016), on the right. Source Behrens (2013) and BAND News (2016a).

3.4.4 Why we should be wary of the concept 'urban screens'

During the Innovationsforum Urbanscreens, some participants, though positive regarding the potential of screens to requalify the urban space, were still critical about using existing digital infrastructure for cultural purposes and the uncritical spread of this technology in the cities. Jan-Gunnar Franke, director of CHB (Collegium Hungaricum Berlin), highlighted that it is difficult to transform an infoscreen (screen that usually transmits information in public use spaces such as shopping malls, airports etc.) into something else. It cannot change from a structure that always shows something specific and turn it into a completely different reference for people already regard it as an Infoscreen. In fact, DOOH, such as Berliner Fenster, currently does not offer much more than a television would have.

In the same direction, Thorsten Schilling, representative of the Bundeszentrale für Politische Bildung (Federal Agency for Civic Education) in Germany, points out the need to distinguish the screens that already have a well-defined application from screens that aim at providing cultural material and discussing political identities, and therefore finds it interesting that additional screens be used during cultural events. As an example, he presented the performance "Sometimes I think, I can see you" from Mariano Pensoti, part of the Parallel Cities project in Berlin, in 2010, in which four writers observed the public spaces and displayed their thoughts in a temporary screen installed in a train station (Figure 20). Although many of the train stations in Germany are heavily equipped with different digital displays, the project organisers found more convenient to use their own structure, thus creating a special atmosphere in the station and avoiding possible problems with the BVG (Berliner Verkehrsbetriebe), the company that manages the subway system in the area of Berlin.

Also Nicole Srock-Stanley, director of CreateBerlin[64], is critical of the use of digital technologies trivialised in the urban space. She claims that conventional displays are the last option to replace a classic medium like paper. They scream to the eye, have lots of light. The screens only make sense if built in conjunction with the architecture, not as a poster.

[64] An open network that aims at enhancing creativity in Berlin (http://www.create-berlin.de/about_en.html)

Figure 20: Sometimes I think, I can see you. Source REDCAT (2013).

There are at least three issues that need to be considered when using the term urban screens. Firstly, created as an attempt to systematise the various digital technologies that are present in the urban space and that may be appropriated for cultural use—at least from the technical specifications view point rather than of the social context in which they operate—the term 'urban screens' has become too broad by encompassing a diversity of technological approaches to the out-of-home technology that display non-commercial content. By doing so, it allows distortions in the concept, as, for instance, an airport hall display that eventually broadcasts non-commercial content can be regarded as an urban screen just as much more artistically or socially driven projects, such as Blinkenlights, which inspired Struppek to coin the term.

Secondly, at the same time, it leads to a narrow perspective about the potential of spatialisation of information and communication, as "screens" often evoke a certain sedimented process of image configuration and one-way content distribution. It might be argued that it allows some levels of interaction, but that is not often the case. It contrasts with the advancement granted by the ample dissemination of digital technologies that argues for the deconstruction of the flatness of information, by spatialising it and promoting reversible channels for information exchange and therefore, communication.

Finally, it is also perhaps too audacious to propose that the infrastructure already installed in cities may be adapted to contribute to a 'sustainable urban society', as proposed by Struppek (2005). Though claiming to bring economic development, much of the technology implemented in the urban space struggles to 'keep in business', such as Nightscreen Gasometer. It certainly fails to successfully tackle social urban issues and to encompass consistent social change, and finally, it does not deal systematically with environmental issues. Therefore, it is still hard to foresee how, in the current context, the installation of screens (or use those already installed) can contribute to an improved public sphere.

The table below (Table 5) summarises some of the implications of urban screens in the different domains discussed in this chapter. In every aspect discussed, it became clear that there is an unbalanced relation between stakeholders, as most (if not all of it) of the process related to urban screens is top-down. As a result, people are regarded as 'final users' rather than co-producers of the space that is generated from their interaction with the urban space and technology as well.

Table 5: Summary of implications in the distinct domains analysed in the research.

socio-spatial	socio-technological	socio-spatial-technological	political
Lack of reflection of the impacts of such socio-spatial production: the prevalence of commercial landmarks and of the spectacle over local everyday experience.	Unaccountability of the different technology producers of the impact of digital screens in the urban space.	Citizens seen only as participants, but not as active agents in the production and fruition of 'interactive' urban screens.	Top-down initiatives disregard local actors, rendering them irrelevant and ignorant on the subject.
Hypermedialisation of the urban space and the "spatial structuring of new forms of consumption".	Further naturalisation of advertisement in the urban spaces.	Interaction as a new market niche.	High incidence of advertisement and low agency of cultural agents to act on the urban space.

It also highlights that despite the possibilities of urban screens to enhance social interaction in the urban space, the concept is built onto a commercialised platform that focuses on economic profit. To advance the discussion of digital technology in the urban space and to think of it as a socio-technological assemble that has an iterative relationship to space, it is important to consider the processes through which capital appropriates technology in the urban space, discussed in this chapter.

3.5 Returning protagonism to people: the potentialities of digital technology in the urban space

Let us quickly return to some of the examples presented before: Times Square and Federation Square. They all illustrate the convergence of informational and land capitals through the use of DOOH. The economic emphasis and the search for a business model for screens that fits the capitalist framework generate poor outcomes for the citizens if compared to the massive return of capital. Such an arrangement renders screens very small room for any truly emancipatory role, one of the precepts of urban screens. Furthermore, urban screens, as they are now presented, reinforce the larger discursive role of this technology. This is also illustrated through the impeachment episode above described: the fact that an institutionalised screen such as Fiesp digital facade was used to display words pro-impeachment reinforces one particular political position, rather than stimulate a much needed dialogue regarding the political unrest Brazil is currently facing.

Nevertheless, as screens become a normalised means for daily collective information transmission in urban spaces, their assimilation by the population and their potential to mobilise people towards dialogue cannot be disregarded. This plight illustrates the situation already predicted by Flusser (n.d: 12) way before the widespread urban technology. The philosopher urges us to change the structure of communication channels to fight the "transformation of man as a passive consumer of information".

In that sense, the analysis and discussion of urban displays can provide essential clues to how interactive digital technologies should be embedded in urban space with a focus on awareness raising, empowerment, emancipation and, ideally, social transformation. Other forms of provision and management of technology (and thus also screens) that allow for renewed ways of using the public space have to be devised. By changing the structure, it might be possible to give more protagonism to people so they can produce information, that is, it can foster dialogues in the urban space.

An important issue to tackle is the restricted access to the support—the screen itself. For those that perform informational work, an alternative to exploitation of monopoly rent is the logic of 'open business' (Dantas 2014a). Such a model allows an expansion of free producers "that no longer feel the need to sell their work to any large unit of capital as a necessary condition to obtain their own material and spiritual livelihoods and existence" (Dantas 2014a: 57)[65]. An open business model is still not possible when it comes to urban screens, especially because content—concrete labour—is directly related to the support, so that the artist is restricted due to technical limitations and conditions of use imposed by infrastructure providers and owners. These limitations include format and software to be used while producing the material, time of transmission and content, mostly because the infrastructure owners are held accountable for any material broadcast in the public space. Artistic content, though interesting and fun, is, as a result, deprived of any political motivation.

Figure 21: Public Projections, 1983. Source: Wodiczko (1999).

This is not, however, a characteristic of digital technology but of the arrangements resulting from an asymmetrical association between content producers and infrastructure providers. The work of Krzysztof Wodiczko, Polish media artist that already in the 1980s exhibited large scale projections on façades, sheds some light on alternatives that give content producers room for experimentation. In Public Projections (1983), the artist made explicit the implicit power relations embedded in architecture (). According to the author,

> The absent-minded, hypnotic relation with architecture must be challenged by a conscious and critical public discourse taking place in front of the building. Public visualization of this myth can unmask the myth, recognize it 'physically' force it to the surface, and hold it visible, so that the people on the street can observe and celebrate its final formal capitulation (Wodiczko 1999: 47).

[65] In the original: "que não mais sentem a necessidade de alienar o trabalho a alguma grande unidade de capital, como condição necessária à obtenção dos seus próprios meios materiais e espirituais de vida e existência".

Currently, artists and artistic collectives are more and more able to not alienate their own work due to the decreasing costs of digital technology. They find in projectors, computers and other digital apparatuses suitable alternatives to the screen, and are, therefore, free to pursue a politically charged art practice.

'Bombing projection'[66] is one type of insistence practice—or political hacking, as pointed by Yurij Castelfranchi and Victor Fernandes (2015)—used during the Occupy movement 2013 and the demonstrations of June 2013 in Brazil. One of the examples of groups using this strategy is the collective Projetação, is an example of how groups are using digital technology as means of protest (Figure 22).

Figure 22: Examples of bomb projections in public space. On the left top to bottom. 1. Project Bombing in the Occupy movement in London, 2011. 2. Projecting VJ Suave in Rio de Janeiro (goo.gl/Drx3PQ). 3. building projection in São Paulo with criticism of Globo TV, June 2013 (goo.gl/ g6s42H) and 4. Project TXTual Healing, Paul Notzold in Brooklyn, 2008 (http: //www.txtualhealing. with/).

More recently, during the demonstrations against the Impeachment of president Dilma Rousseff, there were demonstrations in different cities of the country, and many of them used projections as means to make visible their position (Figure 23). In contrast to FIESP façade, this sort of use defies the established power: it is a bottom-bottom occupation of the public space and it demonstrated the possibilities of using ICTs to amplify positions in spite of formal channels of broadcasting.

[66] Online information on a DIY bombing projection is widely available. Some sources are: http://jahya.net/blog/?tag:Projection_Bombing, http: // thecreatorsproject.vice.com/blog/do-your-own-projection-bombing-instructables-how-to, both accessed in 29/08/2014. The research group Lagear has been developing spatial strategies of information (dos Santos Cabral Filho and Baltazar do Santos 2006, Andrade and dos Santos Cabral Filho, 2010). It is important to state that as a researcher, I attended some of the lab projects between 2006 and 2012.

3.5.1 Urban Screens as a political tool?

If other ICTs have been successfully used for mobilisation, there is the need to discuss whether it is possible to develop different arrangements that allow for screens to also become a dialogic tool, that is, open to political action. During the Innovationsforum Urban Screens, Thorsten Schilling proposed we consider the role of screens in a network for microlocal information. He believes people have always an emotional connection to places, and are therefore, prone to interact with and in it at the level of information sharing, but often do not know how and where. According to him, there are three layers of elements that have to be considered. From the institutional perspective, screens have to be place-bound and reflect the individualities of the site. Regarding use, participation strategies are essential, as people are much more active towards their media of choice, creating their own media environment and culture. As such, people should be seen as target audiences and not only passive consumers anymore. Lastly, from a political and historical perspective, media has to be understood as a means to address conflicts. Citizens might have the desire to position themselves politically, but often do not have the right medium to do so. If people wish to position themselves socially in conflictive issues, urban screens could contribute to that, offering a platform for a network for microlocal information.

Figure 23: Projection in laser, in Brasilia, against the process of Impeachment. Source: AFP (2016).

Schilling exemplified the need of open interfaces that would accommodate political action with Prenzlauer Berg recent development conflict. The Berliner neighbourhood is facing a great level of gentrification, but people who visit the Mauerpark, one of the landmarks of the area, on the weekends, are not aware of such a process which also threatens the own existence of the park[67]. In this situation, Schilling believes, urban screens could be a tool to raise the awareness to the situation of the park, by bringing information to the visitors. By spatializing information about

[67] More information at ttp://www.mauerpark.info/mauerpark/mauerpark-the-film/?lang=en and http://www.irishberliner.com /2013 /03/mauerparks-struggle-against.html

these conflicts, Schilling believes there would be a higher level of mobilisation and negotiation. What he does not consider again, is what groups hold control of the infrastructure.

I would like to present two examples where there has been an attempt to address this potential of political action through the screens, and also their limitations. The first the 'Ativismos contemporâneos', a bidding for the use of the Espaço do Conhecimento screen in Belo Horizonte and the second, Ituita, an interactive media cascade in the city of Congonhas, both in Brazil. The latter also exemplifies how the imaginary of technological development is being trickled down to smaller cities in Brazil[68].

The Digital façade of the 'Espaço do Conhecimento' (Space for Knowledge), an interactive centre belonging to UFMG that focuses on making academic and scientific production accessible. The big screen is located at Praça da Liberdade in Belo Horizonte, Brazil. The expensive infrastructure space has often been underused, and seldom for issues that are politically charged. This year, though, the screen will be used to display thirteen selected works that deal with contended political issues. The call 'Contemporary activisms' aimed at displaying content that highlight 'concepts and practices that raise a critical look to the contemporary world and that propose alternatives that favour the collective, either urban, rural or rurban" (Espaço do Conhecimento 2016: *online*)[69].

Figure 24: Espaço do Conhecimento em Belo Horizonte. Source: Pedro (2010).

At the same time, there was the concern that the material shown was not partisan to any individual party or group. This was only possible due to the effort of the current advisory board; as previous boards were not necessarily concerned with political issues. Having said that, nothing guarantees that future calls will deal with this sort of issue when a next board assumes the management of the screen. One major issue with the screen is that there is no budget to offer

[68] In fact, smaller towns are being target by digital displays corporations as a fresh market to be taken (Friskney 2010)

[69] In: In the original: "conjunto de conceitos e práticas que suscitam olhares críticos para o mundo contemporâneo e propõem alternativas em prol da coletividade, seja urbana, rural ou rururbana".

to the winners of the call, which limits the scope of those who want to display any content in the screen.

Ituita[70] is a media cascade in Congonhas, a 40.000 inhabitants small city in Minas Gerais Brazil. During the renovation of the central square, a large set of three interactive screens was commissioned by the city hall to the architecture office Opera. Similarly to many projects that include large digital displays, there was the expectation that such an investment would lead to local returns, by for example, putting the city in evidence regionally. There was also the idea of modernity attached to technological development. Nevertheless, little thought was given on the actual purposes of having a large infrastructure in the main square of such a small city.

Figure 25: Ituita in use. Source: Opera Architects (2013).

In order to avoid having purposeless screens in the main square of Congonhas, Opera studio resorted to researchers at Lagear to further the design a set of digital interfaces to foster popular participation and political engagement towards social mobilisation. From digital interfaces (arranged in the square) and a website, people would be asked to answer questions about the city in regards to common issues, such as sanitation, health, garbage, etc. on three different levels: individual, the neighbourhood and the city. The answers—transposed in the cascade as green, yellow and red dots (according to the level of satisfaction of the population on a specific topic)—would become elements in the cascade with which people could bodily interact. The main idea of the arrangement was to explore the different levels of engagement possible through digital technologies, i.e., responsive (reactive), interactive (pro-active) and dialogic (Stralen et al. 2012), as shown in Figure 26.

Ituita was innovative in many ways. Firstly, it was possible, from the onset of the screen experience, to devise a political tool for the collective appropriation. Secondly, through the website interface, people could respond to the issues in question, while at the square, people could not only bodily engage, but also meaningfully understand the extension of the issues raised. Furthermore, they could understand their own role in the making of the city, as the screens displayed the different levels of action. But most of all, people would be able to participate in dialogues in the public space itself, by engaging in discussions regarding issues of

[70] Please refer to this video (https://vimeo.com/54800861) for an explanation of the functioning of the cascade.

their own interest, leading, if successful to a path for social transformation. Nevertheless, Ituita did not succeed in mobilising people and currently it operates with randomised images rather than tailored content. There are no assigned personnel to manage the screens or to curate suitable material, as the costs are high and were not considered in the budget for the infrastructure. Ituita proposal, from its onset, was devised in the framework of technological determinism and the design, no matter how much socially driven, could not dispense with such an oversight.

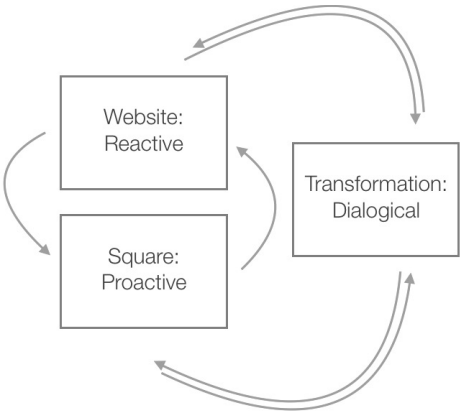


Figure 26: Feedback loop between the different instances in Ituita. Source: the author based on Stralen et al (2012).

Regarding people's engagement with Ituita, one of the main reasons for the lack of adhesion was that the whole project was devised without the participation of the population. Though researchers had the best of intentions in mind, and the project intended a bottom-bottom discussion of urban issues with a possibility of a bottom-up approach to urban planning, they delivered a 'package for engagement' to the population that did not feel related to the project at all.

But the most important issue, derived from this technologically deterministic approach, is that Ituita illustrates the way that technological fascination is leading to ill-suited solutions all over the world. In this case, it is clear that the imaginary of development is closely linked with ICTs and that smaller cities are importing models that already show signs of failure in larger city centres through public policies and investments that fail to address relevant local issues. That means that the high costs will not always translate into benefits for the population. Put into perspective, it also emphasises the power relations in place that influence the outcomes of public investments.

3.6 CONCLUSION: BEYOND SCREENS, BEYOND CREATIVE SMART CITIES

Both Ativismos contemporâneos and Ituita show the importance to consider the uneven power relations that constitute any attempt to use digital technology in the urban space as means for political action; even more so now that urban screens, normalised in many large urban centres, start to be incorporated in smaller cities as well. A thorough examination shows that such an incorporation follows a formal logic without a social reflection of specific contexts. That renders screens the role of reinforcing mass culture and consumerism. Despite the most enthusiasts hopes of social relevance, screens continue to contribute to the process of alienation of people regarding the political use of urban space. Overall, urban screens participate in heteronomous spatial practices and contribute to two forms of access deprivation: first, the deprivation of the

material support, often called the "digital divide"—with an instrumental nature and often tackled by public policies focusing on digital access—; and the socio-cultural deprivation, mostly invisible to public policies. Those forms of deprivation, in turn, reinforce the role of the citizen as consumer of brands, technology and space, and does not encourage emancipatory socio-spatial practices.

As a result, there are two mutually reinforcing processes of peripheralisation of those who do not have the knowledge or the purchase power to enjoy the atmosphere offered by screens and other ICTs in spaces of privilege, such as creative cities. There is a socio-technological one that subject less skilled workers to low-paid jobs and that leads to their socio-spatial displacement to the fringes of urban centres. This pattern marginalises this social group as they do not participate in the consumption of the spectacular that is largely the foundation of the creative city, reinforcing, again, the socio-spatial peripheralisation to which they are subject. According to Dantas (2006: 61):

> Hence capitalism, in its new informational stage, became a mode of production that excludes from the production processes and the enjoyment of wealth a large contingent of the population that is not even considered as a 'industrial reserve army' anymore. The growing digital automation, since the end of the twentieth century, is eliminating millions of redundant jobs, or allowing them to, thanks to global tele-computerised networks, be transferred to cities and regions where workers can be exploited in near-slavery conditions consistent with, however, the very low informational value of the work they perform, as reality shows and a growing body of literature seeks to understand (Dupas, 1999; Castells, 1998; Harvey, 1996).[72]

This excursion aimed to spatialise the political implications of a specific socio-technical ensemble in cities, the urban screens. At present, they tend to disenfranchise marginalised groups mostly contributing to further their socio-spatial and socio-technological marginalisation. Attempts to politicise these tools are very punctual and not embedded or inherent in the assemblage per se. In fact, they usually depend on the efforts of invested individuals and groups, such as the Ativismos Contemporâneos example.

While such large digital infrastructure is seen mostly in cities, technology is slowly trickling into smaller cities without, however, decreasing the already existing socio-cultural gap (these communities are both geographically and socio-technologically marginalised) or even bridging the so-called 'digital divide'. Ituita's example clearly illustrates how governments in smaller cities are adopting technological solutions that are not fit to their own specific context. And even though, in this specific case, there was the clear intention of using the urban screens to empower the population (intention directly connected again to invested groups rather than the whole ensemble), the network of power relations reinforces the limitations of screens as means of mobilisation.

[72] In the original: Daí que o capitalismo, nesta sua nova fase informacional, tornou-se um modo de produção que exclui dos processos de produção e usufruto das riquezas, grandes contingentes populacionais que já não aparecem, perante ele, sequer como "exército industrial de reserva". A crescente automatização digital, desde o final do século XX, está eliminando milhões de postos de trabalho redundante, ou permitindo transferi-los, graças às redes teleinformatizadas globais, para cidades e regiões onde os operários e operárias possam ser explorados em condições de quase escravidão, consoante, entretanto, com o baixíssimo valor informacional do trabalho que efetuam, conforme nos mostra a realidade e tenta entender uma crescente literatura (Dupas, 1999; Castells, 1998; Harvey, 1996).

Even smaller cities and rurban communities are incorporating technological solutions that though not as obvious as screens, certainly influence the way people appropriate collective spaces, ergo their local socio-spatial practices. That is obviously the case of the internet, introduced in these communities much later than on urban centres (both in central and peripheral countries). What is seen is that the internet model regarded as successful in the latter usually informs the way it is being introduced in the former, with no regards to contextual specificities. Because there is a lack of understanding of the relationship between decision-making processes in the socio-technological sphere and the implications on local socio-spatial processes, the next chapters will investigate the everyday appropriation of the internet on three rurban communities.

4 Top-down introduction of the internet and the need of a fostering space for its collective use: the examples of Santo Antônio do Salto, Brazil and Pendeen, UK

4.1 An introduction to the everyday: understanding the reproduction of capitalism in the daily life of the rurban

The everyday is the most intimate social level described by Henri Lefebvre, and, because of that, essential for the reproduction of social relations of production. Lefebvre (2000: 197) argues that

> Marx never considered economics as determinative, or as determinism, but he saw capitalism as a mode of production where economics prevailed, and therefore that it was economics which had to be tackled; nowadays everyday life has taken the place of economics, it is everyday life that prevails as the outcome of a generalized class strategy (economic, political, cultural). It is therefore everyday life that must be tackled by broadcasting our policy, that of a cultural revolution with economic and political implications.

An apparent equilibrium in the everyday is essential for the status quo. "Daily life is key to hegemony and the reproduction of capitalism insofar as it is saturated by the routinized, repetitive, familiar daily practices that make up the everyday in all spheres of life: work, leisure, politics, language" (Kipfer 2002: 132). In Lefebvre's words: "A revolution takes place when and only when, in such a society, people can no longer lead their everyday lives; so long as they can live their ordinary lives relations are constantly re-established" (Lefebvre 2000: 32).

Lefebvre points that, if the everyday is essential for the maintenance of the social relations of production, it is also in this level that these relations may be questioned.

> The revival of art and of the meaning of art has a practical not a 'cultural' aim; indeed, our cultural revolution has no purely 'cultural' aims. but directs culture towards experience, towards the transfiguration of everyday life. The revolution will transform existence, not merely the state and the distribution of property, for we do not take means for ends. This can also be stated as follows: 'Let everyday life become a work of art! Let every technical means be employed for the transformation of everyday life!' From an intellectual point of view the word 'creation' will no longer be restricted to works of art but will signify a self-conscious activity, self-conceiving, reproducing its own terms, adapting these terms and its own reality (body, desire, time, space), being its own creation; socially the term will stand for the activity of a collectivity assuming the responsibility of its own social function and destiny—in other words for self-administration. The Festival rediscovered and magnified by overcoming the conflict between everyday life and festivity and enabling these terms to harmonize in and through urban society, such is the final clause of the revolutionary plan.

Three rurban communities' everyday was studied in this research to understand what is internet's stance when it comes to questioning (or endorsing) their peripheral condition. Their history, spatial configuration and socio-spatial practices were investigated, and a narrative that explains the impact of the internet devised.

This chapter will introduce two of the case studies investigated in the research: Santo Antônio do Salto and Pendeen. There are two main reasons to join both communities. First, both cases represent how the internet (and as a matter of fact most ICTs) is being introduced in marginalised rurban communities. What is being witnessed from governmental to NGO approaches is the attempt to supply internet in top-down initiatives, assuming similar needs among different groups. Second, to avoid a critique from the South that does not reverberate in the North, these two communities will account for a (semi)peripheral context, in the case of Brazil, and a central context, in the case of United Kingdom.

The fact that they also share similar historical contexts of occupations, though serendipitous, has become a key element in the decision to present and analyse the two communities in one single chapter. It is also important to note that, in the thesis, they have been rendered a supporting role to Noiva do Cordeiro, once the latter has given far more elements to discuss a possible micropolitics of the rurban. Being so, these two work, mostly, as contrasting examples, albeit in some situations dialoguing to Noiva do Cordeiro (these possible interconnections will be enquired in chapter 6).

Due to their supporting role in the research, the Actor-Network metholodogy will be strategically applied in the articulation between socio-spatial practices and the internet, that has, for this part of the research, been understood as the main actor-network to be devised, that is, the narrative built (please refer to 4.5)[1]. The network visualisation was produced using the software GEPHI and its analysis aim at understanding how the mediations that are being affected by the introduction of the internet impact the socio-spatial practices of the communities, if so. The figures shown in chapters 4 and 5 are the representation of the networks organised according the actants related to the main narrative that were identified both through my observation and the interviews and questionnaires conducted in the communities. Actants which had only one weak link to other actants were capped from the network. Other actants were punctualised[2] when doing so did not alter the narrative, allowing for it to be clearer. The number of relations among the actants identified defined the strength of the links and a value from 1 to 5 was attributed in the software. The number of links and their strength defined the centrality of given node in the network, by using the Force Atlas 2, a force-directed algorithm for spatialisation of networks, "the projection of data onto a space" (Jacomy et al 2014).

The chapter is organised as follows. The historical development of the communities is first presented. Spatial elements of each of the communities are then understood as an important actant and therefore presented as such. Following, the socio-spatial processes are introduced. These are the elements that contribute to the delineation of the narratives, presented in section 4.5. Section 4.6, named "Preliminary pointers" present the early attempt to bridge the gap between the data unpacked using the ANT method and the tooling available in the Marxian based theoretical framework (this will be further pursued in chapter 6).

4.2 HISTORICAL DEVELOPMENT OF THE COMMUNITIES

4.2.1 Santo Antônio do Salto: triviality throughout history

Santo Antônio do Salto—usually referred as Salto—is the newest district of Ouro Preto, and it is located 126km from Belo Horizonte, with boundaries with Ouro Preto, Santa Rita de Ouro Preto

[1] It agrees with Bruno Latour that "Those advocating the actor network approach agree with the social constructivist claim that sociotechnical systems are developed through negotiations between people, institutions, and organizations. But they make the additional interesting argument that artifacts are part of these negotiations as well. This is not to say that machines think like people do and decide how they will act, but their behavior or nature often has a comparable role" (Latour, 1992:225).

[2] Punctualisation is, per Law (1992, n.p), a means to quickly devise the networks of the social limiting the complexity to be dealt with. "Network patterns that are widely performed are often those that can be punctualised. This is because they are network packages—routines —that can, if precariously, be more or less taken for granted in the process of heterogeneous engineering. In other words, they can be counted as resources, resources which may come in a variety of forms: agents, devices, texts, relatively standardised sets of organisational relations, social technologies, boundary protocols, organisational forms -- any or all of these".

district and Mariana municipality. Salto is in the Quadrilátero Ferrífero (in loose translation Iron Quadrangle), region in the central area of Minas Gerais state responsible for most of the production of iron, gold and gems.

The registered history of Salto started at 1773, with the first notarised purchase of part of Santo Antônio do Salto Alto farm located at the banks of Gualaxo do Sul River, in the way to Serra of Lavras Novas (Carrara 1999), despite indications of occupation in the area prior to this date. Santo Antônio do Salto remained as a village of Antônio Dias district until 1992, when it became district of Ouro Preto by means of the Law 78/1992 of 30th of November. Even though Salto's area never had an expressive participation in gold-mining, the settlement developed in the 19th Century due to trade activity related to mineral exploitation (Prefeitura de Ouro Preto 200-).

Per Heloísa[3] (retired, middle-aged, born in and resident of Salto), in the 17th Century, the district was on the way between Vila Rica (currently Ouro Preto) and Piranga. When troopers—men who drove trains of mules that carried the goods through the mountains of Minas Gerais state—were unable to continue their journey in the hilly region due to heavy raining, they would stop, often for more than a week, to rest at the farm where today is located the Santo Antônio Church. After some time, the place became a reference, and the farm, a rest point for the troopers. As stated by Wesley (male, tourismologist born in Salto but living in Ouro Preto), gradually, trading became a local activity and the first residences emerged in the vicinity. The initial settlement started from Santo Antônio Church and later developed through other old paths.

In 1934[4], with the installation of a aluminium plant in Ouro Preto and the need for large amounts of energy for production, Salto was chosen for the implementation of a power plant in the region, for its sets of streams and waterfalls. A canal was built by diverting the course of the river to feed the turbines. The aluminium and the energy plants brought perspective to the region, formerly suffering from unemployment that was caused by the worldwide economic crisis in the interwar period and the local reduction of the exploitation of mineral resources in Ouro Preto.

According to oral accounts[5], the canal was opened with the labour of local residents, especially women, and at extremely low pay rates. By using rudimentary building techniques and without proper equipment or basic safety precautions, there were many casualties resulting from work. The rugged topography conformed the construction of the canal in the valley, following the path of troopers linking Ouro Preto to Mariana. The canal divided the village longitudinally and conformed the urban development that took place without planning and technical assistance, as

[3] The majority of the information collected is based in the oral accounts of the villagers, and therefore it does not have official record. Thus, the people will be often referred to their informal nickname in the district, as Teinha or Seu Anastácio. It is relevant to keep the colloquial record of how key elements of this research are named in their daily life to keep the track in the village context, being easily identified for further researches or data corroboration.

[4] Stablished in 1934, it was during the WWII that Elquisa could consolidate internationally. In the 1950's Elquisa was acquired by Alcan (Aluminum Limited of Canada), and became an important actant in Salto's history. Then, in the 2000's after a financial crisis, Alcan was sold to Novelis, that kept the aluminium production until 2014. It then close the plant, firing over 300 employees, and of those, many were from Salto. The closing was motivated by two elements: firstly, the global strategy to use more recycled than primary aluminium, and secondly, the recent energy crisis in Brazil caused by severe drought, that made It more profitable sell energy to open market than to use it to produce aluminium (Estadão negócios 2014).

[5] When asked about sources for historical research, Prof. Angelo Alves Carrara, informed that Salto is not present in any of Ouro Preto's database (Carrara 2014).

described by Seu Anastácio, a retired worker of the Mining company Elquisa, inhabitant of Salto that moved to the region in search of a job.

Because of the implementation of the industry, Salto was one of the first places in Ouro Preto region to have domiciliary electricity, fully subsidised by the Elquisa/Alcan until late 1990's. The arrival of electricity lifted up the villagers' hope. According to Weslei, at that time the residents were struggling to live (because of the lack of jobs), "Formerly, poor things... people struggled to plant what to eat, then Novelis came with the hope: we will give you people free electricity, we will provide jobs for you, a place to live, [...] all of us hoped for improvement", accounted Teínha, adult, inhabitant of Salto since her childhood and that moved to the district with the family in search of employment.

However, the inclusion of this socio-technical network did not bring the expected urban development and Salto remained a marginalised community subjected to the socio-spatial processes that served the interests of aluminium company[6]. Without the establishment of public policies to secure the inhabitants welfare, many of the old and new residents could not be locally employed and Salto experienced again the rural outmigration with workers commuting to neighbouring towns, on the one hand, and the continuation of subsistence agriculture on the other. Seu Anastácio, for example, worked as a janitor in Ouro Preto for many decades, returning to Salto only during the weekends. According to him, there were shared houses where men lived during the week as a way to save money on housing, while the wives remained in Salto and were responsible for reproductive labour and subsistence agriculture, with occasional additional income from primary activities.

Conversations with residents suggest that the installation of the aluminium plant in Salto demobilized the population to any form of emancipatory praxis. Some small improvements, such as the construction of houses for some employees and the monopoly of the only landline in the region for many decades, were enough for Elquisa to have the villagers' subjected to the exploratory conditions of work and organisation of space. Nevertheless, these contributions also withered away. Teinha explained that "people were given houses to live, and after a while they were asked to give it back, and the houses were then knocked down [...] Wonderful houses from Novelis [...] Today what is there? Only bush", and completed

> My father lived in Ouro Preto, we lived in Ouro Preto, he came [to Salto] to work at Novelis. I was just a little child at the time. Everyone who worked at that time had problems. They worked at the mouth of the furnace and had cold shower to clean themselves to be able to go home [...] I think Novelis murdered my father, not only my father, a lot of people. I do not like Novelis for it. I starved; I struggled as hell for it [...] I've always spoke ill and always will.

The difficulty of tracing the history of occupation of Salto is the result of several factors. Among them are the lack of historical record of the donation/sale of land grants process prior to the 19th century; the fact that Salto's history and economics are not considered important and

[6] Bringing the controversy of the installation of power plants in Salto is essential to understand its current development for two reasons. Firstly, it illustrates how the abrupt implementation of a major technological infrastructure in the village did not promote development (understood with Souza 1997): although the improvement in quality of life with the introduction of electricity is undeniable, the presence of Elquisa/Alcan/Novelis has not brought an increase of social justice to its residents. Secondly, the industrial complex became an important actant in the network reconfiguration with the decrease in the aluminium production in the region in the mid-2000s that can be observed Salto today.

therefore not be present in easily accessible documents; and the fact that the Ouro Preto City Hall has only recently regulated the urban allotment processes in the municipality. Therefore, most of the plots of Salto result from the occupation (as reported by Seu Anastácio) or purchase made through sales and purchase agreements and without official registration.

The current general actor-network of Santo Antônio do Salto is illustrated in . The graph highlights the importance of each of the nodes according to the weight of the connections, represented by the size of the nodes. It also depicts the centrality of the nodes according to a colour pattern, where light blue means less centrality and dark blue means more centrality[7]. This structure will be used for all the network graphs, unless otherwise stated. As it can be seen, four elements are essential in Salto's network: the women, family economy, the mining activity (together with Novelis) and the gastronomy festival. These elements will be discussed throughout the chapter.

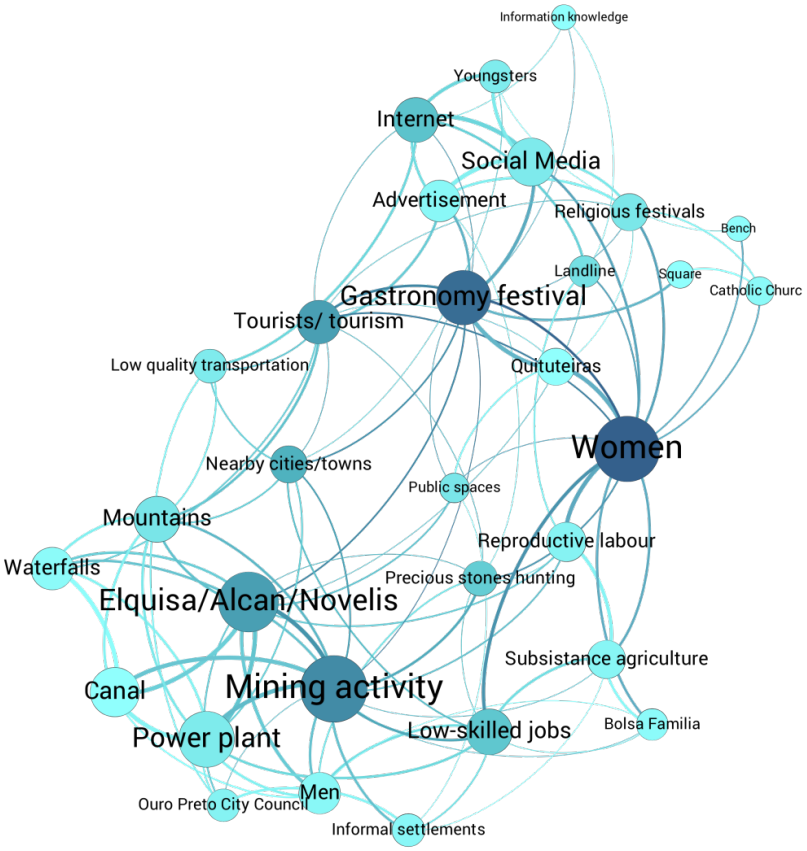


Figure 27: General network of Santo Antônio do Salto. Source: the author, 2016.

[7] Two main parameters were used in the algorithmic calculations that produced this graph. The first parameter was 'weighted degree' that defined the size of the node in accordance to the relations that were weighted by the researcher. The second parameter is called 'betweenness centrality', and it determined the ranking of centrality that can be seen in the gradient produced where lighter colours mean less centrality. The concept of betweenness centrality was developed by Linton Freeman as "the degree to which a point falls on the shortest path between others and therefore has a potential for control of communication" (Freeman 1977). Betweenness centrality can be understood, in Actor-Network terms as the level of mediation of the actant. Mediators "transform, translate, distort, and modify the meaning or the elements they are supposed to carry […]No matter how apparently simple a mediator may look, it may become complex; it may lead in multiple directions which will modify all the contradictory accounts attributed to its role" (Latour 2005: 39).

4.2.2 Pendeen: from a prominent mining site to a peripheral community

Pendeen is a 656 inhabitant village established in 1846 in the Penwith peninsula. Its slender settlement follows the St Ives road, which connects the village to Trewellard and Higher Bojewyan, both small settlements existing since pre-historic times and still heavily rural. Already during the Iron age (600 BCE – 43 CE) the region had a European prominence, supplying tin and copper to the Roman Empire and Spain. Historically, it has always attracted immigrants, such as German miners, in the 16th century. In the 18th Century, Pendeen saw its first wave of internal migration, by attracting workers to the tin mines in the region.

During the 19th century, the landscape changed to accommodate the infrastructure needed for large scale mining. Waterpower, needed for the extraction and processing of tin, led to a distinctive development of leat systems, stamping and corn mills, reflecting on the settlement pattern and reinforcing the agricultural character of the community. The presence of commons contributed to the physical shape and extent of the settlement up to the 20th century (Cornwall Council 2009).

The mining also led to the establishment of new settlements and the consequent co-existence of an agricultural and fishing based economy, as miners invested in small scale agriculture and fishing to complement the meagre earnings. During this time, Pendeen experienced a steady growth, becoming a parish on its own, and the needs of the community were satisfied with the growth of shops, pubs and nonconformist chapels. The community also worked together to build a Methodist church.

During the Second World War, there was an increase in demand for tin, and Pendeen experienced growth—there were more than twenty shops in town—and there was a big immigration to the area: Italian war prisoners and Polish workers were brought to the community. By the 1960's, that growth in demand led to the construction of housing. The community was prosperous until the collapse of tin prices in 1985 and the closure of Geevor Mines in 1991. As 'the Great provider' (Geevor 2009) shut down, miners emigrated to regions such as the Channel Tunnel and the Sudan.

More recently, some areas of Pendeen faced a change in landscape characterised by agricultural specialisation and capital investment towards more industrialised forms of farming and the inability of local farmers to compete. The response of agriculture to industrialisation and the resulting mechanisation processes led to reduction of working positions and smaller farmers were absorbed into larger holdings.

According to Sandra[8], retired, who moved to the village in adulthood and volunteer at the Centre of Pendeen:

> However, help was given for retraining and quite a few became self-employed using the skills they had from the mine e.g. carpenters or vehicle/machinery repair or with newly acquired skills e.g. gardening. The mine was also much missed for the help it gave to the community and to individuals in need in the village. It had a paternalistic role in Pendeen. An example I remember was when a blind man's roof was badly damaged in a storm the Mine sent a team to repair it for him free of charge. They also responded quickly and professionally if there

[8] As with Santo Antônio do Salto, most of the information obtained comes from accounts of the inhabitants, and they are presented here as collected.

was a subsidence incident. I remember when a rather large hole suddenly appeared on the main road and it was capped very quickly by the Mine.

In 1999, the community invested in the creation of the local community centre, the Centre of Pendeen, in the grounds of the Men's Institute, created in 1931 to alleviate the high unemployment in the region[9].Since then, the Centre has been acquiring a great importance in providing services for the community, as it can be seen in . The nodes that hold most weighted degree are the Centre of Pendeen, the clubs in the village, the internet, the Farmer's market and social media (this node representing all different social media used for leisure, work and information gathering). One interesting element that arose from the network is the centrality of 'precarious services', that, by hindering the development of Pendeen becomes an important actant in the network.

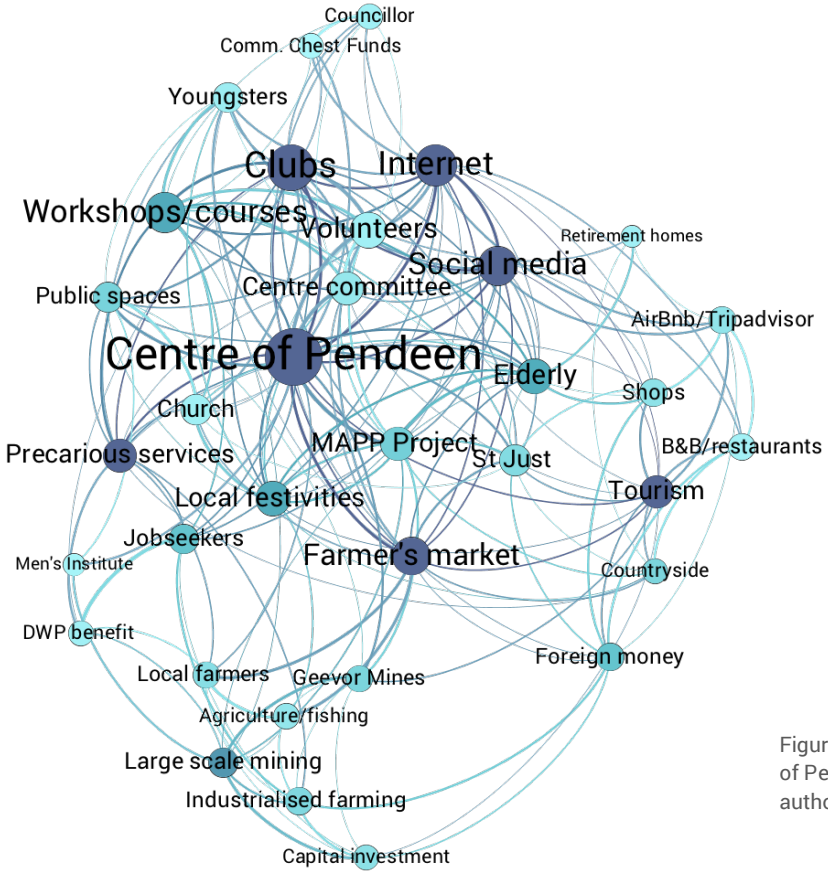


Figure 28: General network of Pendeen. Source: The author, 2016.

4.3 SPACE AS AN ACTANT: SPATIAL CONFIGURATION OF THE COMMUNITIES

It is seldom that space has been regarded as an actant in methodological approaches to ANT, even when it is the work's premise to do so. Hilde Heynen illustrates this difficulty, by analysing the work of Albena Yaneva, scholar invested in discussing ANT in the space. For the author, Yaneva focuses on the discourses that accompany the buildings rather than considering their

[9] Originally, it was thought as means to provide 'social intercourse, innocent amusement, mental improvement and mutual helpfulness' for workers. (Rev. E. Boteler Chalmer 1850's). In the 1920's the Central Welfare Committee was established in London with the aim to provide 'recreation, health and education in the mining areas' and avoid workers from spending all their money drinking. (Resources for Learning in Scotland 2015)

materiality, thus failing to deal with the physical articulations in the space (problem that the author identifies in other fields of spatial discussion, such as cultural geography).

Drawing from conventional space metaphors prevalent in the literature: receptor, typical from social sciences and anthropology; and instrument, used by architects and urbanists; Heynen proposes the use of space as stage, seeing it as a multidisciplinary view that encompasses the other two, as space will always absorb, but will also act onto spatial practices. Even though the author acknowledges the active role of space in the construction of social relations, the choice of the metaphor 'space as a stage' is still inaccurate to discuss the spatial dimensions that any politico-technical agency assumes. The metaphor certainly embraces the material dimensions of space and allows interdisciplinarity so necessary to the disciplines of space. However, it does not do justice to the active role that space has in the co-constitution of social relations (or actor-networks, if you like), as it covers satisfactorily neither the temporal dimension (the one that allows for the traces left by the entity that is formed from human's interaction with space, mediated or not by technology, to be followed), nor the possibility of agency when a new entity is formed from the same interaction.

The active role of space was an important element in Lefebvre's theory: "Urban reality modifies the relations of production without being sufficient to transform them [...]. Space and the politics of space 'express' social relationships but react against them" (Lefebvre 2003: 15). Just as other elements often assumed as actor-networks, space "In addition to 'determining' and serving as a 'backdrop for human action" […] might authorize, allow, afford, encourage, permit, suggest, influence, block, render possible, forbid, and so on" (Latour 2005b: 71). After this quick excursion on the role of space in actor-networks, let us start discussing the spatial development of Santo Antônio do Salto.

4.3.1 Space as a constrain for local development in Salto: the lack of centralities

The district is in a deep, narrow and long canyon valley in between mountains. While other villages and towns in the Quadrilátero Ferrífero had, in different measures, their development boosted by the mining industry during the gold exploration, the growth of Salto was hampered by its difficult access, which resulted in the initial process of local peripheralisation, with a very timid urban development along the river margins in the following centuries.

The process of occupation of Salto was twofold. Firstly, farmers occupied the south bank of the river, as they inherited or bought their lands that were remnants of the *sesmarias* (land grants given by the Portuguese crown to support the occupation of the country centuries before). Secondly, other incomers simply took the land by fencing it.

> Formerly, people who could afford to buy wire used it to mark more land. Someone dug trenches, you know, those farmers [....] They dug trenches, planted bamboo. For example, we are neighbours here, I planted a clump of bamboo and you planted gravatá [thorny plant in the region] and other one made a trench there, look, they made a water trench [...] to serve as a boundary. Now I cannot go from here to there [...]. That is what happened.

Because of this process, there is not a complete record of the land acquisition process in district[10]. The houses are parallel to the water channel and the small river that cross the village

[10] As stated by the historian Alex Bohrer, the land sales in Ouro preto districts are still based in 'sales and purchase' agreements, as most of the allotments resulting from the land grants have no official record. Ouro

longitudinally. There is a central square from where most of the services provided are located, mostly a supermarket, a bar, a church, a bus stop, a food truck and a primary and secondary school. Farther away are located a health centre, another bar, other two churches and two football fields. A sports hall has been built near an already established women's Centre, but both are underused (Figure 29).

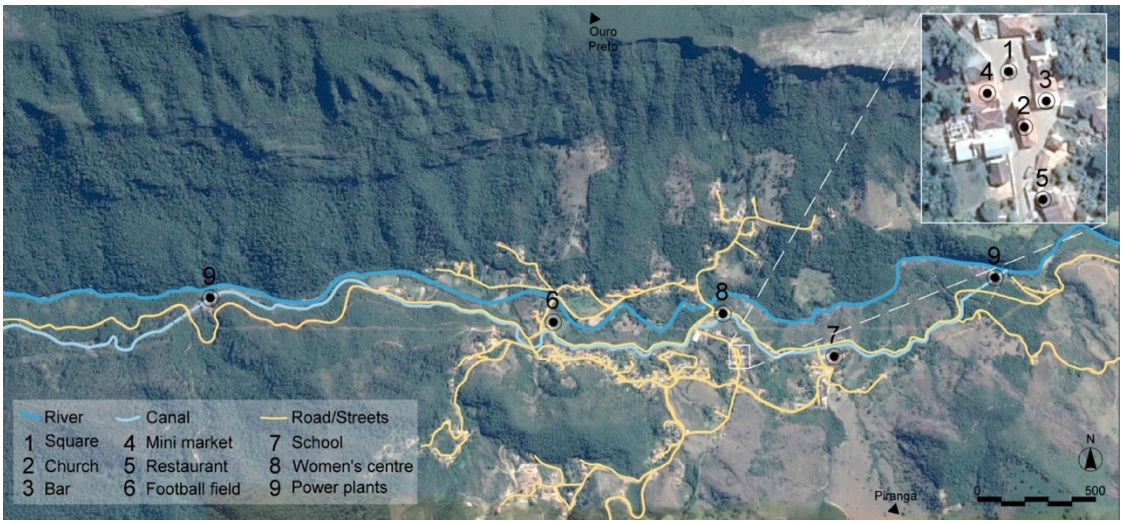


Figure 29: Map of Salto with spatial ad built elements highlighted. Source: Google maps with the author's incursions.

The unequal division of land and the lack of an organised development of the territory led to an uneven distribution of infrastructural elements in the district, depicting the difference in power of the inhabitants that first occupied the district. While the south bank concentrates most the public facilities, such as the catholic church, the bar, the school, all located in the central square; the North bank lacks general infrastructure such as sanitation and pavement of the streets. Furthermore, the population is further isolated because of the deficient access to the infrastructure located in the south bank, with only two pedestrian passages through the river and the canal, that are not safe (Figure 30).

This isolation hinders even more the participation and engagement of those inhabitants, for mainly two reasons: firstly, they are much more subjected to the routine activities within their households, for instance, mothers need to take the children to school due to the peril of the passages through the river and the canal and the distance between the houses challenges neighbours solidarity; and secondly, the lack of spatial unity and the distance from the main settlement excludes people from collective activities. Thus, they withdraw from the already scarce public life in Santo Antônio do Salto.

Preto City Council has been trying to rectify the situation by demanding street layout and sewage system planning for approval of agreements. (Through phone conversation on 7th January 2014).

Figure 30: The Canal at Santo Antônio do Salto and the inadequate barrier provided by Novelis. Source: Ney (2015).

The lack of public collective activities can be partly explained by the absence of public open spaces in the community. The church and the adjacent square, which have the most central character of the village, have not become a centrality for the community. The church does not have a dedicated priest, being used only when Ouro Preto Parish sends one every three weeks. The square lacks maintenance, so the population does not use it on daily basis, or for any sorts of encounters that could be designated as political. It is used for the yearly gastronomy festival, but even so, it does not agglutinate the locals.

Figure 31: Top left: Gastronomy Festival, 2014, right: the canal and one of the few passage points in the entrance of the urbanised area of the district; left: the place young girls meet in the district; on the right, the natural beauty of Santo Antônio do Salto. Source: the author, 2014.

Youngsters often use the football fields and the food truck located in the centre of Salto, and some teenage girls also mentioned meeting at a specific point of the sidewalk that they call 'o altinho', where the conformation of the pavement created seating spots (). Women often meet near their houses, calling each other through the windows, as they said. Men, who often work during the week in nearby villages and cities, meet at the bar on the weekends.

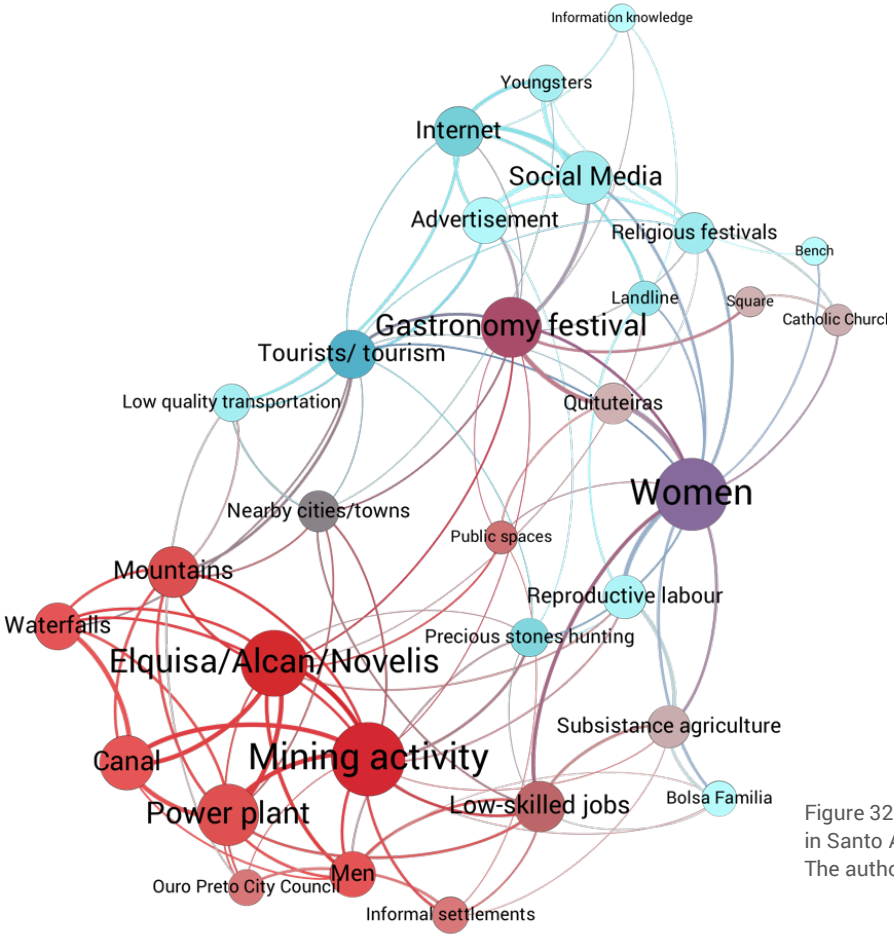


Figure 32: The permeability of space in Santo Antônio do Salto. Source: The author, 2016.

In Figure 32, using the paint bucket function in GEPHI, the spatial elements of the community and their connected nodes were highlighted. The tool allows to understand how given node influences the network, as by painting the node (in this case, in red), one can follow the links and other nodes attached to them. In this example, as each of the spatial elements were painted once, but mutually influence one another, the brightness of the red informs their importance in the network and highlight how public spaces in the community exert little influence on other actors, contrary to the waterfalls, the canal and the mountains, which have shaped the spatial, social and economic development of the district. It is also interesting to see that the public space exerts little influence in economic activities in contrast with the mining related spaces.

4.3.2 The lack of public open spaces and how institutional buildings have become essential in the network of Pendeen

Pendeen also had a concentrated growth due to the mining activities in the last century. As Salto, Pendeen displays a linear development, with the settlement following the main road that

connects Trewellard and Bojewan, as it can be seen on Figure 33. Pendeen also has a very precarious network of businesses and services, limiting the offer to the community to a post office, a school, a fish and chips shop, a pub and some restaurants, and a grocery shop.

Figure 33: Map of Pendeen. Source: Google Maps with incursions from the author, 2016.

The village also suffers from the lack of open public spaces for social encounters. Nevertheless, differently from Salto, Pendeen has a set of institutional buildings that are used for the purpose of meeting and have become local centralities (that sometimes expand to other villages as well).

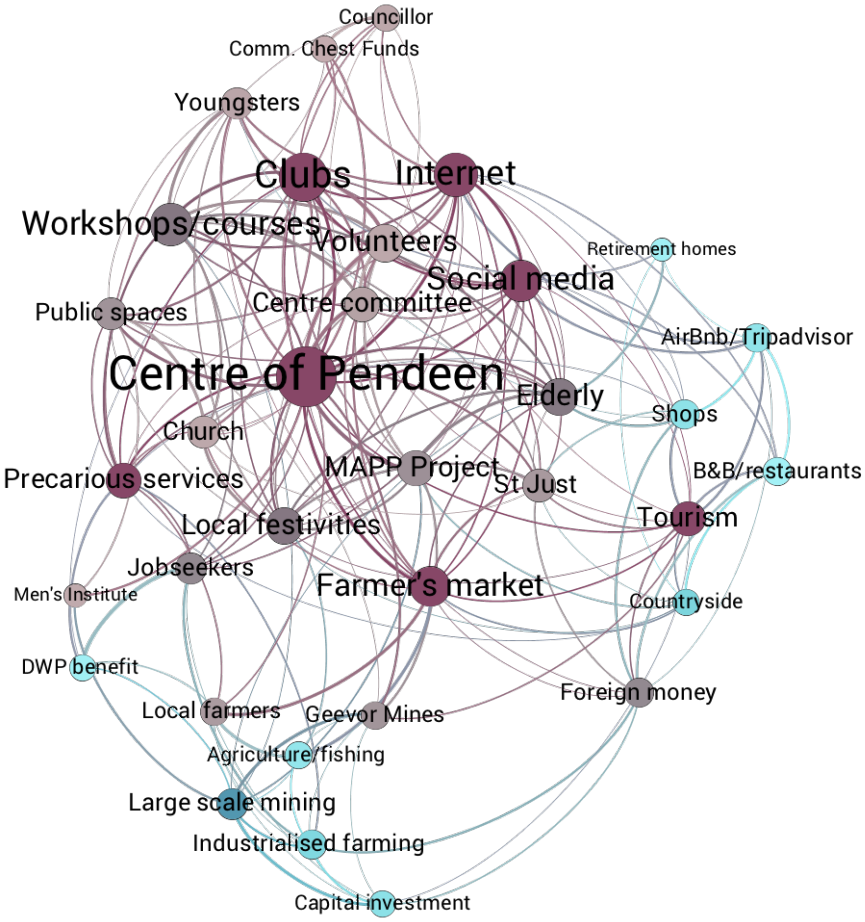


Figure 34: The extension of the Community Centre in Pendeen. Source: The author, 2016.

The most important ones are the church and the community centre, running clubs, workshops and courses, and support groups that cater for the individual and collective needs. One of the important activities is the farmer's market, currently being held at the Centre of Pendeen[11]. shows the extension of the two buildings in the network, by using similar strategy of Figure 32. In this case, the Centre of Pendeen and the church was highlighted in red using the paint bucket and by doing so, it is possible to see how they influence the local network. This information is built on top of the previous information of size of nodes (number of connections) and betweenness centrality (the level of mediation in the network).

The lack of public spaces and related activities seem to be a historical issue in Pendeen, as the establishment of the Men's Institute was already, in the 19th century, an attempt avoid that men spent all their time and income in local pubs. The inability of inhabitants to point out activities performed or experienced in open, public spaces during the fieldwork also show a reliance on institutional buildings and commercial establishments to provide recreation and extra-curricular activities in the region. If the public space is often assumed to be where individuals meet and become political, the Centre has certainly assumed this role, though in a very limited fashion (being run by volunteers and therefore displaying also a semi-public character, it is not possible for the Centre to simply replicate the conditions that successfully occupied open, public spaces would). By offering diverse and affordable social activities, it became a meeting place for different groups, where people can discuss common issues and share experiences. The more people participate in specific groups, the more they engage in the community in common issues.

4.4 Current socio-spatial processes in both communities

4.4.1 Socio-spatial processes in Santo Antônio do Salto

The implementation of the aluminium plant in the 1930's satisfied partially the demands of the Salto's population, leading to the resignation of its residents. The mobilisation that could have arisen from the basic need for survival was no longer necessary, since the employment relationship with Novelis provided the minimum for subsistence for part of the community. Demobilised and dependent on the low skilled work provided by Novelis, Salto gradually decreased the production of subsistence agriculture and started to depend on produce from outside, including foods that were previously available locally (though it is still existent in the community). This was also reinforced by the inflow of revenue in the last years, with the income of commuters and the implementation of *Bolsa Família* (a social welfare programme to counter extreme poverty in Brazil, in loose translation: family bursary) by the Federal government.

It is still possible to observe the prevalence of family economy, with men working outside home and women being responsible for reproductive labour and agriculture, and its fundamental role in defining the daily activities in Salto. During the week, the social dynamics of Salto is still largely dictated by this division of labour: because reproductive labour is performed within the

[11] According to local accounts, there was some rivalry between the Centre of Pendeen and the church at the time the former was being implemented in the community. For instance, for some time, both buildings held a farmer's market on the same dates. This fact led to a lot of discontent, because the shared market meant that either was getting enough clients for their produce.

households and men are often out of the village for work, the weekdays in the village are dominated by the private sphere.

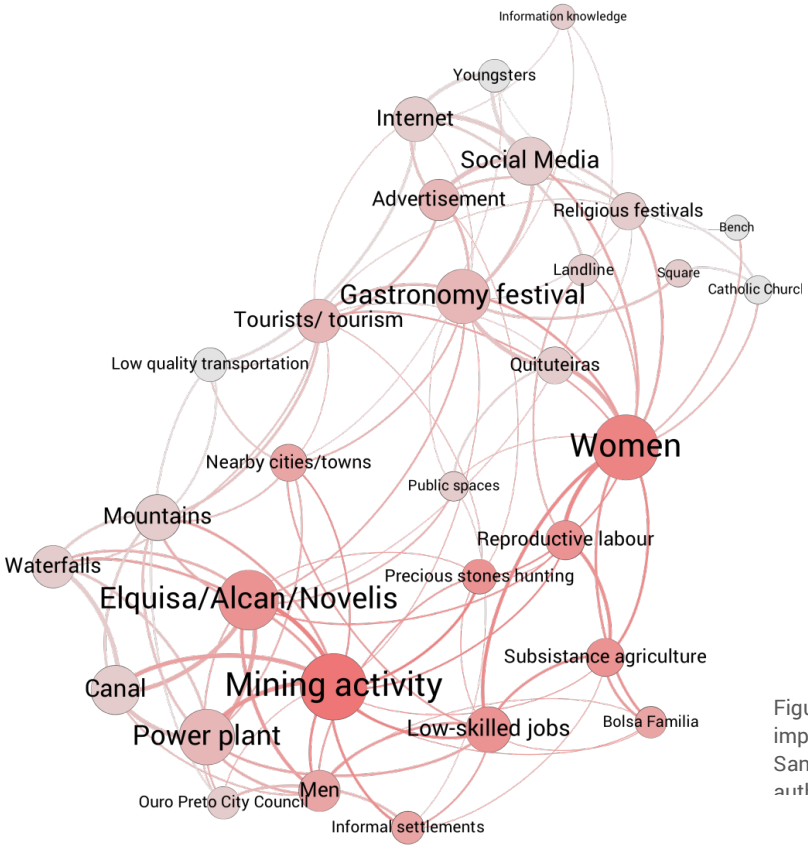


Figure 35: Extension of the importance of family economy in Santo Antônio do Salto. Source: the author, 2016

Some activities are done in group in public space, but they are still based on individual earnings, such as wood collection and gold-digging. The weight of household chores, performed individually, contributes to the introversion of women. With men working out of town during the week and women confined to their homes, there is always the impression that Salto is a quiet place.

The lack of jobs (or "occupation", as they say) has always been a concern, and it only worsened with the decline of aluminium production in the last two decades. Because most of the jobs available in the village were provided by Novelis, now the working population that was locally employed is also seeking employment in neighbouring towns, especially Ouro Preto, Mariana and Ponte Nova. Family members with small children, and especially men, continue to commute during weekdays and others have decided to move closer to work. Those who own means of individual transport (mostly motorcycles), drive more than 60km daily, counting both journeys of the commute.

Because of the change in the employment dynamics in the region, it is possible to start to observe a shift on the role of women in the community, with many being the primary source of financial support in the family. For the younger generations of mothers, for example, there is the reliance on the elderly women in the family, who help raise the children accumulating the household chores. shows the impact of family economy in the network of the community by highlighting the actants that are related to it.

The decline in production also led Alcan, before being acquired by Novelis, to call Saltenses to "start walking with their own feet." The company held meetings with the residents to devise a plan for the district, and some of the inhabitants decided to explore the cuisine of the region that valued the influence of the troopers in the first settlements of the village with an annual gastronomy event[12]. A group of women took the lead and created an association for the quituteiras (women that make quitutes, a delicacy from Minas Gerais), coordinated by Heloísa.

For Heloísa, the festival became an important local financial support, once during the event, the streets are full of tourists from places like Ouro Preto and Lavras Novas (the event is still quite local), as it can be seen in Figure 36. Figure 36 also shows some of the ramifications of the festival, and how it influences a large part of the network, with high impact on women and family economy.

There are still controversies regarding the benefits of the festival for the community. Although it celebrates the culinary traditions of the region, it is seen by some as a private festivity. Aparecida, for example, who last attended the festival cleaning the bathrooms, thinks that the money brought by the festival does not benefit the whole community. As a result, local mobilisation for the event is quite limited (despite the predisposition to mobilise for other festivities, such as weddings, christenings and religious festivals in which all collaborate by working or by donating money and supplies). Another concern is that the quituteiras do not seem to agree with the decisions made by the coordination of the association. For instance, they must contribute with ten percent of the sales In the festival to the group's reserve fund but many think it might be too much money, without knowing what the maintenance costs of the association are. At the same time, they are not interested in getting involved with its books, or, as a matter of fact, any other issues that go beyond producing the delicacies.

It can be said that most of the (limited) social networks have grown as a result of everyday socio-spatial practices, although inhabitants are not aware of their significance (the networks are invisible, for they are not always specialised or 'valued' activities). For instance, when asked about the activities she likes to do in the district, D. Geralda responded that she did not like to go anywhere, unaware that fetching wood, the activity that allows her to "catch up" with her five friends, is an important socialising activity.

Saltenses are isolated and demobilised. The community does not have any other significant community associations, as the former neighbourhood association was dissolved due to the lack of interest of the community in maintaining it. There are some networks that were formed in the community based on individual interests. Some examples are the district band, with some regional distinction whose members travel for presentations; the football teams—both official,

[12] There is controversy in the accounts of how the quituteiras group was created. Dorinha and Cida, two of the inhabitants, claim that the idea was Weslei's, Dorinha's son, in response to one Ouro Preto City Councillor who called Salto a place of 4 b's: bêbado, bobo, bambu e banana (drunk people, silly people, bamboo and banana). According to them, Weslei took the stage at a rally and gave the idea of the festival to change the distrcit's image. Heloisa, a retired teacher in the municipality and the current president of the Quituteiras Association, said the festival emerged from the meeting with Alcan, when the company suggested to use their resources and strengthen work possibilities. The local cuisine, according to the resident, was one of the main points discussed at the meeting which finally resulted in the idea of the gastronomic festival in the district. Weslei, in turn, explains that during these meetings with Alcan, he had this idea and that it was accepted by the population.

Aluminas and Palmeiras—and others informally formed; catholic and evangelic groups and their praying activities.

Most attempts to mobilise the community for economic or social development that happened in recent years came from outside and were not successful. One failed attempt was to establish a rural tourism model—a way of providing accommodation and food for tourists using as infrastructure their own houses, and of exploring the cultural potential and natural attractions of the region.

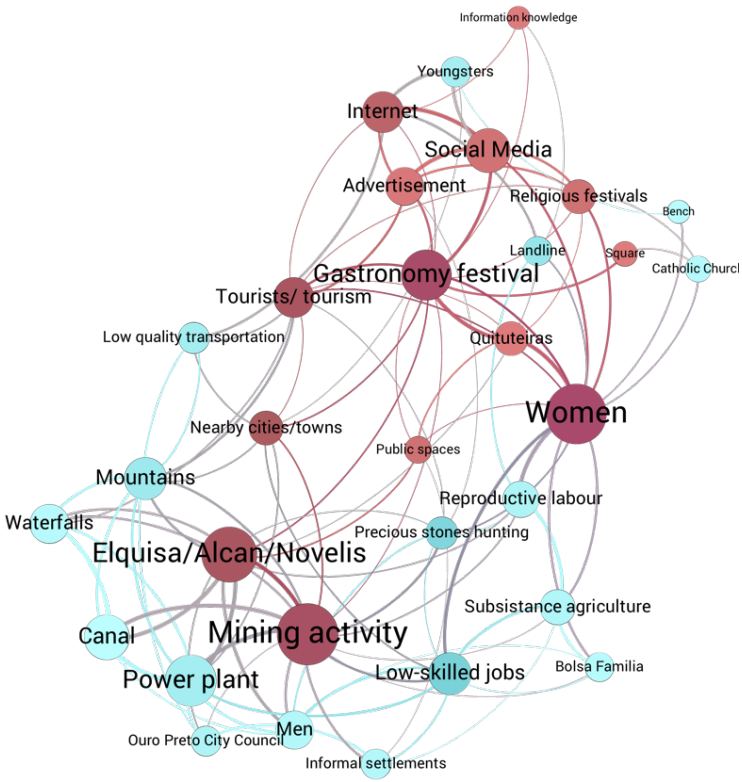


Figure 36: The Gastronomy Event in Salto and its importance in the network.

Figure 37: Salto's main square during the Festival Gastronômico do Salto. Source: Melgaço 2013.

4.4.2 Socio-spatial processes in Pendeen: a reflection of isolation and deprivation

Even though Pendeen experienced a period of flourishment in the 20th century, the crisis in the mining industry in the 1980's led to a retraction of the village. The two most important mining companies ceased operation in the area, unbalancing also the economic triad: fishing and agriculture were heavily industrialised, and local farmers were not able to adjust and compete. This decrease in the production sector led to a large migration process (both out-migration and emigration), the shutdown of many of its shops and the unavailability of employment. Based on that, the current socio-spatial processes in Pendeen are a reflect of deprivation[13] and isolation.

[13] It is important to note that its deprivation is not only a local response to the mining crisis, but reflects Cornwall own historical process of peripheralisation. Even though Cornwall had been essential for the British industrial revolution, as the 1800's Cornish mines were among the largest enterprises of Europe, the lack of diversification in production and manufacture did not allow the region to become a core industrial region in Britain. The peripheralisation process led to an insufficient regional development, with no urban centre of regional importance and introverted small towns, that due to political and cultural fragmentation, were not able to establish strong inter-town links (Perry 2001).

Currently, around thirty percent of the working-age population is economically inactive and more than thirty percent of adults have no qualification. The village has a high level of working-age people receiving DWP benefit (Department for Work and Pensions, 18% against 11% of Southwest average). 24% of the population is income deprived, and almost 33% of the children live in income deprived households. Less than six percent of the population works with agriculture, hunting and forestry, reflecting the shift in economic activities in the village (Cornwall County Council 2002). Given the limited number of employment in the region and the low level of people working on primary activities, the data suggests that the working population has been allocated elsewhere—mainly St Just and Penzance.

Pendeneers also lack access to a series of basic services. 90% of the households are more than 8km from the nearest job centre, a government-funded employment agency and social security office, whose aim it is to help people of working age find employment in the UK. The index of people with no means of private transportation is 18.1%, 8% higher than the national average[14].

The patterns of land use in the community are also essential to understand the socio-spatial processes in place in the community. Let us focus on the most relevant ones. Currently, the village is mostly intended for residential use. There is a growing role of second and retirement homes, fact that in the past led to some wariness from locals to the incomers. But because it is still a small proportion of the housing stock (unlike other villages in the region, where much of the stock has become holiday houses, causing gentrification and precluding original inhabitants to remain in their homes), there is a relative harmonious relationship between the new and the old[15].

[14] The IMD technical nature, though giving an overall perspective of the relative level of deprivation of Pendeen, still highlights the measure limitation while investigating the social dimensions of marginalisation, specially in relation to digital marginalisation. This limitation is recognised by the methodology, as "there is no readily available small area data on the lack of socially perceived necessities, and therefore low income is an important proxy for these aspects of material deprivation" (Smith et al. 2015: 12). Income and employment deprivation weigh each 22.5%, while education, skills and training deprivation, only 13.5% and barriers to housing and services, 9.3%. Furthermore, there is no measure for access to ICTs, highlighting that "there has not been any common framework through which local patterns of digital exclusion and material deprivation (as measured by the IMD) might be systematically compared across England" (Longley and Singleton 2009: 1276). The authors have concluded that low engagement with technology is not always directly linked to materially deprived areas. This fact is essential, because the perception of deprivation is also an important measure to be considered in research. When asked about the deprived classification of the community, Sandra responded: "I can't speak for the entire population but I think that many, like me, would find the classification 'very deprived' to be an unwelcome description of their village. They regard Pendeen very differently. They acknowledge that they are not top earners or rich in terms of money but they place a high value on its special character, the friendly community and the pace of life here. We are surrounded, too, by the inspiring natural beauty of the countryside and the coast. The simple pleasures of swimming and walking in the countryside and on the SW Coast path are there for us to enjoy. There are many local initiatives by our County Councillor, Sue James, who is a valued, co-opted member of The Centre of Pendeen Committee. For example, this Christmas saw some local people move into brand new bungalows built by the Council. Also, aware of the need for digital inclusion, Sue has funded the use of computers and the Internet for local people, at The Centre, from her Community Chest funds.

[15] The reason why there is a relative harmonious relationship is that, while some inhabitants rejoice the arrival of new inhabitants, there are some that feel that incomers are just outsiders and will not be able to fraternise in the community. There is also the impression that many of the new incomers that try to get involved in the community's activities are pushed away. This is one of the contradictions found throughout the research process.

The lack of open spaces for everyday, spontaneous activities to be carried out meant that organised activities for extracurricular activities had to be organised by volunteers, mostly in the Church and in the Centre of Pendeen. These activities are essential for those inhabitants who cannot resort to external sources of leisure or knowledge building. Most of the social activities and local festivities in the village happen in those buildings.

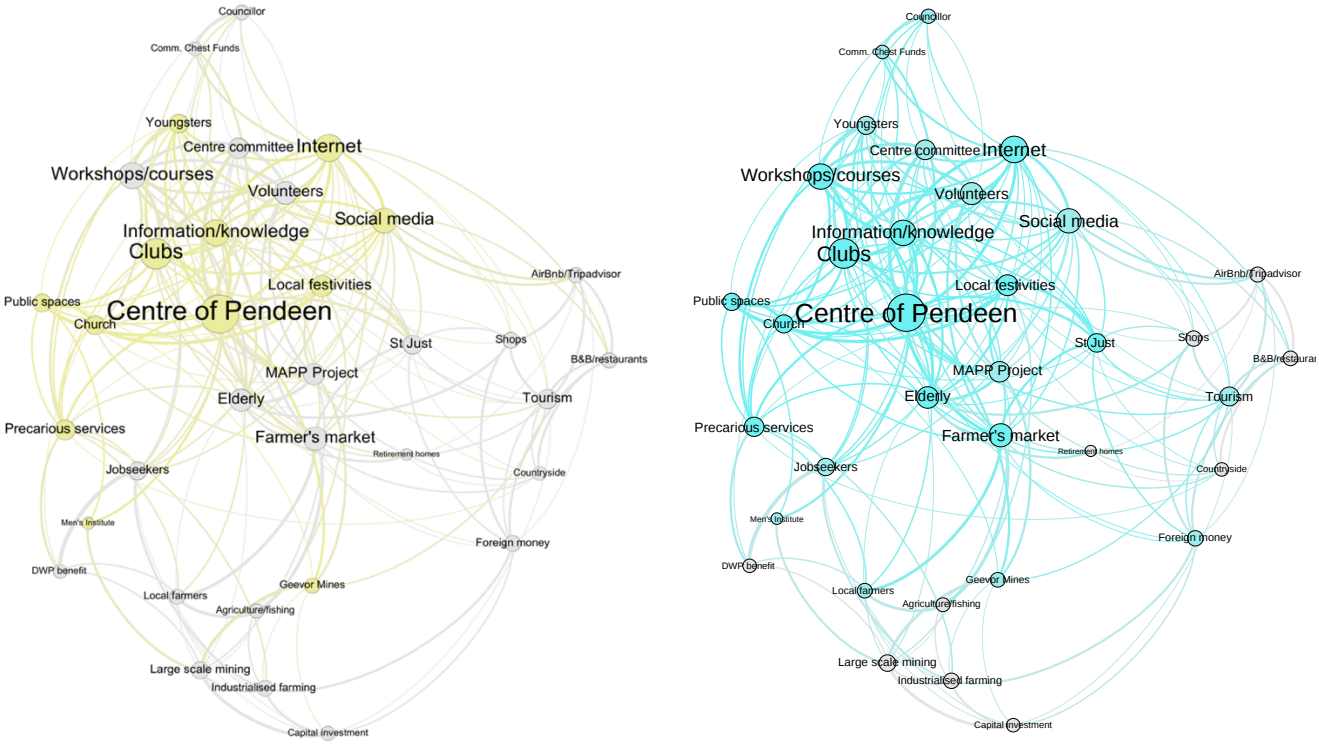


Figure 38: Permeability of public space and of the institutional buildings in Pendeen. Source: the author, 2016.

Figure 39: The Centre of Pendeen. Source: Councillor Sue James (2016).

Many clubs have also been organised in the community, some by volunteers or by people with specific knowledge that will charge a small fee, and also by groups of inhabitants that have a common interest. Among them there are the table tennis, Spanish, book lending, computer walk–in, activities for the elderly, such as dancing and the Patchwork club, among others[16]. The clubs count for most of the social activities in the community, but there are also local festivities (such as Christmas Pantomime) and religious events that aggregate the community. illustrates the higher permeability of institutional buildings in Pendeen (on the right side), in comparison to the public space (in the left). Institutional buildings have more direct connections in the network, as well as stronger and more often ramifications. To create these graphs the public spaces were highlighted in yellow and the institutional buildings in blue using the paint bucket. Two graphs were generated to maintain the clarity of the information.

Family agriculture is also losing its importance in the community. Even though the initial development of the region was made possible through the establishment of a supplementary agricultural culture, mechanisation changed the dynamics of the industry in the region. Large-scale farms dominate the surrounding areas, which costed working positions in the region. Currently, some families still cultivate their land for personal consumption and it is common to see, in harvest season, baskets with surplus production left by the inhabitants for collection[17].

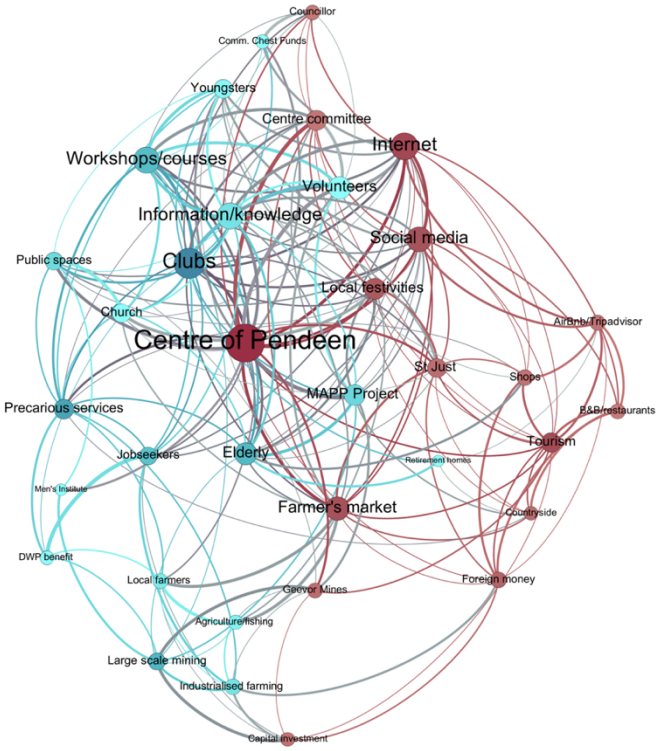


Figure 40: The growing importance of tourism in Pendeen. Source: The author, 2016.

The community has resorted to tourism as means of attracting foreign money. The village has some B&B types of accommodation and four restaurants. Currently, some accommodations can also be found through Airbnb, an app that allows people to rent rooms or whole properties,

[16] List of all activities in Pendeen and St Just: http://www.stjustandpendeengoodneighbours.btck.co.uk/ClubsSocietiesandActivities, last accessed 17/10/2016

[17] Information obtained through interview with Amanda, one of the inhabitants and volunteers at the Centre of Pendeen.

suggesting that some of the inhabitants are turning into the service provision sector to improve income. Pendeen also attracts inhabitants from villages and towns in the region. Figure 40 shows how tourism is permeating the everyday of the community, but the activity is still marginal in the network of Pendeen.

Pendeen still depends largely on the surrounding areas especially for shopping—such as St Just or Penzance—as they offer chain supermarkets and specialised retailers for larger items such as furniture, not available in the village. Since the shutdown of the Mines, the village has lost many of the shopping options it once had. One of the remaining options for grocery is Boscaswell Stores, which was closed for a while and reopened in the past few years. While it was closed, one of the inhabitants improvised a grocery in his own pub to serve the community, but stopped doing it as soon as Boscaswell was back in service.

Pendeeners are also very proud of their communitarian way of living. When asked, interviewees stressed that, despite some minor conflicting interests, the community is always collectively engaging into issues that are of general interest. Figure 41, for example, is part of the MAPP Project (Memories and Pictures of Pendeen), and shows the collective effort of some of the inhabitants to raise funds to make improvement works to the slipway and path at Boat Cove Pendeen in 1966.

Figure 41: People involved in clearing the Leat in 1966. Source: Centre of Pendeen, 2016.

Other community initiatives are relevant. In 2014, for example, the inhabitants of Pendeen joined with St Just's both online, through social networks and an online campaign (Caven 2014); and in meetings, to devise a plan to resist the government initiative to reduce the opening hours of the library of St Just. They arranged themselves to continuously borrow books as a symbolic gesture of the importance of the library for the community. The action, nevertheless, was unsuccessful (Meyjes 2014; Smith 2014).

4.5 NARRATIVES: TOP-DOWN INTRODUCTION OF THE INTERNET AND ITS UNFOLDING IN DIFFERENT SOCIO-SPATIAL SETTINGS

Both communities exemplify the way the internet is being provided in the rurban: as a top-down commercial process with very little support to the inhabitants. Having said that, the cases hold some nuances that will be exposed in this section with the narrative constructed from the empirical work. Let us first start with Santo Antônio do Salto.

4.5.1 Santo Antônio do Salto: marginal access to ICTs, marginal access to the internet

Access to ICTs is very recent to the residents of Salto. It is true that they had a relative early access to a landline through Elquisa in the 1950's, but this access was very limited (and not efficient). Currently, the district has some public telephones installed, but residents complain about the poor quality of service.

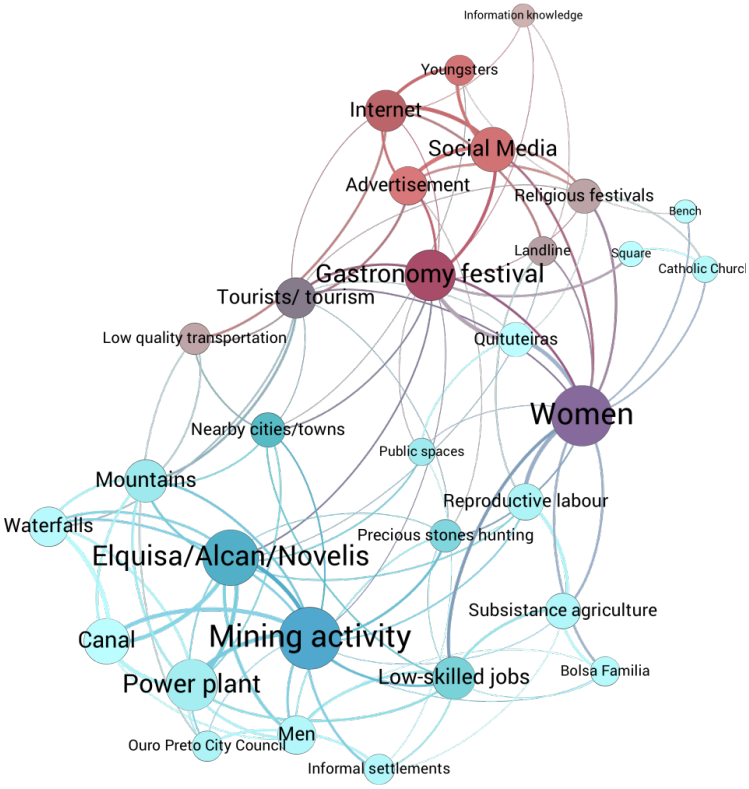


Figure 42: The positioning of internet in the overall network of Salto. Source: the author, 2016.

Access to individual landlines happened almost concurrently to mobile phones and the internet, and inhabitants praise that, since then, they do not need to wait for the news to come from Novelis workers. It is in this context that the internet was made available in the district especially in the 2010's[18]. Santo Antônio do Salto was never granted any government actions tackling the

[18] Although during interviews it was questioned how long television is present in day-to-day lives of residents, it seems to be the most widespread information medium in the district. In fact, in most of the interviewed houses can be seen that there is a television, and mostly televisions are large and flat. According to Cida, "TV we watch, you silly. TV is good. [...] I like only the Rede Vida [a catholic channel], only the mass. Well, Jornal Nacional [the national news produced by the largest communication conglomerate in Brazil, Rede Globo de Comunicação], I

digital divide, being subject to poor and high-cost rural internet delivered by small companies and slow mobile internet through a sole internet mast until recently. As it can be seen on Figure 42, marked in red, internet is in the periphery of Salto's network with little permeability and depth of importance in the community.

Limited access to rural internet and the widespread of mobile internet

Few residents had access to dialled internet in the beginning of the 2000's. Currently, Internet is available through individually contracts for rural internet service which operates on radio waves, and provides very low speeds. Monthly internet costs are on average 1/7 of a typical monthly income, so it mostly used by wealthier households. Some, like Cida, even have the computer but do not know how to use it and cannot afford the rural plan. In her words:

> "There are many people who already have [internet]. Who is more [makes gesture of money]. We who are poor cannot have it. Holy Mary, I'm just dying to learn how to use the computer. The day you have classes here in Salto, I will attend. No matter at what time, even if it is in the evening, I will go, but I cannot. There is nothing."

The families that have computer and rural internet access tend to use the computer for research, information research and knowledge building. Jheiniele, for example, describes how her daughter, aged eight, uses the internet to search material for school or to play educational games and only eventual use of social media is allowed. Maria do Rosário, a former school teacher in Ouro Preto (and now teaching in Salto) described the importance of the internet to know what is happening beyond Salto. She also used Skype to connect with her siblings, who did not live in Salto anymore. Her social connections went beyond the district, but at the same time, she did not have many connections in Salto (no family, not many friends, and she said she only participated in the praying groups formed around Christmas time).

Most people have mobile phones, some of which are smartphones with access to the internet, although the mobile phone signal is poor and provides intermittent access and internet packs are prohibitively expensive. As a result, people also use their phones sparingly, and when using their data pack, they give preference to Facebook. WhatsApp has recently become an important tool for day to day communication, especially among those who still live in Salto and those that have left[19].

Perception of the internet in the community: The Facebook frenzy

There is a clear distinction of how people from different social groups perceive internet in Salto. Some of the inhabitants have not embodied internet use yet for the most various reasons that go from the lack of devices for access to the inability to use a computer, but they grasp the possible benefits of being connected. Take Cida as an example. Because in their extended family she has people already living in Ouro Preto, and even a member with a university degree, she knows the potential importance of being connected, but does not have the means to be connected. She even had the idea, with her sister, to advertise on YouTube their idea of

watch from time to time. I do not sit here in this room, no. I had one TV there in the room but it broke. This one is for my boy to watch, the boy watches". For Jhane, one of the teenagers interviewed, television is one of the only means for fun for the residents of Salto. But the young warns that it works only for subscribers of Sky (private provider of satellite television) because the antennas cannot cope with the intensive heat in the village. The Sky antenna has become a sign of distinction in the community, as only the 'rich' can have it.

[19] In interview with Jeiniele over Facebook, on 21/10/2016.

enterprise: gold-digging tourism. Those who have wider networks, better education levels, skilled work, travel experience, etc., are also the ones with enough purchase power to have home access to broadband internet. This group usually recognises the value of internet to improve their life conditions, and use it to further expand their networks.

From the information acquired, it can also be said that the internet is more widespread among young people, and only now beginning to interest adults, and used primarily to access social networks. Facebook is the most used social media, and from what it can be observed, the social networks that were spatially established are reproduced online.

The image below (Figure 43) is the expansion of the actor-network internet on a focus on its use in the community. As it can be seen, social media (mostly Facebook) plays a pivotal role in the network, superseding even Internet, as most of the population confounds both. Information and knowledge are still marginal in the community, and often associated with those with purchase power and access to rural internet. As a comparison, the weight of access to information and knowledge is comparable with the weight of advertisement (size of the nodes), but the former is even less central than the latter (colour of node).

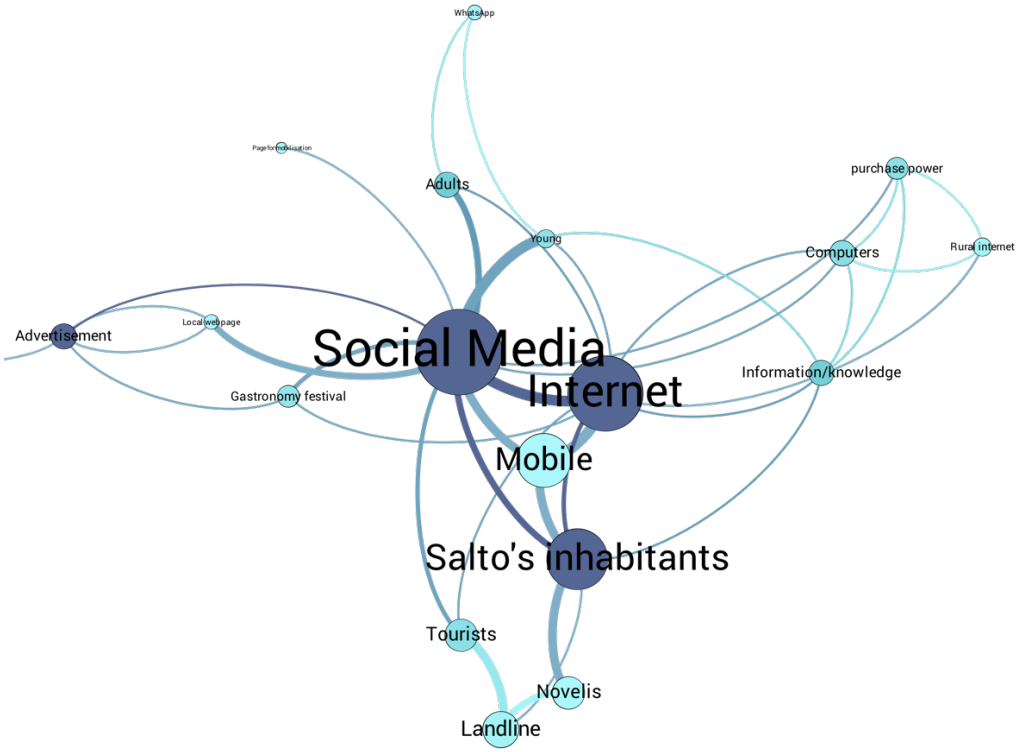


Figure 43: Santo Antônio do Salto's Internet network expanded. Source: the author, 2016.

The lack of a centrality that fosters internet use: individual ventures, but no collective use of the internet

The same disconnection caused by the unequipped communal space and reinforced by socio-spatial practices is echoed on the way people are using the internet. As a result, space and the internet have a marginal role in Salto's network, and are diametrically opposed to each other, (Figure 44, where yellow is related to the internet, cyan, to space and green to the interactions between them).

Furthermore, there is a lack of public place for people to access the internet (an earlier attempt to install a telecentre in the village school was frustrated when the computers were stolen on the same day they were taken to the building). As a result, the internet is mostly used as an individual means for communication, with little exceptions when people gather in someone's house to use the internet.

Another issue is that the internet is marginally used for information acquisition (formal knowledge). The low self-esteem of the community also means that there is little being produced internally for them to disseminate the knowledge produced locally, which most consider of no value. For instance, the initiative to use the internet as a tool to disseminate Salto was Weslei's, who created the site www.santoantoniodosalto.com.br, currently unavailable. He also created a 'personal page' (rather than a community page) in Facebook with the name of Santo Antônio do Salto[20]. But visiting the Facebook page it becomes clear that it is the initiative of a single individual, rather than a means for accessing information, or fostering communication in the community (as the Centre of Pendeen or the Noiva do Cordeiro pages work, as will be later presented).

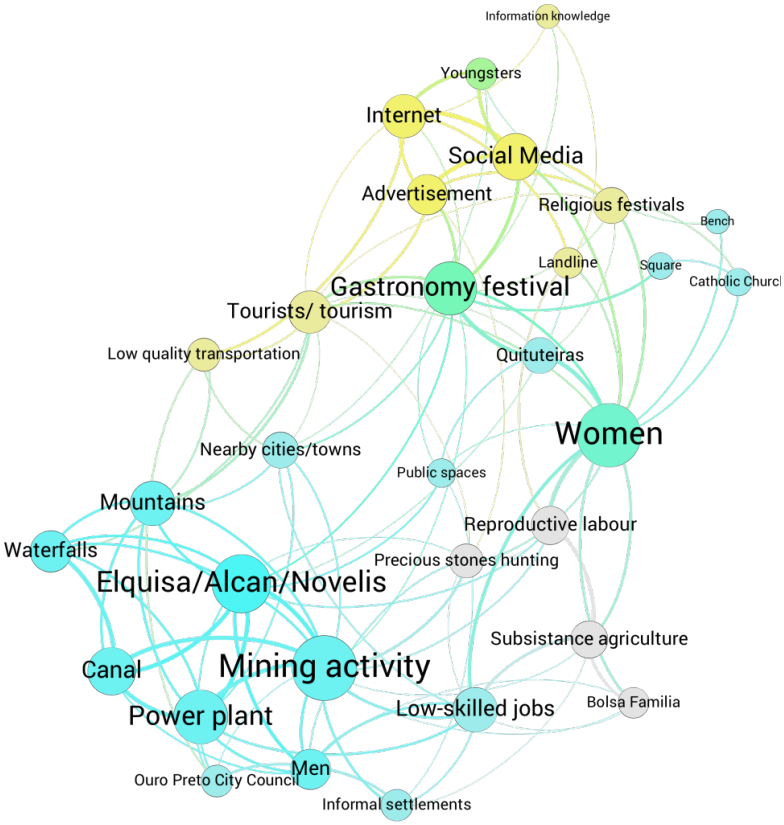


Figure 44: Interactions between space and the internet in Santo Antônio do Salto. Source: the author, 2016.

Another frustrated initiative to use the internet as means of mobilisation and communication of the community was the Facebook page titled CANAL DO SALTO NOVELIS providência já![21], created in 2013 by Jeiniele. It aimed to discuss and engage the population to demand action from Novelis

[20] https://www.facebook.com/waviagenseturismo?fref=ts, last accessed: 10/10/2016. In fact, the page has recently changed, and now reflects the Wesley's work as tourism specialist.
[21] https://www.facebook.com/?q=#/groups/556369351067783/?ref=br_tf. Acesso em: 20/01/2014

regarding its negligence with the canal that led to the then recent accidental death of D. Aparecida (the owner of the only B&B of the village). The page had a high level of accession at the beginning with 290 members. Despite the many posts of indignation with the position of both Novelis and the Ouro Preto City Hall, any time Jeiniele raised the need for people to organise themselves for action, no feedback from the participants was given. The page today is populated with advertisement for touristic activities shared by Wesley. One way for the page to have positive repercussions in the community would be for it to become a means for mobilisation of its inhabitants. Specially in this case, it needed also to be mirrored by spatial action, with the deployment of the community's resources to question the uneven power relations exerted by the institutions and the market. The low participation reflects the lack of spatial or online resources to mobilise towards change.

4.5.2 Pendeen: The centrality of the Centre of Pendeen in the community and its relation to the use of the internet

Similarly to Santo Antônio do Salto, Pendeen also had a top-down internet provision. Nevertheless, instead of just becoming sheer consumer of the service, the village was part of 'Superfast Cornwall', a pioneer governmental project developed within the UK's Rural Broadband Programme framework, managed by the Broadband Delivery UK (BDUK)[22] and in partnership with British Telecom (BT), which aimed at delivering superfast broadband to virtually all Cornwall from 2011-2015.

shows the network devised when acknowledging the interrelations between the Centre of Pendeen, the inhabitants and the introduction of the internet in the community through the Superfast Cornwall project. As it can be seen, the Centre of Pendeen and the superfast broadband play central roles in the network, while Superfast Cornwall, because of its instrumental approach, plays only a marginal role. Let us further investigate these issues[23].

The marginal role of BT in providing internet in Pendeen

Even though the provision of superfast broadband may be essential for the community, Superfast Cornwall has a very marginal role in the way Pendeeners are appropriating the internet. One of the reasons is that most of the budget of the project was applied to the provision of the network itself—that is, to the immediate availability of the internet infrastructure[24]. There has been no

[22] According to SERIO's report (2015) Superfast Cornwall managed to deliver superfast broadband to 95% of Cornwall and Isles of Scilly households and businesses by March 2015. Until 2020 with the New Programme, also run by the British company, superfast broadband infrastructure will be made available to 99% of the territory, provided that funds of the European Union are secured (http://www.superfastcornwall.org/future-programme). The extension of the programme has provided Cornwall with the world's biggest rural fibre network, and therefore, Superfast Cornwall considers the county as the most connected rural area in Europe (http://www.superfastcornwall.org/assets/file/Superfast%20Cornwall%20-%20Our%20Story.pdf)

[23] The narrative construed through ANT concerns the relationship between internet and inhabitants mediated by the community centre, that becomes central in the community context. The use of internet in individual settings was, therefore, not the aim of this research. It is important to note, though, that similarly to Salto, internet in Pendeen is not widespread due to the quality and costs of the service.

[24] Even though BT argues to have delivered superfast broadband to at least 95% of the households, it has only committed to making the service available, but households still need to subscribe to the service. There has been complains that the project has granted BT with the monopoly of provision—hindering competition and fairer prices. Furthermore, as in many places the fibre reaches only the villages' distribution boxes, and internet is further distributed through cables, the effective number of households receiving the superfast service is even further reduced.

substantial investment from BT's side to fund a long lasting programme focusing on the availability of an improved digital infrastructure. Similarly to other communities where superfast was implemented, Pendeeners were left to develop, by their own means, strategies that would ensure broader access and more effective use of the internet. That means that the long-term success of the programme relies on the work of volunteers, straining the already limited resources on the rural areas. Superfast Cornwall claims that more than 3,000 people were given a first taste of the internet[25], but there is no data showing which groups have been involved in digital training sessions and no follow-up on whether this 'first taste' led to its continuous use.

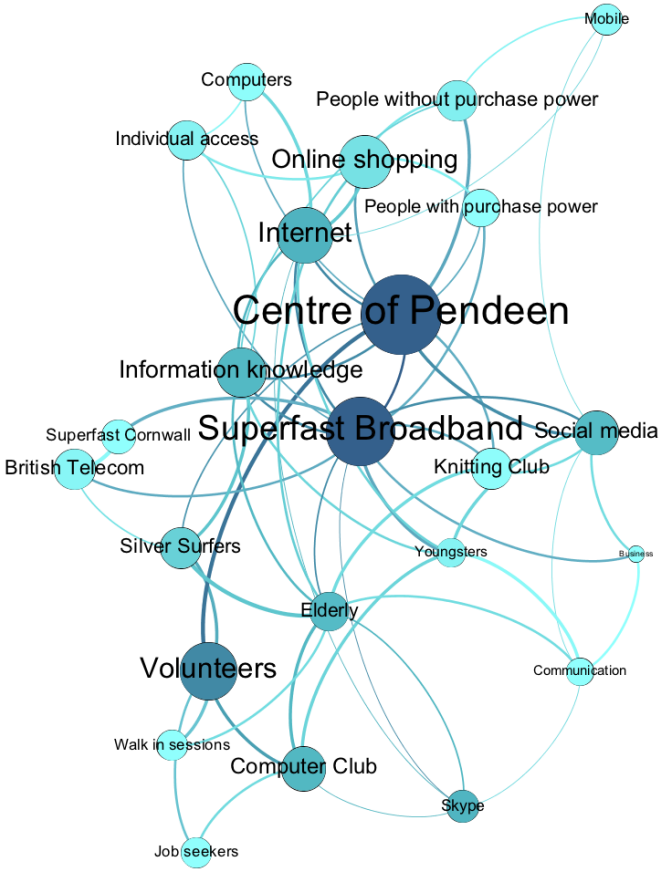


Figure 45: Expanded network of the access to the internet and the Centre of Pendeen. Source: the author.

The perception of the internet in the community

The population of Pendeen is gradually assimilating the internet as a means to overcome some of the limitations imposed by isolation and lack of resources. They have an overall positive perception of the internet, though still concerned with its role in their personal and communal lives: "your personality and independence of thought are lethally threatened" or "have to keep reminding myself there's a real world out there. Otherwise it would 'suck me in' [and] I would spend too long in a virtual world. That's the danger" are some of the local concerns relating to the internet.

The internet is mainly being used for three reasons in the community: information acquisition, communication and access to services and shopping[26]. The internet is improving the access of

[25] http://www.superfastcornwall.org/assets/file/Superfast%20Cornwall%20-%20Our%20Story.pdf
[26] Information obtained through questionnaires applied in Tea and Cake sessions carried out in 2014-2015 in the community.

the community to information. Inhabitants pointed out the possibility to research and to find information on different areas, such as schoolwork, health related information (such as pregnancy info), job seeking or family history research. Some referred to it as "Good Lord. A library in the wand of your fingertips" or "Online encyclopaedia. Got a question-go on web".

Local networks play a very important role in the everyday of the village, and the contact among inhabitants is still heavily based on face-to-face and landline use. But other means for communication are also present: Skype and social media are widening their connections beyond the already existing local networks. The recent implementation of superfast broadband in the communities helped people reconnect with those members of the communities that out-migrated especially to other English speaking countries, such as USA, Australia, New Zealand and South Africa.

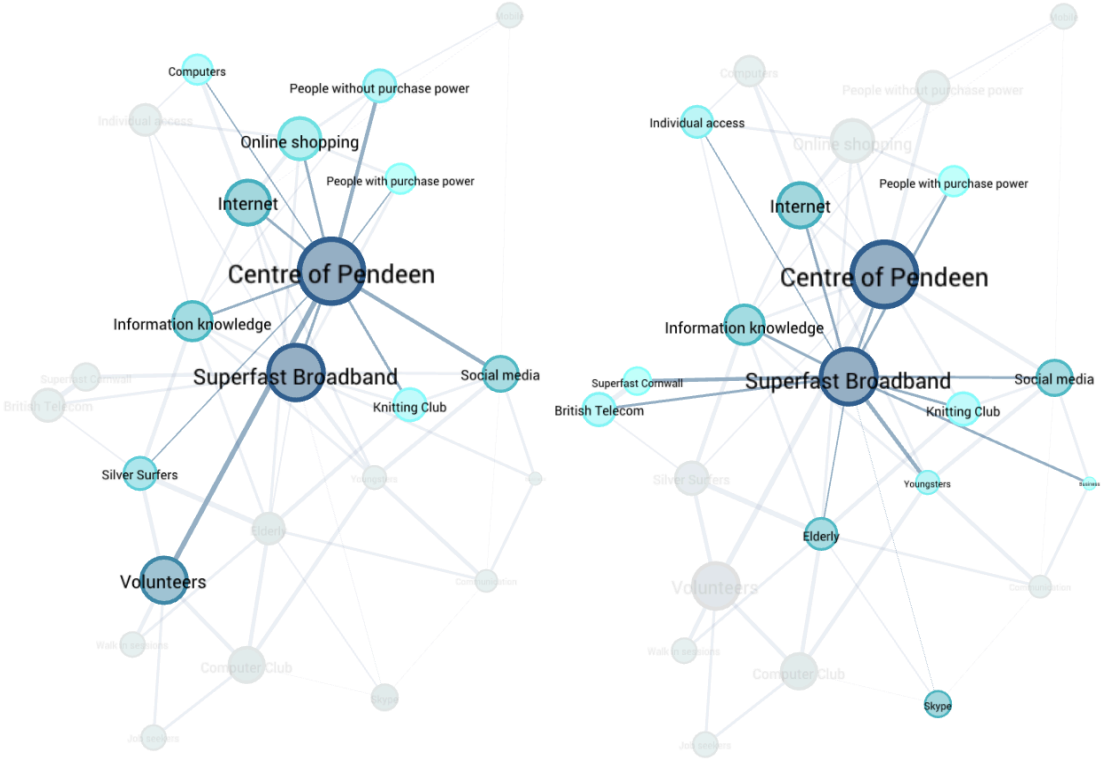


Figure 46: From left to right: network highlighting the Centre of Pendeen and direct connections and the Superfast broadband and direct relations. Source: the author.

Inhabitants are using the internet to access and offer their services. During the research, some highlighted the usefulness to compare prices and shop online or to book holidays, as research for shopping results in cheaper purchases. Others also use the internet to access government information on benefits, for example[27]. Another important role of the internet is the advertisement of local business and monetary activities. Lil's fish and chips (along with other shops), for example, encourages customers to rate the shop in TripAdvisor, believing it will attract customers to the shop. The Centre of Pendeen page also advertises some of the locally produced goods, targeting the local population, but also possible tourists.

[27] It is important to note that UK government plans to move most of its services online, therefore, it is essential for inhabitants in communities such as Pendeen, which are heavily dependent on government benefits, to be able to access them online.

Figure 46 shows the overall role of superfast broadband in the community also in comparison with the role of the Centre of Pendeen as well. Even though there have been complaints that the internet is still slow (a result of the technical decisions on how to distribute the internet in the community), superfast broadband (here understood as a socio-technical ensemble, and not just the tool to access the internet) becomes central in the community, together with the Centre of Pendeen.

The importance of the Centre of Pendeen, and its role in the spread of internet access in the community

The Centre of Pendeen provides a base for activities such as t'ai chi, pilates, yoga, table tennis, short mat bowls and a patchwork group. A farmer's market is held there twice a month. They also offer workshops and clubs that help the inhabitants with day-to-day issues.

The Centre is also responding to the change in population dynamics and the lack of employment in the region, by aiding the population in the search for jobs, offering courses, such as informatics and the work club and in the practicalities related to it, such as CVs and interview practicing. Figure 46 shows the direct relationships of the Centre and of superfast broadband in the network.

The community centre is also investing in the MAPP project, which aims to collect and catalogue images to preserve the history of the village as the villagers perceive it. According to Sandra Coax, one of the volunteers at the Centre,

> (inaudible) my husband and his family were all (inaudible) farmers (inaudible) and things. And I could hear them all talking together, it was just what a community centre should be, you know. And um... And that went out. We've got, obviously we've got um, a website here at the centre and we've got Facebook. […] And then Delia said — 'How about going to the committee and asking if we can do a local village archive here, based here?'. It might mean maybe taking over the whole room, we haven't got to all of the details yet. But we're going to call it Map of Pendeen, Memories and People of Pendeen. And um, and we've put the word out for local people to bring in um, anything they've got old photographs and things. And that will connect up too with our superfast broadband because obviously we're going to store most of it in that way and we'll have computers where people could come in and look at what we've got. So the superfast broadband will be used in the archive and we're looking at the moment at getting some extra funding. Um, so that, you know, we can really do this archive professionally.

Currently, the Centre of Pendeen is one of the most successful cases in Cornwall when dealing with ICTs. It offers an internet suite with six laptop computers and a subscription of Superfast Broadband connection. These computers were donated by the Job Centre Plus to develop a work club, still active, and can now be used at the community's discretion. In 2012 they obtained a grant to offer digital training and support for Jobseekers, and they also have hosted a GetIT Together digital training, the BT Connected Society's approach to improving digital inclusion (Harper 2015).

In providing a hub where people can come to learn basic IT skills and access the Internet, for example to look for work, prepare CVs or register for Government services, the Centre of Pendeen is providing a vital resource to local residents that may otherwise be left excluded from the digital age. The Centre is a shining example of the impact that volunteers can have in their local community, which can inspire other villages and towns across Cornwall (Superfast Cornwall 2016: *online*)

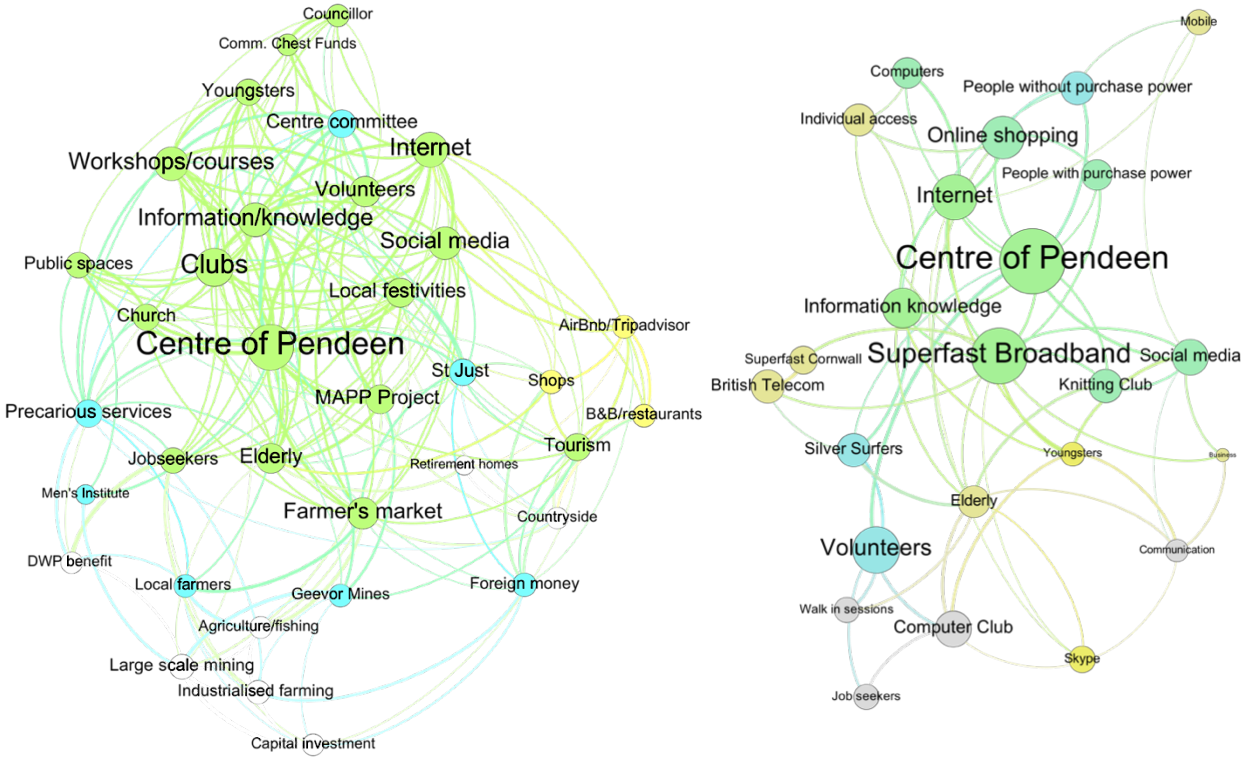


Figure 47: Permeability of the Centre of Pendeen and of superfast broadband in the general network (left) and in the Centre-internet network (right). Source: the author, 2016.

Volunteers have a major role in the functioning of the centre. Figure 48 highlights the extension of the role of volunteers in the network, marked in red. Besides the clear connection with some of the nodes in the network, the coloured edges suggest that the volunteers' performance exceed the Centre itself, influencing the everyday of the whole community.

The volunteers are now associated with YMCA to create a youth club, which main goal is to provide laptops and connectivity for children to access material needed for their homework. This is essential in Pendeen, since schools are relying ever more on online activities to complement studies and the youngsters in Pendeen lag due to the lack of home access to the internet.

The access to the Internet is free of charge for low-income inhabitants and there is a small fee for others (2£ an hour) to help cover the costs of the Centre, running at around 1000£ monthly[28].

[28] The volunteers also organise a series of events with the purpose to raise funds for the centre. Sandra noted that "Last year that was several months that we weren't covering our costs. And then, um, we had a big exhibition here (inaudible) exhibition here about the ship wreck, that raised. My cake festival, you know, I mean okay, it's not huge amount but I think handed over about one pound, one hundred and fifty pounds to the centre. But there were many months when, you know, you looked at the balance sheet and there were two or three hundred kind

The computers and the free access, in conjunction with actions to introduce ICTs to the community brought many people to know the Centre, when before they did not. This was also an important step for them to engage in other activities offered there. For those people, digital inclusion came with some sort of social inclusion (even if marginal). Figure 47 shows the permeability of both the Centre and the Superfast Broadband in the community and the juxtapositions among them in relation to the whole network, on the left and the Centre of Pendeen-internet network, on the right.

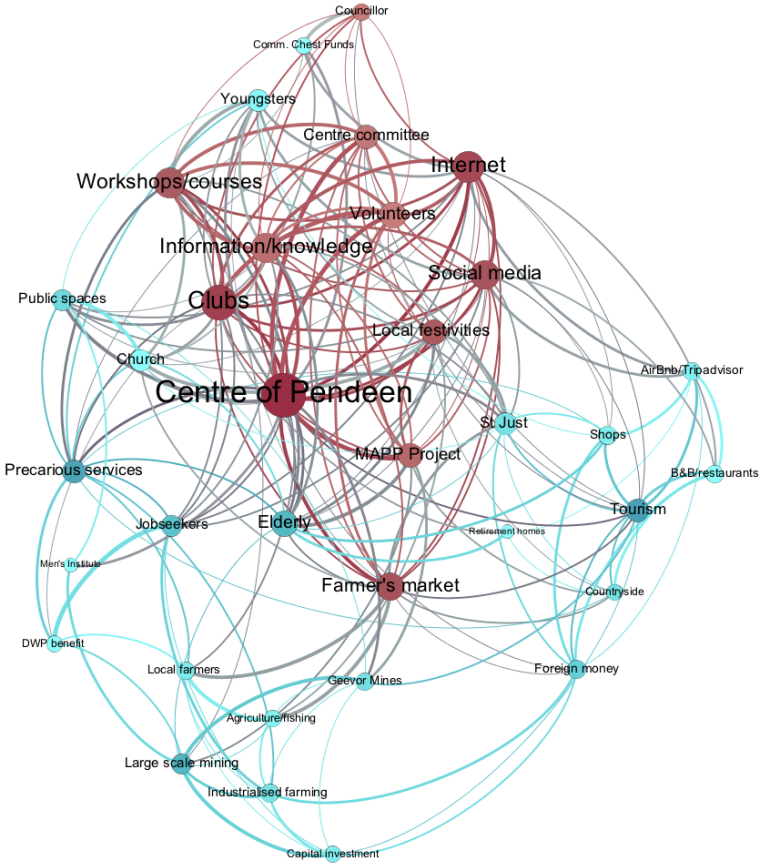


Figure 48: Importance of the volunteers in the community centre in the context of Pendeen.

In yellow are represented the ramifications of the Internet, while in blue, the ramifications of the Centre. In these images, it is possible to see how both actor-networks are complementary to each other, as the green colour shows the paths and nodes of which both actants are connected.

4.6 Preliminary pointers

Santo Antônio do Salto and Pendeen are two communities which have entered the circuit of capital early on their history. Nevertheless, Santo Antônio do Salto has always been peripheral while Pendeen firstly occupied a prominent position in industrial activities. With the disintegration of the mining industry they were further cast outwards the system, and were not able to fight isolation and develop disruptive socio-spatial practices. They both illustrate the standard top-down approach to introduce the internet in rurban communities, each of which

of in the red. And in the difficult months and then more things start happening so… Yeah… It would be lovely to make it [internet] free for everyone, but it is virtually free to everyone".

with their distinctions. The first distinction relates to the way the internet was brought to the communities. While in Salto it is still mainly provided by the market with no governmental initiatives to tackle access or effective use, in Pendeen superfast broadband was implemented by the government within a digital inclusion framework (mostly focusing on access, rather than effective use). Still, other elements in their networks are responsible for the way the internet is locally perceived and used. The following sections will further explore three of those: the socio-spatial organisation of the communities and the role of space in the appropriation of the internet, the way networks are being built with the institution of the internet and the ways the community approaches the internet in terms of information and knowledge.

4.6.1 Socio-spatial organisation: the role of space in the actor-networks observed

By investigating Santo Antonio do Salto, it becomes clear that it remains a peripheral community, unlike other districts of Ouro Preto, which explored (or fabricated) local potential—especially tourism—to generate income. Within the framework provided by ANT, Salto seems to be in a (temporarily) stabilised network[29], of which recent changes do not significantly alter the socio-spatial configuration of the district, not even the dissemination of the internet. The lack of mobilisation of the community points to a tendency of stabilisation; and in this scenario, most inhabitants do not act as mediators of the network here developed. As one of the residents pointed, “what is missing here in Salto, I find it difficult to get, because what is missing here in Salto is the alliance of its people. Here you have, as they say, you know, just have people to pull you back, right (sic)? Now, to help you, that is hard.” Seu Anastácio believes that this lack of collective spirit is the elder’s fault, and that Salto residents will only be united when "the old die" and new to take the initiative. Nevertheless, several of the young people interviewed have no interest in mobilising and show the intention move out from Salto.

Mirroring the everyday solidarity at the individual level among neighbours, the internet is reduced to a social network which extends to minor everyday actions, reinforcing their marginalised condition. The everyday is stultifying, and as the public/collective spaces in the district do not afford occasions for people to congregate, Saltenses live a very introverted life. Retreat from public life means less possibility of mobilisation in the district, and this is reflected on the lack of online arrangements in the search of justness, neither in regards to Novelis oppressing living conditions imposed to the village, nor in regards to the negligence of City Hall with Salto’s inhabitants.

Like Salto, Pendeen is an isolated and peripheral community in UK. However, differently from Salto, it has a history of collective engagement. The establishment of the Centre of Pendeen, for instance, was the result of the pre-disposition of the community to collectively engage, and at the same time, it became a central node in the community that now allows for further collective action. The centre has become a fostering space, as it is actively involved in events that tackle common issues, such as the need to improve the employability of its inhabitants or to offer leisure activities no cost or affordable prices. Yet, the reach of those actions is still very limited, and, in the end, the centre displays a resigned position, still concentrating on the improvement of the quality of life of its inhabitants on an individual basis.

[29] Even though, as it will be later discussed in Chapter 6, rurban communities are far from being stabilised networks, for the tension between urban and rural elements that compose its socio-spatial organisation.

4.6.2 Redefinition of networks, reinforcement of existing ties

Generally, the wide spread of the Internet in Pendeen has contributed to the redefinition of networks, especially in a global scale. Inhabitants can much more easily communicate with family and friends not only in UK, but also globally. Software such as Skype has become part of the everyday of a large part of the population. Local ties have not changed drastically, as the community still relies heavily on more traditional communication forms, such as landlines or face-to-face communication. Mobile technology has been embraced to solve everyday issues. One interesting fact, though, is how email became a form of communication between Pendeeners, indicating that different technologies play distinct roles in the village as pointed out by many inhabitants in the village.

The patchwork club is a good example of how the internet access contributes to the expansion of local ties. The group, formed in its majority by elderly women, keeps close international ties to other patchwork clubs, made possible using the Internet and social media, especially Facebook.

Social media is also boosting local small businesses. The Lil's Fish and Chip shop, along with other four restaurants in the area are listed on tripadvisor.com, and the owner, who is also the cook, makes sure to ask clients to go there and rate the shop. For her, advertising her shop on the internet nowadays is not only excellent, but also vital for her business. The Centre of Pendeen also explores social media to help engage the community by functioning as an information sharing hub. Their Facebook page displays all the activities being offered and posts topics regarding the village.

Inhabitants of Salto, in turn, are reproducing their previously existing networks online. The lack of engagement already present in the community is also observed on the way they have been exploring the internet. One important sign of the narrow perspective of the internet is the fact that most of the people interviewed believe that Facebook is the internet[30]. The platform is being used on an individual basis, and there is little success in any initiative that requires the engagement of Saltenses. Some people will use Facebook as means to advertise their economic activities, such as the quituteiras with the gastronomy festival and Weslei with his tourism business. But still, most of the population do not know how to use tools available online. This lack of knowledge and the high costs of access limit the depth of use in Salto. More recently, WhatsApp is also being used for people to communicate, but again, it is mainly reproducing the networks they already had before.

4.6.3 Information, knowledge and the internet

As this chapter has shown, in both Salto and Pendeen the way the internet is being used does not lead to profound changes in the communities. In both, though, its implementation has contributed to the improvement of quality of life, though in different levels. Figure 49 shows how information and knowledge permeates much less into Salto's Network than of Pendeen's. For this, the actant information and knowledge was highlighted in red with the paint bucket tool.

In Pendeen, the community centre plays a central role in advising and tutoring the community on how to use the internet for their individual needs. People know they can get information

[30] In fact, 55% of Brazilians believe Facebook is the internet (Derakhshan 2015).

online and some will also use it as a knowledge building tool, even if rudimentarily. Furthermore, the use of some of the tools available online to engage in matters that are important to the community can be observed, such as the online petition, the Facebook pages and webpages calling the people to act. If on the personal level some have decided to refrain from using the Internet on a regular basis, they still see the changes brought by the infrastructure allied with a supporting place for its use. In Salto, on the other hand, the internet seems to be much more established on the everyday of the population, but at the same time, the way the population use it is much more superficial than in Pendeen. Once Facebook is prevalent, the population has much less access to alternative sources of information and knowledge building tools. Furthermore, there is little effort of the community to share local knowledge. Thus, there is an impoverishment of Saltenses in this regard: the improvement in quality of life in Salto is, thus, marginal.

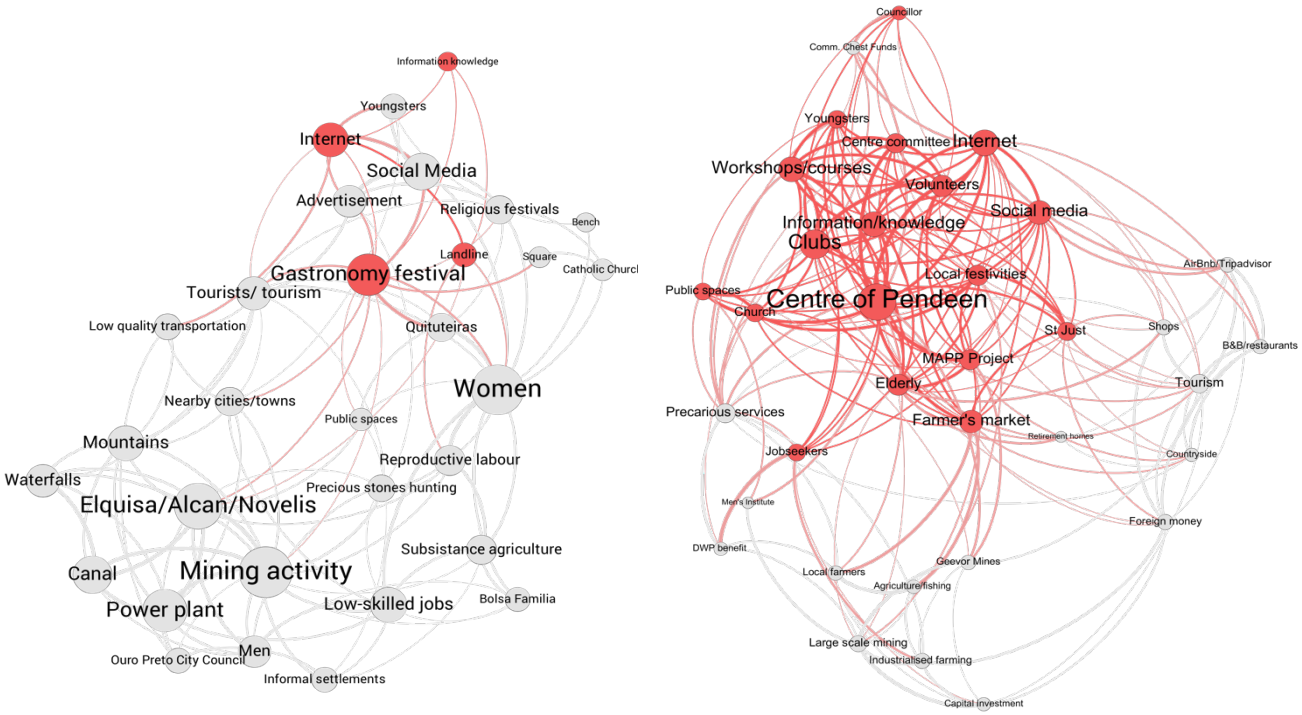


Figure 49: Comparison between the extension of information and knowledge in Salto's general network, on the left, and Pendeen's, on the right. Source: the author, 2016.

Another clear distinction between the two communities is that while a great proportion of Pendeeners are involved in ways to share their local culture through the internet, thus reinforcing some of the rural elements of which they are proud, Salto's population does not seem to value their local culture and the knowledge they produce locally. Only spare attempts can be found online.

5 The role of ICTs in the enhancement of collective introduction of the Internet and the relationship to existing socio-spatial practices in Noiva do Cordeiro, Brazil

5.1 Understanding the historical development of Noiva do Cordeiro

5.1.1 General historical development before the arrival of the internet

Noiva do Cordeiro is a rurban community on the outskirts of Belo Vale, a 7,000-inhabitant town located 80km from Belo Horizonte, the capital of the state (Figure 50). According to local reports, the community began when, in the late 19th century, Dona Maria Senhorinha of Lima, newly wed in a marriage arranged by her father, left her husband Arthur Pierre by Francisco Augusto Fernandes de Araújo, known as Chico Fernandes, and fled to the outskirts of Roças Novas. As they lived in a period of very religious rigour, the couple and up to its fourth generation were excommunicated by the Catholic Church of Belo Vale, and they raised their nine children isolated from the surroundings.

Figure 50: Noiva do Cordeiro community. Source: Noiva do Cordeiro (2016c).

Fifty years after the excommunication, in the 1940's, the evangelical minister Anísio Pereira evangelised the vicinity. The 43-year-old Pastor married Dona Delina Fernandes Pereira, 16, the granddaughter of the excommunicated couple, and founded an Evangelic church called Noiva do Cordeiro (loose translation: Bride of the Lamb), the result of his criticism to over eighty other religions he had carefully studied. The implementation of the religion reinforced the prejudice of local Catholic groups against the community. The restrictions imposed by the conflicting relationship with the Catholic Church and the life of deprivation and sacrifices required by Pastor Anísio led the community to impoverishment and famine: not enough food was produced and members of the community could not work in the nearby communities.

If on the one hand, the community isolated itself from its surroundings for not conforming with the catholic rules, on the other, religion helped them create strong links with two other smaller rural communities in Minas Gerais: Sião, near Montes Claros and Mouras, near Desterro de Entre

Rios. By means of shared religious beliefs, they created strong bonds that are still part of their daily lives.

In the 1990s, the community, with around three hundred members, began to question Pastor Anísio's doctrine. Little by little, D. Delina emerged as new leadership to break the internal symbolic violence—represented by the severe religion—and external—that resulted from the forced isolation on religious grounds. She dissented from imposed rules, by not apologising to her husband in public or by allowing music during one of their daughters' wedding, for example (Rose and Schultz 2010). Since then, she has become an authority in the community (even though most issues are deliberated in the community, D. Delina has the final say in many issues, such as the construction of new houses) and is respected not only in Noiva do Cordeiro, but also in the other communities.

Knowledge was also an essential tool to overcome the religious institution and Seu Anísio's ruling of the community. Noiva do Cordeiro inhabitants were already aware of the importance knowledge, despite the forced isolation they faced, and women created study groups to challenge the strict religion. With the minister's death, the community chose the abolition of any institutional religious dogma but remain faithful, though with no religious ties.

They believe there is one important lesson from the years under Pastor Anísio tutelage: the cohesiveness of the community. They kept the community values reinforced by it and created a consistent discourse around mutual love and share. In Noiva do Cordeiro, 'everyone is for everyone' and 'one cannot decide for all'. Ana Paula Baltazar (2013) describes this new process as the establishment of the *love doctrine*, which morally guides and helps shaping the behaviour of Noiva do Cordeiro's inhabitants.

The initiative to break the extreme poverty cycle came from the matriarch, D. Delina. She accepted whole families to her twenty-room house, sheltering over eighty people. The transition also required the establishment of new arrangements: men left for work especially to Belo Horizonte, returning on the weekends while women stayed and were responsible for the maintenance of the community. Apart from the Mother house, inhabitants lived in other shared houses built in the community.

The communitarian way of thinking inspired the development of other activities in Noiva. Household chores were taken collectively and divided per taste and without hierarchies. They invested in collective subsistence agriculture, joining effort during harvest. In 1999, the Associação Comunitária Noiva do Cordeiro (ACNC – Community Association of Noiva do Cordeiro) was founded. Their actions are integrated with governmental initiatives, NGOs and volunteers and extend beyond the community boundaries, reaching other parts of Belo Vale. Following the organisation of the chores, women decided to join their domestic sewing machines to produce underwear as means to complement the income of the community. Other activities were also collectively organised to sustain Noiva do Cordeiro, such as wood collection in a nearby farm that gave them enough wood for cooking for over a year.

5.1.2 Developing and expanding connections

The decision to dismiss the evangelic religion that hindered the community for over half a century was an important step to overcome isolation, first with the creation of local links with the

neighbouring communities and then with the expansion of their network to wider groups, as developed in the following paragraphs.

With regards to local connections, two moments were essential for the creation of local links. First, on the occasion of the 2004 local representative election process, Noiva do Cordeiro put forward Rosalee Fernandes as a candidate for Belo Vale City hall. Because she knew other communities were being overlooked by the local government, she intended, if elected, to also cater for the needs of these other marginalised communities. While campaigning in the region, she initiated an unprecedented communication process. According to her accounts, by visiting the neighbouring villages, she was also able to demystify Noiva's image as a community of prostitutes, that since the end of 19th century stigmatised women. This was the first time in many decades that someone from Noiva do Cordeiro talked to outsiders. With the massive mobilisation of Noiva's inhabitants and also acceptance from inhabitants of the other communities, Rosalee was elected in 2004 with 279 votes. The electoral process in 2004 was essential for the development of local connections to nearby settlements as well as for empowering Rosalee, and therefore, Noiva do Cordeiro inhabitants, to procure institutional support.

Second, in 2005, the community was granted with the first informatics lab in a rural area in the State of Minas Gerais: Centro de Informática e Desenvolvimento de Educação Comunitária (CIDEC - Centre for Informatics and Development of Communitarian Education). This project was made possible due to a partnership among ACNC, the mining company Vale and the Comitê para Democratização da Informação (CDI – Committee for the Democratisation of Information Technology), with the support of Microsoft. Per Baltazar (2013), the fact that Rosalee was a city councillor may have been critical for the success of the project. For the first time, residents of Noiva had access to a computer, and for that, in 2006, they became known as *rural pioneers* through an Estado de Minas, a major press vehicle in the State, newspaper article. According to Elaine, adult, coordinator the CIDEC in 2007, "the computer classes gave us visibility and the opportunity to denounce the discrimination we suffer" (Microsoft Brazil 2007: 38). This infrastructure enabled Noiva to create bonds with the neighbouring communities with the creation of the CIDEC Itinerante (Traveling CIDEC), through which people that otherwise would not have access to computers could use them. With the implementation of the internet, inhabitants of these villages also visited the community.

Noiva's links expanded beyond the local specially from 2006 onwards. Besides the newspaper article in the *Estado de Minas*, the documentary 'Noivas do Cordeiro' (2008), from Alfredo Alves, presented Noiva to a much wider public, reaching national and international repercussion. Though punctual in Noiva's path, they uncovered the unusual socio-spatial practices of the community, which have been attracting the media attention ever since. Figure 51 illustrates the historical development of the community.

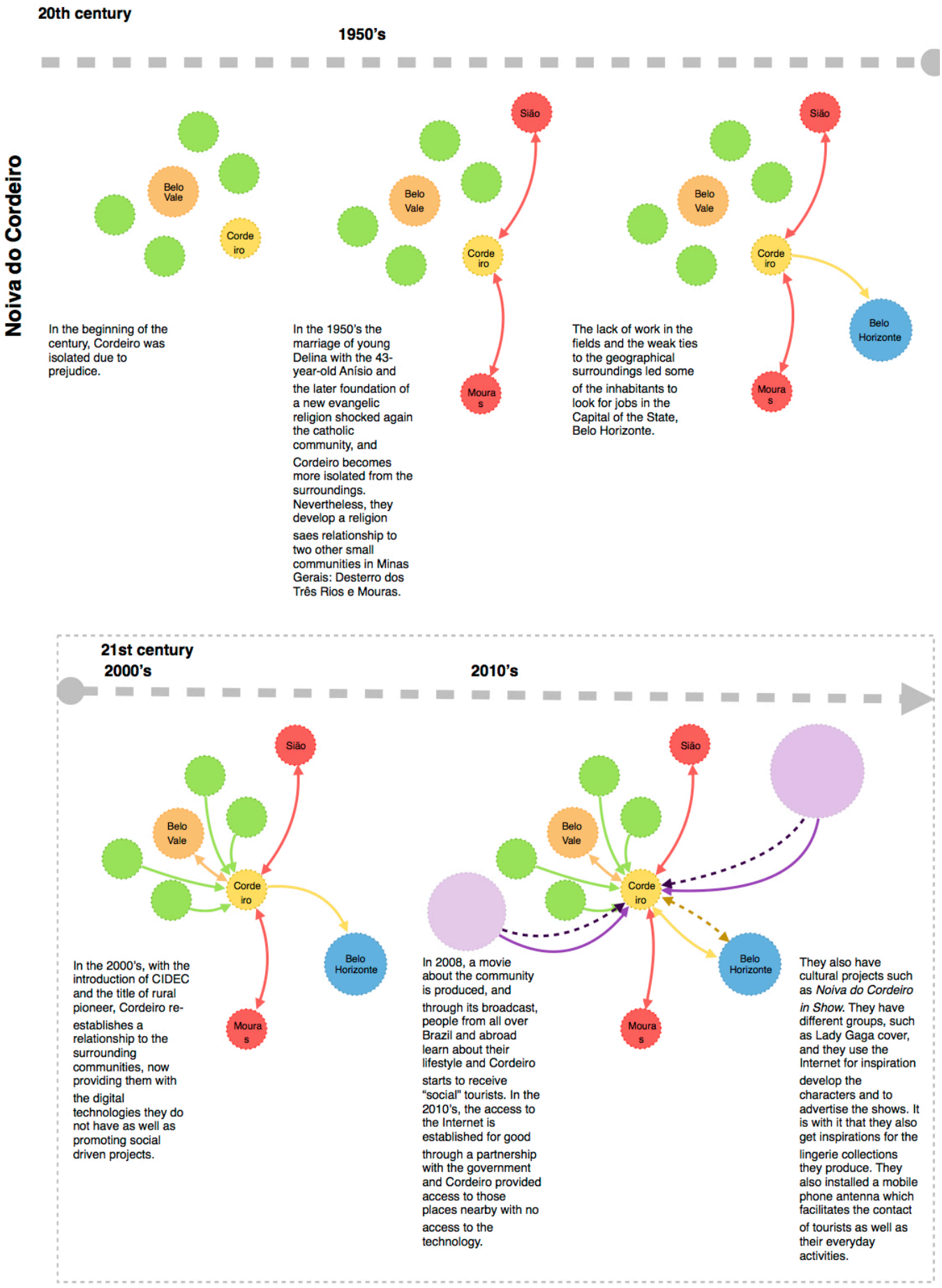


Figure 51: The historical development of Noiva do Cordeiro. Source: the author, 2016.

Figure 52 shows the network devised for Noiva do Cordeiro, based on the information collected in the fieldwork. The elements of the network will be further unpacked in this chapter. As in the analysis of the other two communities, the size of the nodes displays the number of connections a node has in relation to the weight of each connection. The colour gradient, in turn, depicts the centrality of each of the nodes in the community. What first stands out is the prominent role of the women in the community. A second interesting element is how the actants in the network are closely linked, which is shown both by the concise shape of the network and the small variation in the colour gradient.

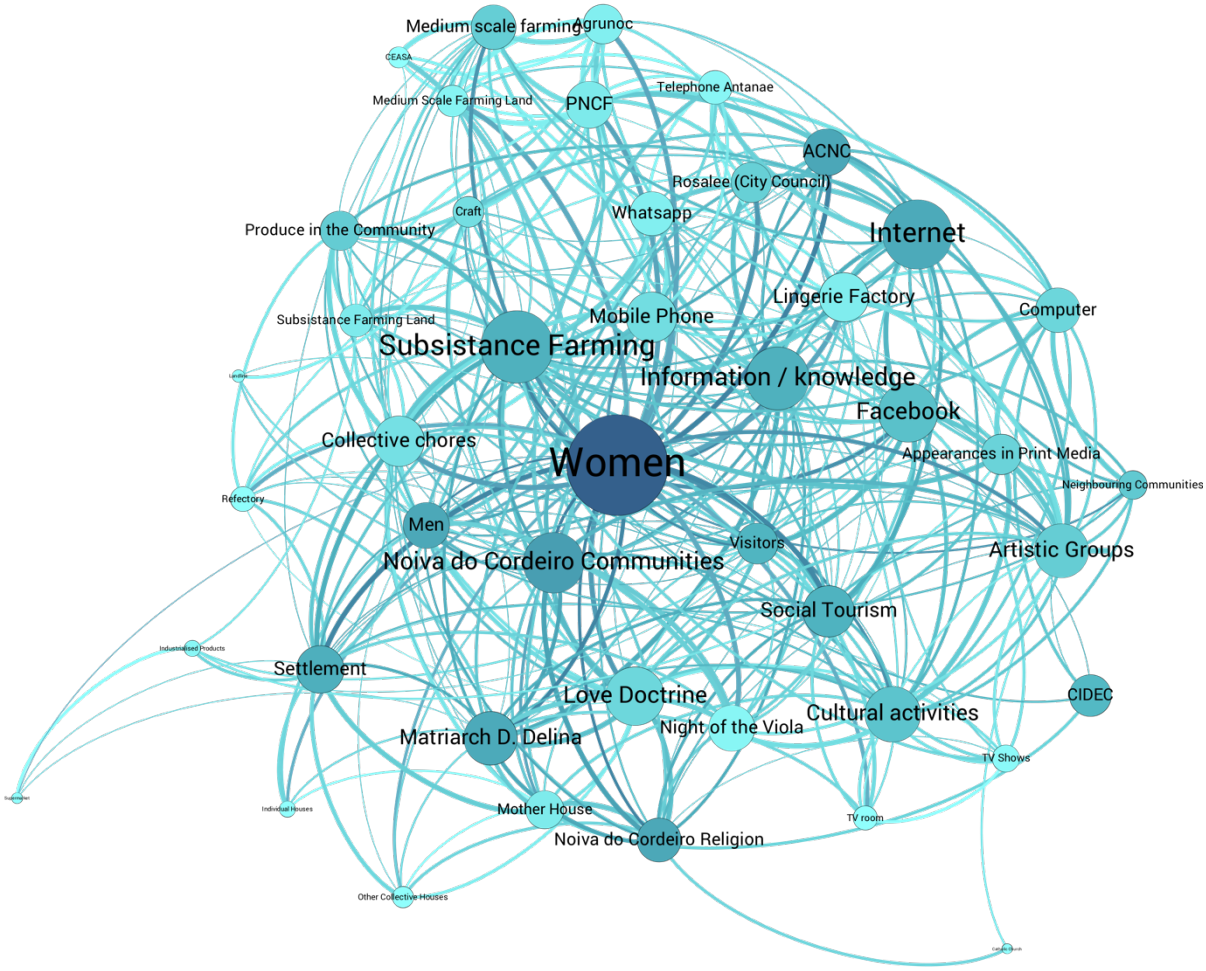


Figure 52: Noiva do Cordeiro network. Source: the author, 2016.

5.2 Spatial configuration of Noiva do Cordeiro

The village core followed a radial axis of expansion. The oldest building in the land is the 'Big House', (built in the 19th century). Today, it functions as a guest house for the other Noiva do Cordeiro communities' members and a nursery for local children. The 'Mother house' is a central space in the community. It works as a meeting space for the community, but it is also home to D. Delina and other inhabitants. There is another collective house, the 'Yellow House'. Together, they accommodate the around 300 women that live in the community. Some others live in extended family units, smaller houses built by individual initiatives. In 2013 there were around 20 individual houses, but this number is quickly raising. As with any of the buildings in the area,

the construction new units is determined by demands that arise in the everyday and is dependent upon agreement of the community and the approval of D. Delina (Zerlotini 2014).

The collective division of the household work has led to the creation of equally collective spaces for laundry, cooking, babysitting as well as for group meetings, cultural activities and sports. These locations also support a range of social activities, including theatre, dance and computer classes that are all organised by members of the community in their own time (Figure 53).

Figure 53: Spatial organisation of Noiva do Cordeiro. Source: Google maps with incursions from the author, 2016.

Locally, the community is expanding: there is a local supermarket (whose functioning in the community is yet not clear) and little stores to sell their produce; new housing units are being built at a fast pace; and existing buildings are being refurbished. The bathrooms, for example, are being tiled, and one of the rooms in the Mother House became a television lounge where promotion videos produced by members of the communities are shown to tourist.

5.3 Current socio-spatial processes in Noiva do Cordeiro

5.3.1 Introducing the current socio-spatial processes in the community

As previously presented, Noiva developed itself as a contained community in the end of 19th century, because of the excommunication from the local catholic parish. Later, the rigidity of the Evangelic church resulted in an austere public space for the fulfilment of religious duties. For almost four decades, the community evolved around the church, that ruled the not only their behaviour, but also the social relations within the community. No leisure activities were allowed and punishments were often publicly performed. Therefore, the church (as an institution and as a space) had a symbolic importance, as it portrayed the power of religion (and of Pastor Anísio) over people. Again, for religious reasons, people from Noiva do Cordeiro were forbidden to talk to outsiders, reinforcing a distorted image of the community, many times depicted as a land of prostitutes. This has led to prejudice—as women were mistreated when shopping in the nearby communities—and violence—such as when men from the region invaded the community with the aim to sexually assault its women (Alves 2008 and Fernandes 2010).

The rupture with the Noiva do Cordeiro religion in the 1990s led to a systematic re-appropriation of local space. It started with a symbolic change: the church, rendered inadequate, was transformed into a 'bar'—a space to celebrate all sorts of activities that were not allowed during

the previous period: there was music, dancing and fun. The public space slowly transformed into an engagement arena, where common struggles could be addressed. This re-appropriation of the space, which marks a shift on the way the public is perceived, led to a socio-spatial organisation based on a communitarian spirit that, for the first time, could be acted upon the space itself, as it will be further developed in the following sections.

Regional networks were also developed, specially in the 2000s, contributing to a redefinition of Noiva do Cordeiro relations with the surrounding area. The diverse cultural and educational activities overtaken by ACNC also benefited other marginalised communities in the region, and Noiva's inhabitants were seen with much more respect and admiration. Finally, foreign interest in the community lifestyle also led to the development of a sort of 'social tourism' that caters for individuals and groups that wish to visit. That adds a complementary layer in the socio-spatial practices of the community.

Currently, Noiva do Cordeiro is undergoing other vigorous changes in their socio-spatial processes due to the investment in medium-scale agriculture, made possible by the PNCF – Programa Nacional de Crédito Fundiário (Free translation: Nacional Programme for Land Credit). The land credit obtained allowed the community to acquire part of the land they already used for planting, as well as a tractor and agricultural inputs for the increase in production.

Figure 54 was produced in GEPHI using the Modularity algorithm. This algorithm distributes the network in communities according to the density of the links among its nodes (Blondel et al. 2008), that will be here denoted as clusters to avoid any ambiguities, as community is used to describe Noiva do Cordeiro in general. The graph highlights four clusters in the current network of Noiva do Cordeiro. The size of the nodes was calculated from the number and weight of connections among them.

In blue, we can observe the core elements with which the community was formed: knowledge, the love doctrine (and the reminiscent elements of Noiva do Cordeiro religion), as well as the Night of the viola. Women are the strongest node of this cluster, which depicts the social basis of Noiva do Cordeiro. The pink colour highlights the organisation of production that first allowed Noiva do Cordeiro to surpass the economic difficulties they previously faced. It displays elements that are the basis of a family economy: collective chores, subsistence farming and the lingerie factory were the local responses to the lack of income in the community. They also depict the collective management of the space. Together with subsistence farming, the internet is the most important node in this cluster. In fact, as it will be further discussed, the internet (and the acquisition of mobile phones) was an essential tool for the strengthening of some of the activities here grouped, and, moreover, it was essential for the development of the activities have been bundled in the green and the orange clusters.

The orange cluster gathers the cultural activities and the elements that are related to them and there is no clear centrality. What is interesting in this cluster is that it shows an increased importance in elements that were just recently introduced in the community, such as the social tourism. Facebook also appears as an prominent actant in the network, mediating the activities and their repercussions outside the community. Finally, the green colour agglomerates the medium scale agricultural production. It is still quite marginal in the network, suggesting that even though it is in frank growth, medium scale agriculture is not as influent yet.

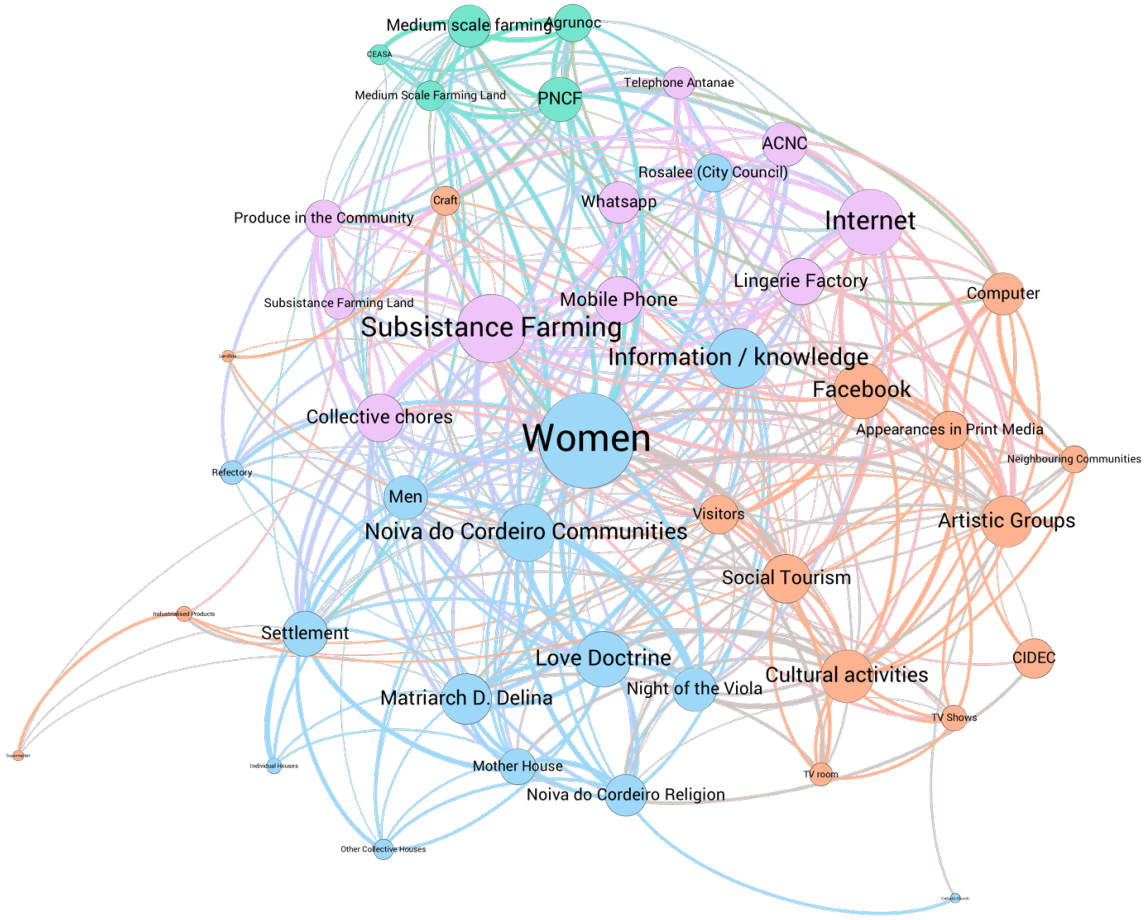


Figure 54: Modularities in Noiva do Cordeiro community, showing the distribution of 'communities' in relation to the density of connections among nodes. Source: the author, 2016.

Discussing some of the spatial processes embedded in Noiva do Cordeiro is essential to understand the narrative presented in section 5.4 as they influence (and are influenced by) the way socio-technical systems, in special the internet, are being incorporated into the community's everyday. In the following sections, some of these will be further presented.

5.3.2 Collective management of the space

While men had to commute, specially to Belo Horizonte, in search of jobs, women stayed in Noiva do Cordeiro as means of maintaining their 'safe haven'. Firstly, they became responsible for the social reproductive labour and family agriculture. They decided to share the work by assigning themselves collective chores per taste and not based on hierarchical definitions, a sign that they valued the reproductive labour, as pointed out by Baltazar (2013). This division of activities led to the creation of collective spaces for laundry, cooking, nursery, and for group meetings, collective cultural activities and sports, as opposed to more conventional structuring of the everyday, where women are contained to their own household activities. These daily tasks became not only social (because of encounters in the public), but also political, and the engagement in decision-making and management of the space have become an embodied practice. This social organisation also frees women for leisure activities, such as cultural bonding activities and dancing and theatre classes, through which social and political engagements are strengthened.

Women are also responsible to produce the subsistence agricultural activities. Due to the recent past of famine and poverty, they have decided to never starve again. For that, they diversified production in a way that most of their daily intake comes from local produce. Instead of maintaining the previous approach of individual vegetable gardens, the community decided to join the production, first in an area nearby the house. They invested in vegetable and livestock, mainly pigs, chicken and fish. As the community ventured in medium-scale agricultural production (as it will be further presented below), their vegetable garden was relocated to the same area, allowing better management and employment of labour for both productions. Subsistence agriculture plays such an essential role in the dynamics of the community, that every other activity is organised in accordance with the harvest season.

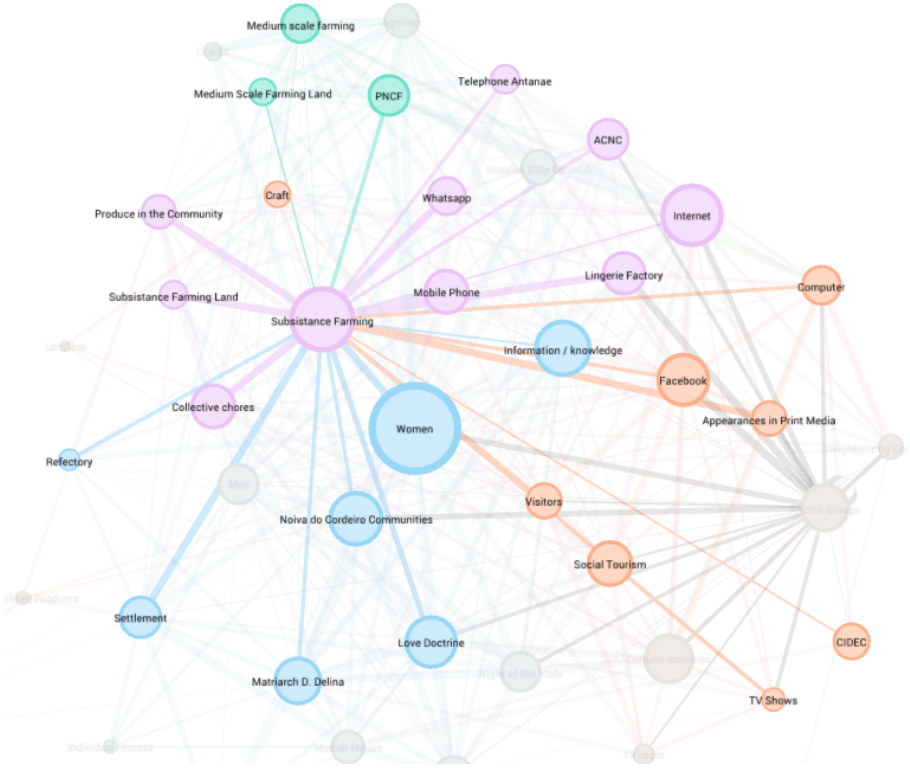


Figure 55: Role of subsistence farming in Noiva do Cordeiro. Source: the author, 2016.

Figure 55 shows the central role subsistence farming plays in the community's network. It is interesting to note that it is the most important element in the pink cluster and, at the same time, it has an interface with all the clusters in the network.

The development of housing

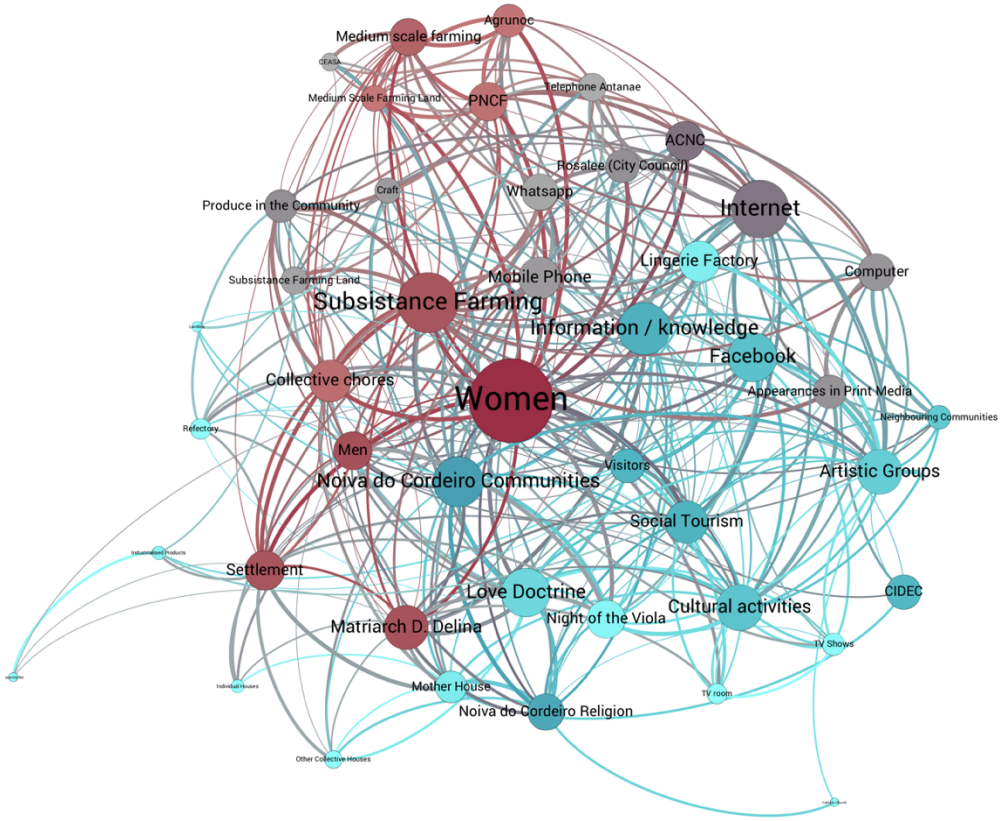
The spatial organisation of the community has suffered little interference of capitalist property relations (Baltazar 2013). There is no private property concept and most of the buildings are collective. As already mentioned, several families live in collective dormitories at the Yellow and the Mother Houses, the latter a reference point and meeting place for all residents. Residents also share bathrooms, the refectory, a TV room and a community centre. There are some single family units, housing more than one family (Zerlotini 2014).

Recent visit to the community has shown that there has been a stark increase in the production of single family units and it seems that there has also been a shift of the way the houses are being built. While previously most constructions were made as self-helping (*mutirão)*, and some would help with money and some with labour, now, with the increase in income in the

community, it is now common to 'hire' some of the locals to work on the site, so they can also have some source of income.

Spaces for production

To avoid female migration to Belo Horizonte, women ventured in production activities as an external source of income. Sewing was the activity with which most agreed and therefore they started producing lingerie, first joining non-professional sewing machines they owned in a common space, and later acquiring professional machines. In the search for a better qualification, in 2000, nineteen women attended a cutting and sewing course through a governmental programme called Pró-Renda Rural MG (Pro-Income Rural MG), which enabled the expansion of activities, and the production of clothes, carpets and quilts. They factory started with no fixed working hours and they would interrupt production every cropping season, when everyone harvests for subsistence agriculture. Products were initially sold in Belo Vale, at craft fairs in Belo Horizonte and other cities and to visitors that go to the community.



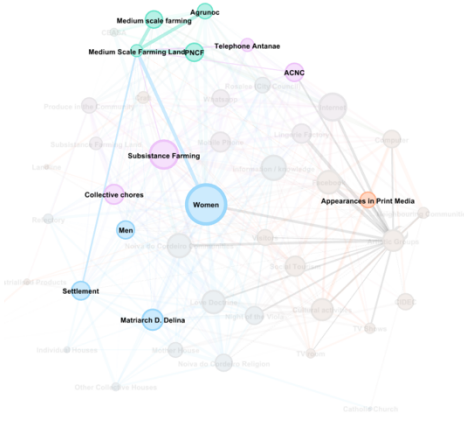


Figure 56: Permeability of medium scale agriculture in the network on the left, on the right a key to the nodes directly connected.

In the 2010s, the community started medium-scale agricultural activities by cultivating pepper and tangerine to sell to the Redistribution Centre of Minas Gerais (CEASA), located in the metropolitan region of Belo Horizonte to increase the community revenue. An agronomist aided them in the beginning of the process. They also had advice on what to produce from someone working at CEASA (more details were not given). Over time, production diversified and currently they intercalate different vegetables to keep the soil fertile. Among the produce are: pepper, zucchini, aubergine, okra, green beans, corn and mandarins. The diversification was made possible with the acquisition of land credit through the Programa Nacional de Crédito Fundiário

(PNCF – National Land Credit Programme). To access these funds, they founded the Associação Noiva do Cordeiro I (Aggrenox – Noiva do Cordeiro Association I). Through this programme, thirteen women of Noiva do Cordeiro acquired the 41,5 hectares' land they already used to plant before. This land belonged to Chileno, married to one of the women in the community. Even though the land title is given only to some of the women, for the community this is only a formality, as they are all committed to settle the debt. Along with the tenure of the land, the community could acquire a tractor, seeds and feedstock.

The acquisition of the tractor and the land tenure meant the development of a more regular agricultural system. They have managed to bring some of the men that worked in Belo Horizonte to commit to the crops and the mechanisation of some of the work has relieved the burden of manual agriculture. According to one of the inhabitants, "From 2015, we have the challenge of seeking new public policies for the expansion of the area and production. Thus we intend to bring back to the field the rest of the young people who were forced to move to the outskirts of Belo Horizonte". They have also built an adjacent building with a kitchen, toilet and shade to house the workers. Agrunoc is responsible for the distribution and commercialisation of the produce, some of which have value added through pre-packaging. The association has also invested in other perishable products, such as doce de leite (a sort of caramel), cheese and chilli sauces.

Even with the specialisation of the plantation, the work of the whole community is still needed in the harvest season. In its entire duration, other profitable activities become secondary. On a visit to the community in July 2015, while the younger women and some of the community men were out in the fields for the harvest of beans and eggplant, the elderly were occupied sorting a large amount of fabric donation they had just received from a clothing factory from Belo Horizonte. The women were shredding fabric for carpet production, while chatting and watching soap opera on TV. This material would be used by the factory once the harvest was finished. This shows the organic operation of the production activities in the community and the ways space is specialised to a minimum.

5.3.3 Cultural activities

Cultural activities have become a central part of the community's everyday. Through those, communitarian values are reinforced and passed onto the young. Inspired by TV shows, the internet and personal experience, inhabitants have engaged in different internal cultural activities (such as theatre, dance and music classes) and created cultural groups. Ballet, for example, is taught by a 16-year-old girl that came from Sião, the Noiva do Cordeiro community near Montes Claros, where she learned how to dance. Adults can also enjoy dancing lessons, as one of the inhabitants, due to her ability to dance, organised classes that happen in the community centre.

These groups started as a means to share the values of the community, but with time, that culminated with *Noiva do Cordeiro em Show,* a cultural group constituted of different musical and theatrical references that tour in the region. They include a typical dance group "Harmonia", "*Lady Gaga Cover*" and dancers, a country duo "Márcia e Maciel", a typical dance duo "Zé da Boneca", male dancers "Os predadores do futuro", a dance couple "Cravo & Yasmin", choir and children theatre "Vida Feliz", de *ballet* group "Flor da Noiva", Choir and theatre group for adults "Quinta Geração", "Os incrivéis", *Stand Up* from "Canela" and the improvisors "Tinki&Lavê".

The more famous group is Keila Gaga, cover artist of Lady Gaga. The idea to create a cover of the artist came with the arrival of the Internet, when many youngsters saw the physical resemblance between Lady Gaga and Keila. She then interpreted the history of Lady Gaga as a struggle against prejudice and for freedom. Inspired by the artist, Keila and some female and male inhabitants formed a group. The outfits are designed and produced by the seamstresses and the daring choreographies by the group. To advertise the cover, they have invested in the production of a music clip, shown at the community in the beginning of a tour. This video was produced by Marcia and Maciel and edited by one of the inhabitants of the community, who knows how to use different digital software[1].

Locally, they have also found a way to bond the inhabitants through events such as the 'Night of the viola', happening every Friday or Saturday. As the men that worked all week in Belo Horizonte return to the village, everyone joins the event to cultivate family and friendship through play, music and testimonials. The latter are seen as a way to strengthen the love in the community (in the logic of the doctrine of Love, as pointed out by Baltazar (2013)). The structure of the event seems to be changing over time. In 2013, when the first interviews were conducted for this research, the inhabitants mentioned the existence of games, designed by the community (who would organise themselves in groups and take turns in selecting and developing the content). These games aimed at reinforcing the community bonds, as they were a dialogic approach to knowledge production and information sharing. During this time, the community also resorted to theatre plays produced by themselves to address contentions subjects, such as homosexuality, sexually transmitted diseases, among others. In this case, information was transmitted in a much more discursive manner than with the games. These two approaches challenged formal ways of sharing knowledge, as they saw them as much less interesting and engaging for the young. In 2016, during the field work carried out for the undergraduate module PRJ062, not only were the games not seen as important as before, the interviewees did not even recall they ever existed. It appears that the games were altogether substituted by the theatre.

Another important change is in the scope and scale of the event itself. In the first interviews, it was portrayed as a cosy and intimate event open only for the people living there (they would even avoid receiving visitors that needed to overnight in the community on these days). Currently, the event is often advertised in their Facebook page and assumed larger proportions than observed before (Figure 57).

These changes illustrate an important shift in the way the community organises itself in the cultural domain. Formerly, the community bonds were celebrated and reinforced through dialogue and horizontal forms of information/knowledge sharing. The events were truly festivities, and they were a liberating means of challenging the stultifying everyday that men endured during the week and the hardships in the community. Currently, the Night of the Viola has embraced a more discursive approach, with the spectacularisation of their cultural bonds observed by the stage-like activities: big shows and the prevalence of the theatre over games create a hierarchy of information and knowledge sharing in a dimension not observed before.

[1] Some of the videos can be seen in her youtube channel: https://www.youtube.com/watch?v=AniwLd6J-rc.

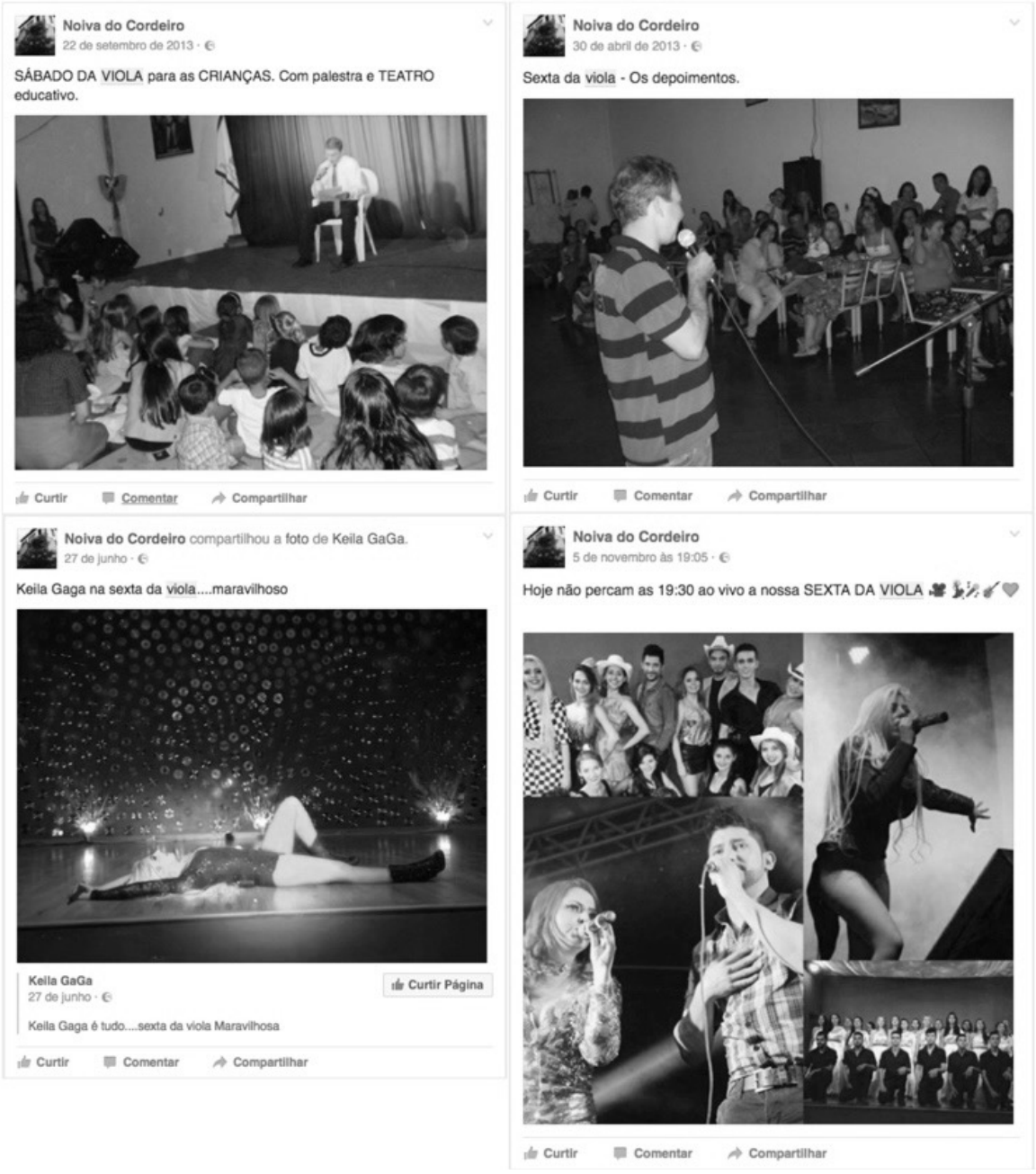


Figure 57: Posts of Night of the Viola in 2013 and 2016. Source: the community's Facebook Page, from left to right Noiva do Cordeiro, 2013; Noiva do Cordeiro 2013b; Keila GaGa 2016; Noiva do Cordeiro 2016.

5.3.4 Social tourism

The interest in the lifestyle of people in Noiva do Cordeiro has led to a steady stream of visitors and the development of a form of social tourism (term used by Élida herself, Noiva's resident (Baltazar, 2013)) that is now a source of income for the community. Initially, they received visitors coming without notice. As many people started to go to Noiva do Cordeiro, they felt the need to organise visits. Welcoming tourists meant increased meal production and required a time effort from some of the inhabitants, who would not dedicate to other activities in the community, such as harvesting. Therefore, they created a system for visitation, which required pre-arrangements and the payment of a fee. At the start, two people of the community were

responsible for receiving and accompanying visitors and they had a fixed rate of (around 30 BRL or 8 USD) for bigger and flexible for smaller groups. Currently, the fee has risen to 80 BRL for any visitation and there are twelve people involved in receiving the tourists. The arrangements in the community are not only logistics related. It seems that they intend to create a narrative that portrays the community a certain way. Some elements have been introduced in the touristic experience: the initial video, already mentioned, with a rehearsed version of the local history, and a farewell choir.

Error! Reference source not found. Figure 58 shows the growing importance of social tourism in the community, by the number of connections established and their permeability (marked in shades of red) in the network in the few years since it was introduced.

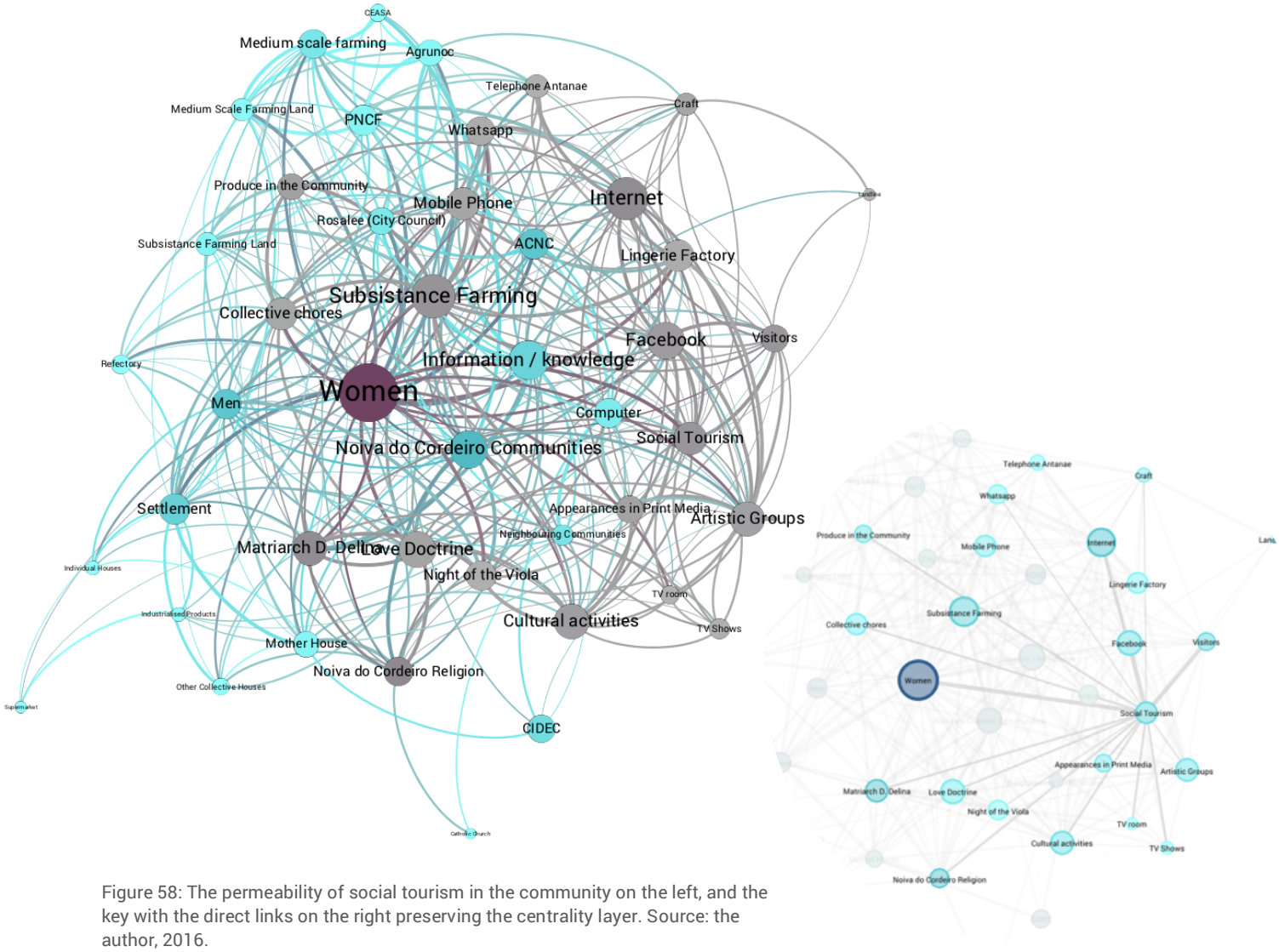


Figure 58: The permeability of social tourism in the community on the left, and the key with the direct links on the right preserving the centrality layer. Source: the author, 2016.

If on the one hand social tourism has been integrated into the everyday of these people specially through the dissemination of a cohesive discourse, on the other, tourists and researchers seem artificial to the otherwise harmonious setting. This can be seen specially during lunch time, as visitors receive a 'special' treatment: food served at individual tables rather than the at the wood

burning stove, special cutlery. After presenting the historical, spatial and socio-spatial elements of Noiva do Cordeiro, the next section will focus on the way the inhabitants of Noiva do Cordeiro are appropriating the internet in the everyday.

5.4 Narrative: The route of incorporation of ICTs in the everyday and the cut of access in 2014

The introduction of ICTs in Noiva do Cordeiro should be understood in its socio-spatial context. As described previously, it has developed a unique socio-spatial organisation, as a result of a long period of isolation followed by an intense opening process in the last decade. Isolation and religious beliefs shaped the community subsistence character and led to the detachment of conventional capitalist spatial organisation and social relations. More access to information, improvement of communication and increased outside interest in their lifestyle have been transforming some of the already existing activities in the community, such as agriculture; while contributing to the creation of others, such as tourism for example.

The next section aims to uncover a series of key actor-networks that have strongly contributed to the ways in which the intertwining of everyday practices and ICTs have evolved in the last ten years therefore strengthening their forward thinking while also introducing capitalist elements into their everyday (Figure 59 summarises the events of this narrative).

5.4.1 The implementation of CIDEC

The infrastructure of CIDEC was successfully implemented because of the local communitarian approach. Its success was due firstly, to the existence of collective spaces such as the Mother House, where it was installed; and secondly, to the collective nature of work, that allowed for some of the inhabitants to become responsible for CIDEC without that meaning employment relations. These socio-spatial practices counter two big issues that hinder the provision of infrastructure in rural communities: 'where is it going to be installed' and 'who is going to take care of it'.

The widespread use of the centre was made possible by the ways informatics knowledge was passed among inhabitants. While a limited number of people received skills training with the implementation of the programme, they managed to spread the knowledge to everyone else who wished to learn how to use the computer. This first moment improved communication and information management within the community, and the available tools were soon incorporated in everyday activities, such as in farming management. Noiva do Cordeiro's inhabitants furthered the range of CIDEC by initiating the CIDEC Itinerante (Itinerant CIDEC), by acquiring a van and driving to nearby villages who to offer access

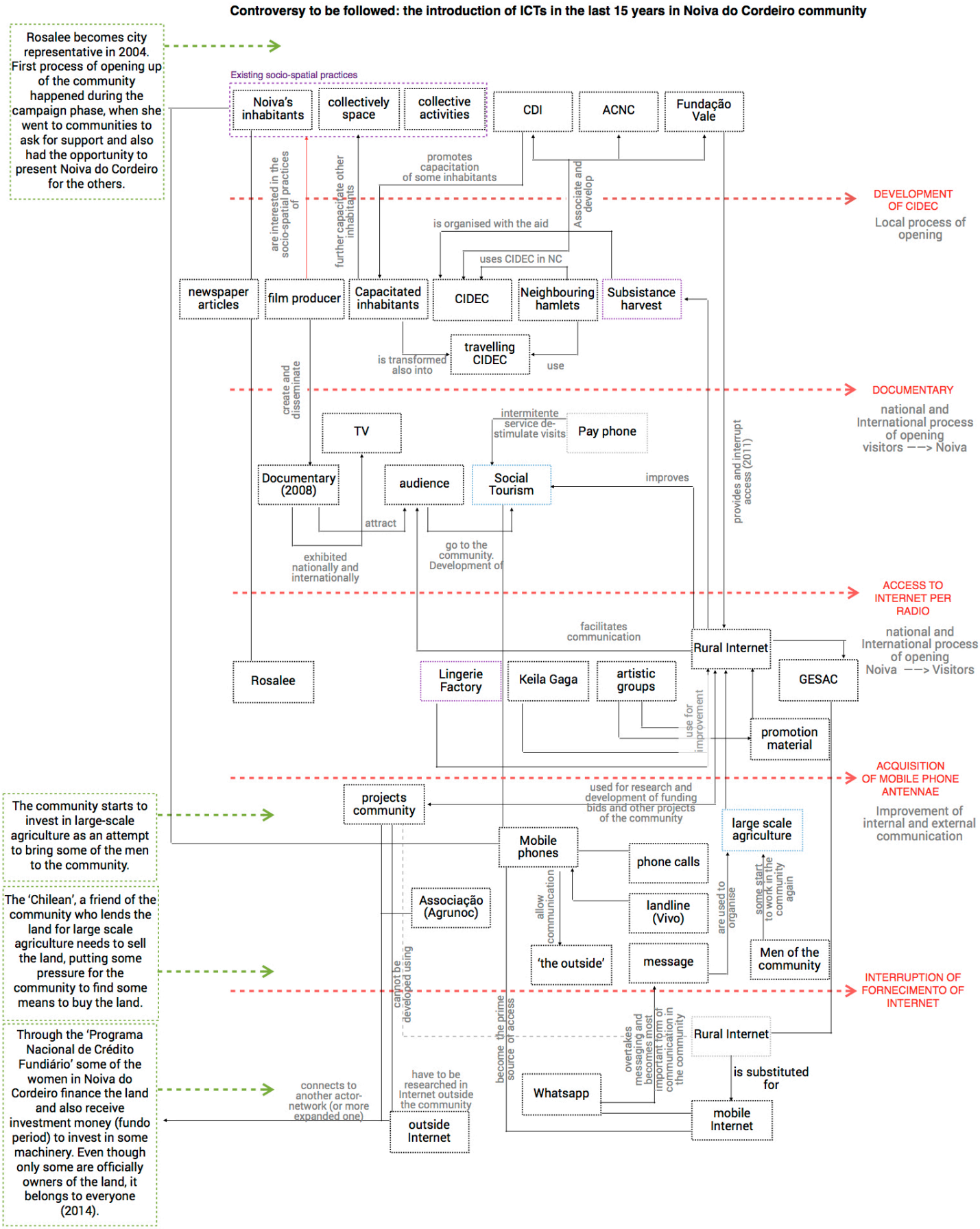


Figure 59: The unfolding of the internet access in Noiva do Cordeiro. Source: the author, 2016.

to the computers. These villages (especially Lages and Palmital) lacked the most basic infrastructure such as Noiva previously did.

5.4.2 Opening to the world: the 2008 'Noivas do Cordeiro' documentary

One of the people interested in the community history and everyday was film maker Alfredo Alves, who pitched for a budget to produce the documentary 'Noivas do Cordeiro', aired in Brazilian channel GNT in 2008. Soon the community became known in other states of the country and overseas attracting a great number of visitors, and later developing a tourism focused on their lifestyle, a social tourism. With the increase in interest, they required the installation of a paid phone in the area, arguing that it was unmanageable for the community to not have any means for communication. The phone was installed, but it soon broke: callers would get a tone, but the people in Noiva do Cordeiro would not know it was ringing. According to local accounts, this was a problem for tourism, because tourists that called just thought 'they did not care'.

To improve communication, inhabitants acquired one mobile phone for the whole community. The idea of a collective mobile line was possible due to their communal organisation. If one thing is perceived important by some of the inhabitants, they discuss it with the group and also collectively work to make it possible. The phone did not belong to one person, but to the group, and it would sit in a common area for discrete use. Nevertheless, it worked poorly and required people to go up the mountain for signal.

In 2008 they had the first access to the Internet in CIDEC, provided by the mining company Vale for one year. At that time, as one of the inhabitants remembers, he was amazed when the technician said "Now you have the world inside here". Unfortunately, the internet was too slow, so people did not use it frequently.

5.4.3 Communication for all: the internet and Mobile phone repeater antennae

It was only in the 2010's that communication was radically improved in the community. In 2011, ACNC acquired a long-term service of radio-wave rural internet through the programme Governo Eletrônico – Serviço ao Cidadão (GESAC - Electronic Government – Citizen Service). GESAC is a Federal governmental project that offered free broadband internet connection to telecentres, schools, health unities among others, focussing on socially vulnerable communities with no other means to access ICTs (GESAC 2014). Since then, the Internet was much faster, and it attracted the attention of many of the inhabitants, specially the youngsters who were the most engaged group in the community.

In 2013, the community collectively purchased a mobile signal repetition antenna, in three instalments that were met with donation according to each individual's conditions (in Portuguese called 'vaquinha'). With the antenna, communication was improved within the community and with the outside world. Virtually everyone bought a mobile phone (most with pay-as-you-go services, with two main providers: Vivo and Tim).

The service changed some of the local dynamics. The harvesting process was first organised by messaging (rather than door-to-door communication). In 2014, they were forced to upgrade the service of the antennae from 2G to 3G and "discovered the internet on the mobile phone", and WhatsApp became the most effective mode of communication in the community. The improvement in communication also helped the producers, as they can now be informed what

produce is being sold in fairs, and provide more when needed (such as doce de leite and chilli sauces). Issues outside Noiva do Cordeiro or even bids and funding projects can now be handled through present-time communication, rather than demanding never ending trips to and fro the community. Tourists interested in visiting can contact Élida either through email, Facebook message, landline (provided as a home mobile) and mobile calls, and WhatsApp.

The access to the internet fostered other activities that bring revenue to the community. With lingerie, for example, they have resorted many times to online references for inspiration, such as the famous lingerie brand Victoria Secret. Keila Gaga was completely fabricated through online references, and the group is always tuned to the current trends of the singer/performer. The different cultural groups also use the internet to exhibit their work in Youtube and Facebook. For medium-scale agriculture, better communication means better organisation of the community during harvest and present-time negotiation with the middlemen.

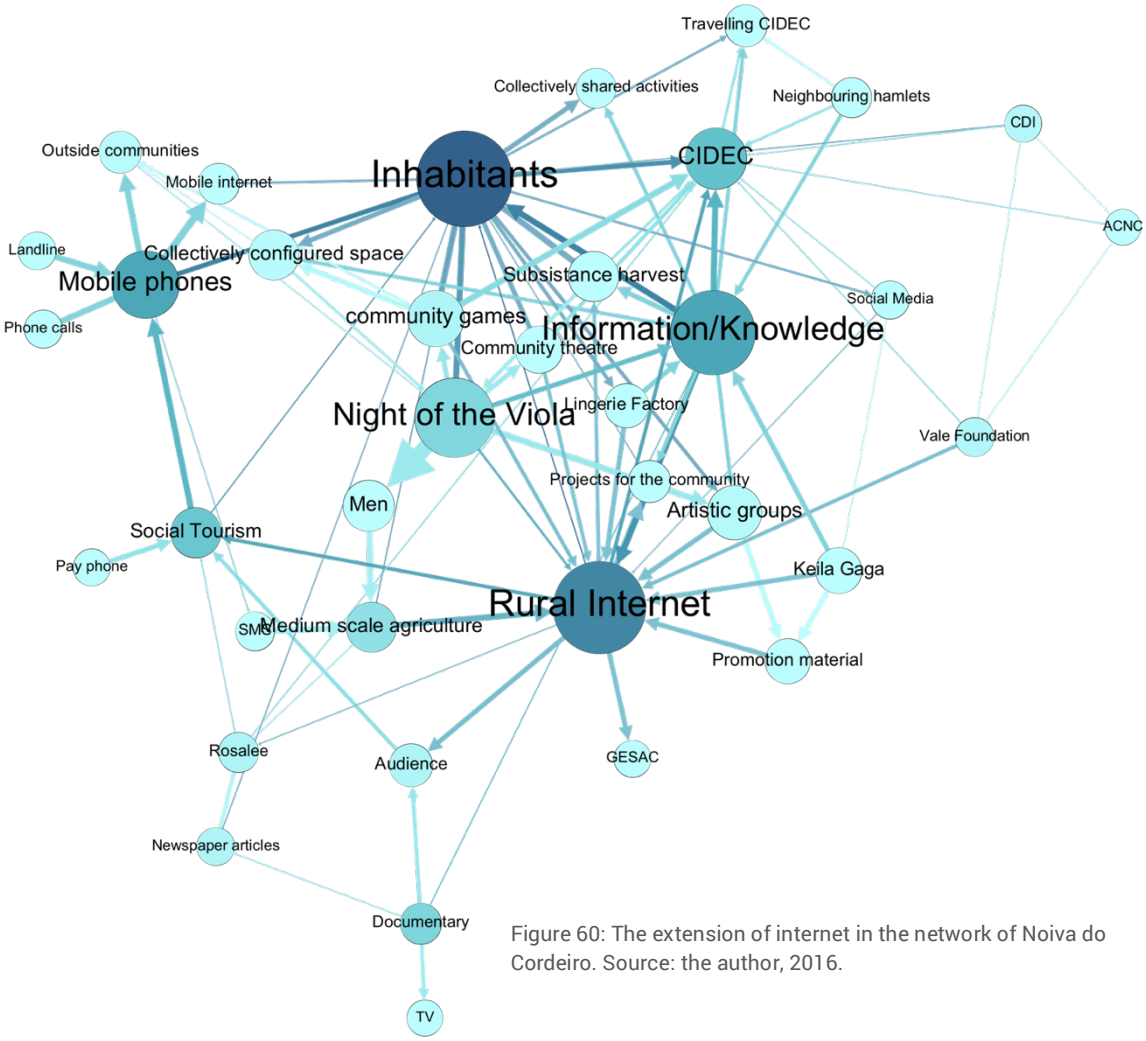


Figure 60: The extension of internet in the network of Noiva do Cordeiro. Source: the author, 2016.

Figure 60 shows the extension of the internet in the community built from the information collected on the visits of 2013 and 2014 and relating secondary information. Four actants are highlighted in this network, for having the most weighted connections (for the size of their nodes) and for being the most central (darker tones of blue): inhabitants, rural internet, information and knowledge and the Night of the Viola.

It is possible to assert that the prominence of these four results from the community's intention to strengthen the local ties through their own traditions. Internet's importance to further knowledge was acknowledged and reflected on their everyday. The Night of the Viola, as the cultural event that bonded every one of the community, permeated their everyday actions.

CIDEC, which had so much importance in the first decade of the 2000's, was slowly losing its importance, even though in 2013 it still played an important role in the community. Mobile phones started to gain some projection in the network exactly during this time, due to the practicality and usefulness in the day-to-day basis, first with SMS and then with WhatsApp.

5.4.4 The interruption of internet service in the community

In August 2014, a series of rumour articles related to Noiva do Cordeiro were conveyed in newspapers and webpages around the world (Figure 61). It all started with the Telegraph piece "Brazil's valley of beauties appeals for single men" (Bowater 2014) and the subject went viral. Within three days, there were 285 related posts found on google, on different languages[2]. Most of those depicted the community as an all-female village where women were desperate to find men (Figure 61). Others attempted to refute what was being said in the occasion, such as the PT3 newspaper article "Afinal, Estas Mulheres Não Estão Desesperadamente À Procura De Homens" (Pinto 2014).

Initially for the community, this repercussion came as a shock. They did not understand when their landline and mobile phones did not stop ringing. Rosalee recalled that they thought the first foreign call was a miscall, maybe done by a drunk person, as it was the middle of the night and they could not make any sense of what they were telling. As the calls became more and more intense, they realised there was something extraordinary happening.

They decided to go online and investigate the incident, but unluckily, they had just had their access to the internet interrupted for unknown reasons. They only knew what was really happening when a researcher from São Paulo, who has become their friend, called and asked whether they knew what was happening. Their Facebook page was flooded with comments of men from all around the world trying their luck with the 'single women'. This still happens today, but in a much less intense way.

Even though women from Noiva do Cordeiro were concerned with the misconception that they were looking for men, they also saw the opportunities with the international repercussion. During the 2014 visit (done days after the episode) Rosalee expressed that 'people' (referring to those who have a closer relationship to them and alerted them for the fact) were overzealous and that there is nothing wrong to 'look for love'. She thinks that this news furthered their network, as journalists from all around the world showed interest in their life style, rather than the fact they were single or not. One example is the video-reportage produced by the German channel Das Erste (Stocks 2014).

The fact that the internet was not available for them on the day following the news incident highlighted the importance it acquired in the community in the previous three years. They got used to 'going online' to inform themselves, and suddenly, they did not have the service anymore. After a long time trying to understand what happened with the internet, Rosalee

[2] Research using google search engine on 25/05/2015.

learned that there was an issue with the service provided by GESAC not only in Noiva do Cordeiro, but also in Belo Vale. Since the interruption in the service, they have been trying to contact anyone in the Communication Ministry that would help them solve the issue, but they have not been successful at it (despite the issue being already solved in Belo Vale). They claim they have not had any official communication as to the reasons the internet service was interrupted.

Figure 61: Headlines of Noiva as a community of single women looking for men. Source: Readhead (2014), N.A. (2014); N.Ab (2014).

Currently, the only way to connect is to use their mobile subscriptions, slow and expensive, or to travel to Belo Vale and visit an internet café, expensive and laborious.

As a result, the communication of the village with the outside has been severely hindered. Their Facebook page was almost abandoned for more than a year because the slow connection provided by mobile internet restricts the postage of images or videos. Even responding to people's comments has become very difficult, according to Élida, in interview in 2015. She still answers emails, but she complains that the speed of the connection is too slow, and it takes too long to respond to things through a smartphone.

But it is not only the communication with the outside that is being affected. CIDEC is not being used anymore, the computers are old and there is little sense in going back to work in 'offline' computers. Young people in school cannot research, leaving Noiva do Cordeiro students behind those in the region who still have access to the internet. For Rosalee, despite the misconception that rural students are less capable than urban students, it is the disparity in access to tools that makes them lag. She believes that access to the internet has proved that students from Noiva are just as capable, if they have the means to accomplish their activities.

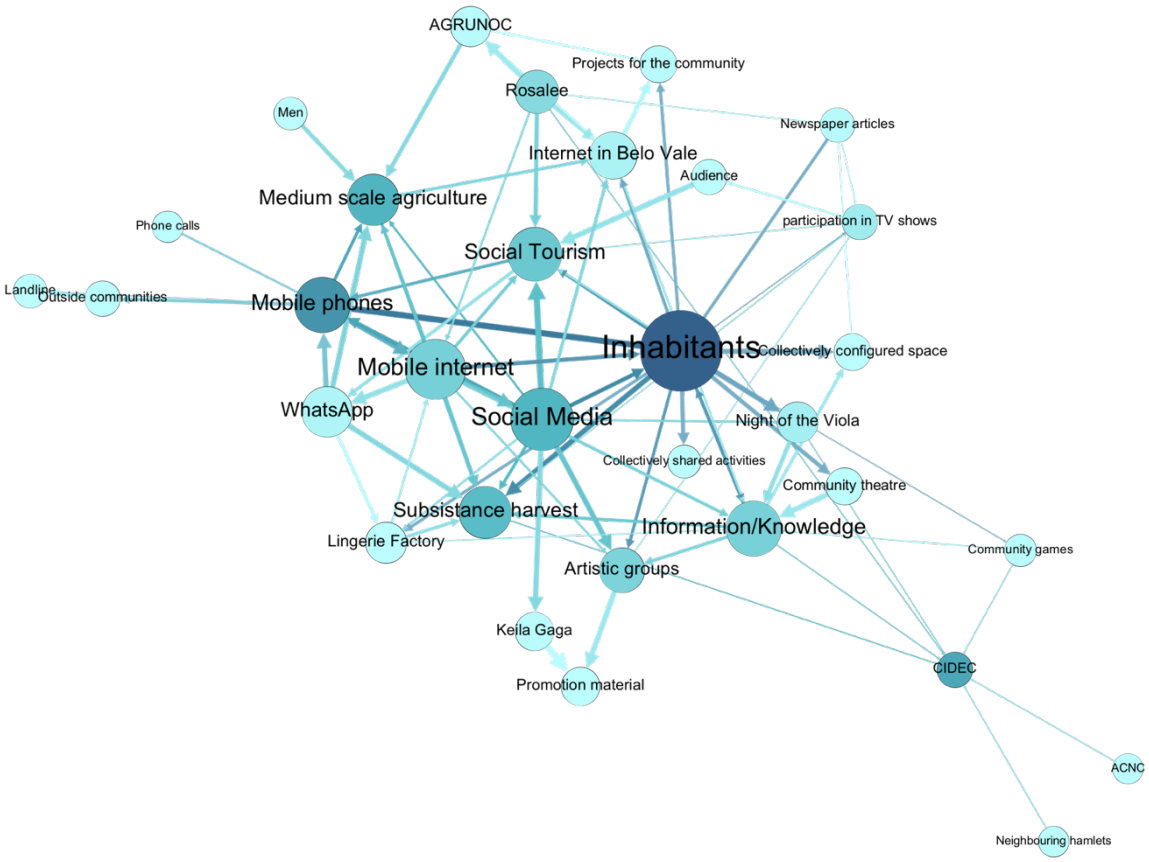


Figure 62: Access network in 2016. Source: the author, 2016.

Broadband internet can only be accessed in Belo Vale, and it has, therefore, lost its breadth in the community. Accessing the internet with mobile phones has hindered the search for information and production of knowledge, as some of the interviewees showed discomfort in using smart phones for longer readings, for searches, and for writing, hence the slight shrinkage of the node. It is also difficult to find suitable projects and bids that could improve their quality of life. For Rosalee, who is one of the responsible to finding and pursuing funding opportunities, communication is 'essential as food', and when asked about the implications of not having internet in the community anymore, she said it should be a crime to leave people without access.

That might be one of the reasons why social media is playing a much larger role in the network, as presented in Figure 62. Social media, and most importantly Facebook, are designed to be well fit to smaller screens. Furthermore, social media is an essential means for the community to advertise themselves, and their Facebook page is the most used tool (For the last 500 posts, their page was visited by people in 44 different countries, and it counts with more than 29000 likes, of which less than 10000 were originated in Brazil)[3].

Noiva do Cordeiro's narrative above presented suggests that the way the internet was implemented in the community was consonant with their own socio-spatial organisation. It also suggests that, in turn, it has had a great influence on the way the community is currently organising itself. The next section brings some preliminary pointers that underscore the fast pace

[3] Information obtained with the Netvizz plug-in in Facebook.

at which the network is changing, by comparing the importance of some of the actants in 2013 and 2016. The next chapter will discuss the outcomes of all three narratives in relation to the theoretical framework set in chapters 2 and 3.

5.5 Preliminary pointers

Nova do Cordeiro has a peculiar social structure when compared to other small Brazilian rurban communities that results from an internal movement of rupture and external movement of openness. Extreme poverty and famine led its inhabitants to initiate a *critical awareness process* (Demo 1988) to strengthen the community within the community, initially overcoming hunger and poverty. They created bonding activities where different generations can meet and share knowledge and experience, reinforcing, little by little, a common cultural identity. Locally, despite perceiving leadership within the community networks (especially D. Delina and Rosalee), they organise themselves non-hierarchically to assign the chores and the productive work. Formally, they created two associations that allow them to apply for public funds and legally sell what is produced. The cohesion of the group also allowed for Rosalee to be elected for the city council, defending their rights and interests in the Municipality of Belo Vale.

The restructuring process after the dismissal of religion has been changing the community at a fast pace, as presented in this chapter. In the last two years, the forceful transformations in the community are becoming even more accentuated, leading to changes in their socio-spatial practices, and consequently, to the socio-spatial organisation. The festiveness of their cultural manifestations is being more and more spectacularised; the bonds with nearby communities seem to be losing importance; and there is an increased interface with capitalist activities.

Due to these transformations, a comparison between the two timeframes depicted in the narrative (2013-2014 and 2015-2016) help bring to the fore some important trends in the way the internet and socio-spatial practices juxtapose in Noiva do Cordeiro, highlighted in **Error! Reference source not found.** and discussed as follows.

5.5.1 New forms of socio-spatial organisation

The way women organised themselves within the settlement made them protagonists in the economic development of the community. Their work does not only aim at subsistence as it did in the past, but also at economic self-sufficiency that would allow for the men to come back and produce in their own land. This ambitious plan required an increased interface with conventional capitalistic activities that have not existed before, such as medium-scale production of vegetables; the establishment of Noiva do Cordeiro em Show with cultural performances inspired by international pop icons; 'social tourism'; and finally a local supermarket, that though not in service yet, indicates that it will function through the circulation of money within the community.

The medium-scale agricultural production, for example, introduces a new element in the network: the organisation of space for production, as opposed to the space for reproduction (Zerlotini 2014). Production at this scale requires, beyond adequate space, capitalist exchange relationships that inserts Noiva do Cordeiro in the formal market, leading to negotiations with middlemen in CEASA and the existence of a flowing capital. Furthermore, the decision to build a supermarket, that seems logical—the money they spent in the local commerce in other villages

will circulate within Noiva—introduces a new socio-spatial setting: the creation of spaces for (internal) consumption.

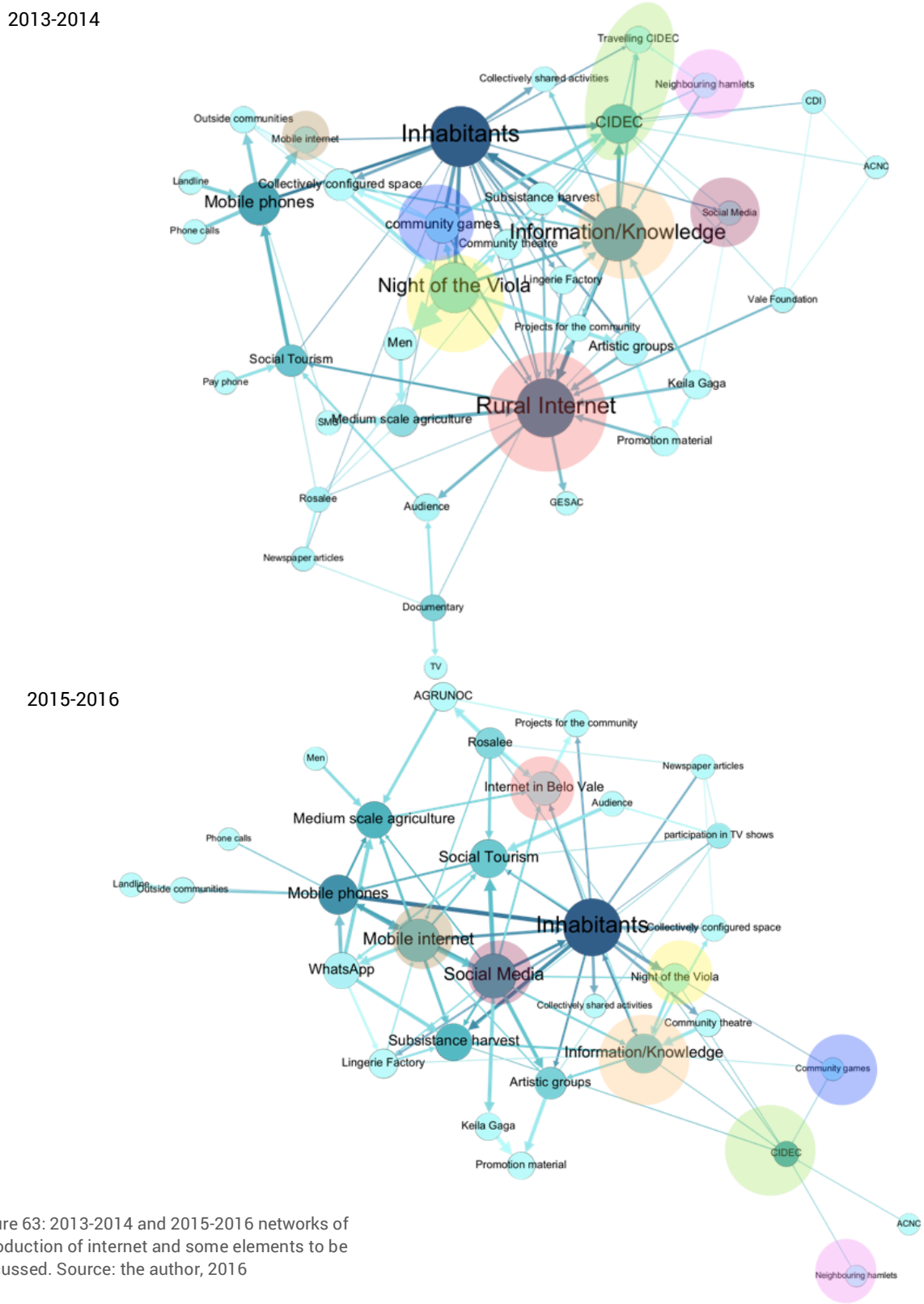


Figure 63: 2013-2014 and 2015-2016 networks of introduction of internet and some elements to be discussed. Source: the author, 2016

5.5.2 Socio-spatial organisation

All these changes seem to have influenced some of the established practices that fostered the community's cohesiveness. One important trend identified in the networks was the decrease in importance of the Night of the Viola as an occasion for the community to empower themselves (marked in yellow in Figure 63**Error! Reference source not found.**). There seems to be a shift in the way the event is perceived, and its dimensions and spectacular structure (only then followed by 'bate-papos'/chats) weaken the original approach to the festivity, whose political dimensions might have been overlooked by the population, as it could be seen in Figure 57. The tendency of substitution of dialogic by discursive means of communication is also perceived in the diminution in importance of the community games, marked in purple in **Error! Reference source not found.**. Even though these changes have no immediate impact in the way the community is organised, they start to uncover hierarchies that contradict their own rationalised precepts of non-hierarchical organisation.

5.5.3 Redefinition of networks

The introduction of ICTs has broadened communication and led to two different (but interconnected) processes of networking. On the local level, the dissemination of mobile phones and the installation of the mobile antenna contributed to improving communication among the villagers, first through texting then through WhatsApp messaging.

Regionally, the installation of CIDEC gave the villagers a voice in the region. Not only the prejudice against the community was evidenced, but also a local inversion of power relations can be noted in the relationship between the villages in the region: Noiva acquired a centrality it never had before. Nevertheless, already in 2013, CIDEC lost part of its importance due to the age of equipment and the emergence of mobile access to the internet (in light green in Figure 63**Error! Reference source not found.**). Currently, CIDEC plays a very marginal role in the network and it does not articulate the relationship between Noiva do Cordeiro and the neighbouring communities anymore (in pink).

Another relevant trend is the increase in importance of social media, already discussed. Social media (in deep red in Figure 63**Error! Reference source not found.**) was very marginal in the 2013-2014 network (even though already in the rise) and it assumed, in the last couple of years, a very central position in the network, even surpassing the importance of information/knowledge.

5.5.4 Information, Knowledge and the internet

Knowledge has always been an essential element in the dynamics of Noiva do Cordeiro. First, for the rupture with the evangelic religion; second, for overcoming prejudice from neighbouring regions; third, for economic development, with the search for references to the lingerie collections or inspiration for the artistic groups' performances; and fourth, to reinforce the local lifestyle through courses for younger generations, games and theatre plays.

Knowledge still plays a very central role in the general network of Noiva do Cordeiro, as it can be seen in

Figure 64 that shows the extension of information and knowledge in the overall network of the community. The graph was created by highlighting in red the actant with the paint bucket in GEPHI.

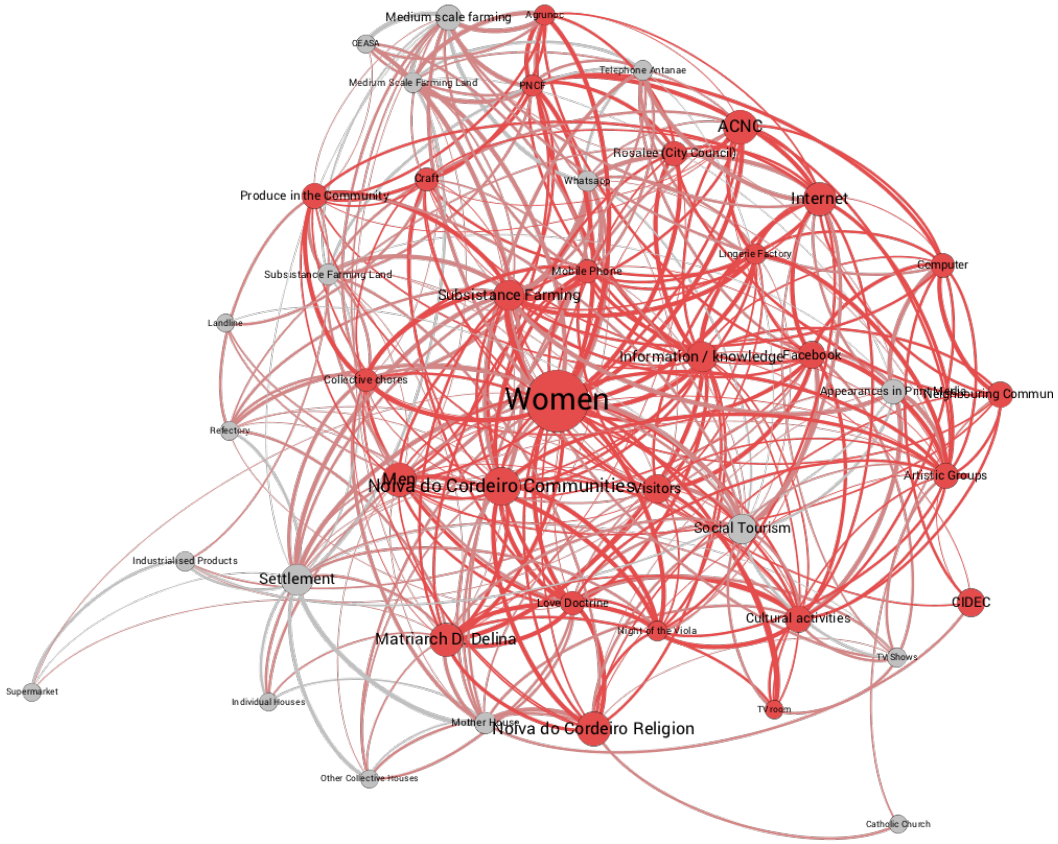


Figure 64: Extension of information and knowledge in Noiva do Cordeiro's overall network.

In this context, ICTs have had an important role in the socio-spatial, cultural and economic processes that unfold in the community. Inhabitants of Noiva do Cordeiro understand how knowledge is important for their own development, and they also understand that having the means to acquire and share information and knowledge is essential. By knowing their rights, they have systematically found ways to improve their quality of life: they have mobilised themselves to create CIDEC, to obtain access to the internet through GESAC and to apply for the PNCF.

Nevertheless, information and knowledge have lost some of their relative importance, when comparison between the two networks is made (**Error! Reference source not found.**, marked in orange). While in 2013 they had a central role in the network, it now seems that they have less (and weaker) connections with other actants. That suggests that the widespread of mobile internet and the discontinuation of provision of rural internet has made it difficult for people to continue searching for information and knowledge. As Rosalee says, 'access to information is just like food', and therefore, they might be starting to starve again.

6 The peripheral rurban: from global to the everyday and back again

6.1 From the global to the everyday: Lefebvre's social levels for understanding the peripheral rurban

6.1.1 The articulations of the social levels: how the global and the urban reflect on the everyday

This research focused on understanding the recursive interaction between socio-spatial practices and the late introduction of the internet in marginalised rurban communities. Its main premise was that there is an imbricated relationship between the socio-spatial organisation of the communities and the way people appropriate different sorts of socio-technical ensembles, the internet in particular. The horizon of the research was to uncover elements that pointed to alternatives to peripherality sparkled through a more disruptive[1] appropriation of technology, which led to development as understood by Souza (Souza 1996b)—improvement in quality of life and increase in social justice—rather than resignation in the margins of the capital. The focus on the rurban was due to firstly, a gap in literature dealing with its specificities and secondly, a need to investigate Henri Lefebvre's (1976) notion that any chance of working around capitalist socio-spatial organisation and practices was to be found on the peripheries.

It was, thus, important to investigate the underlying forces that help shape rurban communities' everyday lives, understanding that, though embodied in their inhabitants and imprinted in their space, they were also to be correlated to phenomena that happen elsewhere. Adopting Lefebvre's concept of social levels was an essential part of this research. The global permeates these communities, strengthening the existing political poverty and sustaining an international division of labour through an unequal access to information and deficient production of knowledge (resulting in consumption of knowledge that comes from outside and the withering of local knowledges). Even when local arrangements lead to alternative social relations to those brewed under a capitalist mode of production and result in particular forms of socio-spatial organisation, there is no significant inside-out or bottom-up triggering effect.

On the articulation of the urban level with the everyday, technical infrastructure interacts with spatial infrastructure influencing socio-spatial practices. Understanding the technocratic, heteronomous, top-down, economically driven articulation of ICTs in the urban space gives insight to the processes inherent to planetary urbanisation. As extended urbanisation encroaches the countryside, the everyday recurrences[2] that characterised the idyllic rural are gradually becoming an unfinished urban project. There emerges a rurban with the prevalence of a heteronomous order conflictive with reminiscences of a moderate autonomous approach to the 'inhabiting'. Technology is introduced in the rurban and reinforces the conflicts that were already in place.

[1] Disruptive in opposition to conforming.

[2] According to the Lefebvre (2000: 18), "Everyday life is made of recurrences: gestures of labour and leisure, mechanical movements both human and properly mechanic, hours, days, weeks, months, years, linear and cyclical repetitions, natural and rational time, etc.; the study of creative activity (of production in its widest sense) leads to the study of re-production of the conditions in which actions producing objects and labour are re-produced, re-commenced, and re-assume their component proportions or, on the contrary, undergo gradual or sudden modifications."

There was the expectation that the everyday—being the level of complacency, but at the same time, the level of conflict and possible revolution (Lefebvre 2000)—, of the rurban, often 'contradictory and disjoint' (Somerville, Halfacree and Bosworth 2014), could offer room for alternative internet appropriations that fostered disruptive activities, hence the empirical investigation in three rurban communities. A first analysis of the everyday of Santo Antônio do Salto and Pendeen, for example, countered this expectation. It showed that these communities, despite any recent changes (such as the closure of the mining in the region of Santo Antônio do Salto), continue to display an apparent equilibrium in the everyday. Under these circumstances, the introduction of the internet has not led to any disruptive activities. In fact, what can be observed is the further conformance to the existing conditions, though with a slight improvement in the quality of life.

Noiva do Cordeiro, on the other hand, for experiencing a dynamic period of challenging their own peripheral position, showed, initially, a much more disruptive approach to the use of the internet, throwing some light at the possibility of, even if in a local and temporary condition, a suspension of pure capitalist relations towards (limited) self-organisation. In a way, what could be seen was that the socio-technological relations developed from the access to the internet matched the community spirit and their socio-spatial practices. Over time, socio-technological and socio-spatial practices are changing one another, leading to an equilibrium in the everyday, consistent to the conditions needed for the maintenance of capitalist staus quo, as asserted by Lefebvre.

This final chapter explores these different interactions among socio-spatial processes and socio-technological ensembles at the different social levels, offering a research framework that focuses on a 'micropolitics' of the connected rurban. It draws from a Marxian theoretical framework, as developed in chapters 2 and 3 and an Actor-Network methodological framework applied in the case studies, in chapters 4 and 5. It aims to, firstly, contribute to the framing of situations where bottom-bottom might be the most appropriate lenses and scale of analysis; and, secondly, expand the tooling available to deal with the recent introduction of ICTs in rurban communities, particularly the internet.

6.1.2 The benefits of bringing Marxian theories and ANT

Before proceeding to the discussion, it is important to highlight how this research benefitted from associating a Marxian-based theoretical framework to an empirical Actor-Network-based method. Approaching the communities with an Actor-Network tooling allowed that the elements that compose the topics to be grasped in the existent timeframe constraints. Even though ANT is known (and highly criticised) for not considering the asymmetries of power from the onset, this research uncovered different power relations through the process of visually constructing the network itself, rather than assuming the pre-conceived ideas that helped shape the object of research.

The final networks are the result of the attraction forces of the actants defined in accordance with the number and strength of connections that also highlighted which actants (to use an Actor-Network term) are central for the narrative being built throughout this thesis.

One example that shows how relations of power and hierarchies built in a spatio-temporal framework is the role of information and knowledge in the Networks of Noiva do Cordeiro (Fig. 63). Note that, over time, by comparing the 2013-14 and 2015-16 networks, the actant 'Information

and Knowledge' is dislocated from the centre of the network, and its radius also reduced over time, suggesting the change in relationship among the actants, and moreover, a decline in importance in the network as it was constructed.

This piece of information agrees with the current discussion of the role of information and knowledge in the current stage of capitalism, but it was not clear during the field trips. Still focusing on the role of information and communication, another example of the efficacy of the method can be visualised in the process of defining relations of power and hierarchy in a given actor-network.

In Figure 65, with the aid of GEPHI, the actant 'Information and Knowledge' was painted. In the software, when a given node is painted, its penetration (or level of influence) is highlighted, as connections and nodes are also tinted with the same colour. An analysis of the influence of this actant accords with the level of self-determination observed in each of the communities, reinforcing the importance of access to information and creation and appropriation of knowledge for their autonomy.

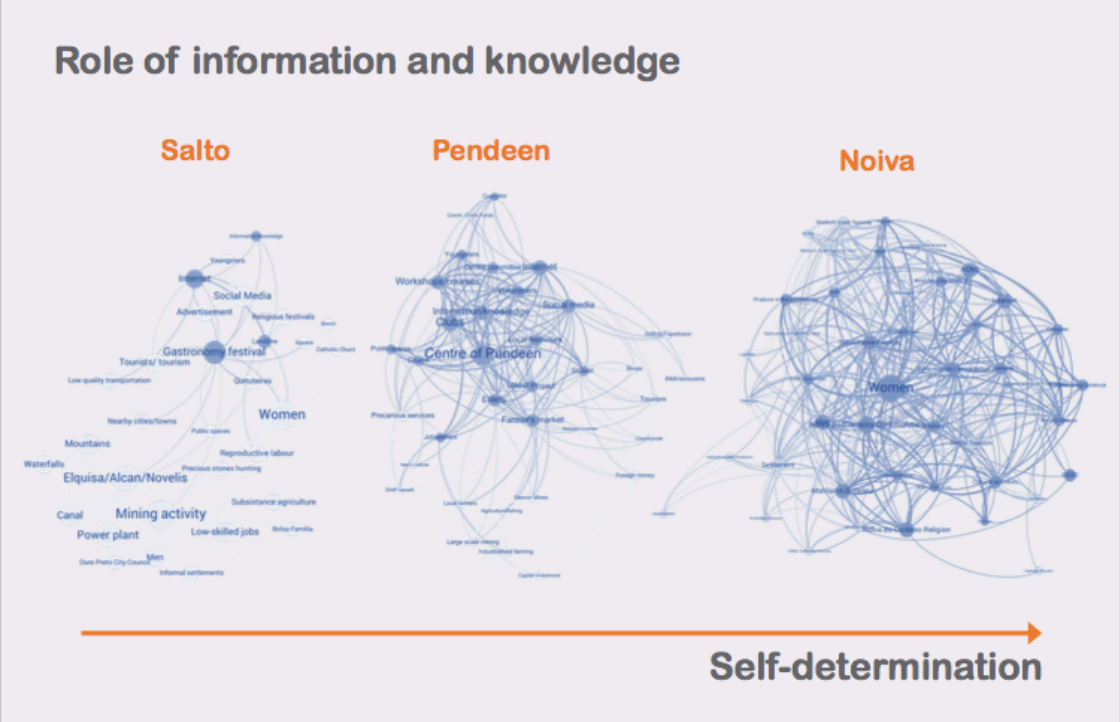


Figure 65: The role of information and knowledge and their relation to self determination in the three communities studied.

Longer periods of observation in each of the communities would most certainly provide this information, but much more time and man labour would be necessary to achieve similar results. The actants, relations and hierarchies revealed with the ANT method can be further problematised and discussed in a Marxian based framework, which throughout the research I found to be more appropriate in the discussion stage that will be further developed in this chapter.

6.2 THE PERIPHERAL RURBAN

6.2.1 The everyday: have the peasants[4] become working class?

According to Marta Inez Medeiros Marques (2008: 69),

> by analysing the agrarian reality under capitalism, we can say that the capitalist urban society becomes the main determinant of social and economic change, whereas the peasantry becomes a segment of a very differently structured world. However, the characteristic form of peasant organisation remains, even if modified, due to the ambiguous position in which it is under capitalism: integrated and marginal, complementary and contradictory, both inside and outside at the same time[5].

One of the main characteristics of peasant organisation is what Teodor Shanin (2008: 27) describes as a family economy: "[f]amily members and the basic family model of economic welfare are particularly involved in a system of labour use that is not waged, but family labour. Hence their ability to solve problems that other types of economy would not in such an effective and inexpensive manner"[6]. Family economy will allow members to organise themselves so that the material conditions are optimised and therefore subsistence conditions are met.

In Santo Antônio do Salto, for example, some members of the family will be formally (or informally) employed in Ouro Preto or other cities in the region. The others will stay and be responsible for the reproductive labour, specially the women (who raise children, organise the household), while complementing the family income with casual work (such as non-certified search of gold nuggets or little stones; eventual tourism; and the gastronomy festival), responding to a more conventional social organisation of the peasantry as observed by Shanin (2008). This form of organisation, though present, is losing its force, as many of the women also feel compelled to work in formal and informal markets to cope with the costs of everyday living. In Santo Antônio do Salto, subsistence agriculture and solidarity among its inhabitants are becoming less present over time.

In Pendeen there are even less elements of family economy to be found. It is true that the arrival of the mining industry led to the bloom of local economy, with the establishment of shops and increase in population. Interestingly, it also upped local agriculture and fishing, as the miners and their families needed to improve their meagre income. With the withdraw of mining industry from the region in the late 1990s, small scale agriculture and fishing were swallowed by

[4] The peasantry here is understood with Marta Inez Medeiros Marques (2008) as both a social class and a lifestyle, and the focus is on the poor campesinos. Shanin (1966) defines peasantry as the small producers on land who, "with the help of simple equipment and the labour of their families, produce mainly for their own consumption, and for the fulfilment of their duties to the holders of political and economic power, and who within their village community are almost totally socially self-sufficient".

[5] In the original: "Ao analisar a realidade agrária sob o capitalismo, podemos afirmar que a sociedade urbana capitalista se converte no determinante principal da mudança social e econômica, ao passo que o campesinato se converte em um segmento de um mundo estruturado de modo muito diferente. Porém, a forma característica de organização camponesa se mantém, mesmo que modificada, devido à posição ambígua em que ele se encontra sob o capitalismo: integrado e marginal, complementar e contraditório, dentro e fora ao mesmo tempo".

[6] In the original: "Os membros da família e o modelo familiar básico de bem-estar econômico estão envolvidos de forma particular num sistema de uso do trabalho que não é trabalho assalariado, mas trabalho familiar. Daí a sua capacidade para resolver problemas que outros tipos de economia não resolveriam de uma maneira tão eficaz e pouco dispendiosa".

agricultural industry. Currently, in addition to high unemployment rates and the reliance on governmental aid, most of the inhabitants are included in the formal employment market.

Noiva do Cordeiro, in its turn, shows a complementarity of State-led interventions, market-driven activities and family economy. For long, the community was only able to survive with the subsistence agriculture and the income from the work of the male inhabitants in Belo Horizonte. Men stayed in the capital during the weekdays in a house organised and catered to by the community. On the weekends, men returned bringing the income earned and taking some of the local produce back for their own consumption. In the community, women organised themselves to share the everyday chores. Shared obligations allowed women spare time for other activities, such as dancing and theatre classes, also organised by their own members. Subsistence agriculture was complemented firstly by the activities in the clothing factory, whose working schedule was defined by the seamstresses and the crop schedules; and later by social tourism and cultural groups, such as Keyla Gaga, Márcia and Maciel and the Noiva do Cordeiro em show.

More recently, the economic dynamic of Noiva do Cordeiro has shown signs of change, from mostly family-based complemented by profitable activities to the opposite. Work has become essential to the community to the extent that the everyday life has changed from a more or less autonomous *modus operandi* to a shift-based organisation. The seamstresses who would previously work 'until their backs hurt' now have to 'stand up, stretch their back and come back' to be able to deliver the material, as now they have a 'partner' for their production outside the community. The former subsistence agriculture has now become a medium scale production that is commercialised in the capital, many times with value added through manipulation of the produce. This upgrade in production allowed for some of the men of the community to stay in Noiva and work there. Social tourism, much less organised before, has now twelve people committed to receiving visitors, who now have to pay 80 BRL for the visit. And they also have their own supermarket, which was built in 2015 with the intention to avoid the flow of money to shops in other communities, even though it is still not clear how organised and permeable in the community it is.

The initial reason for the community to pursue such a dramatic change was the desire to reunite men and women, but the implications of the shift in the economy are much broader. It is difficult to anticipate what the consequences of such changes in the social and productive organisation of the community will be. Monetary transactions in the community are altogether not clear, and it seems like it is a taboo to talk about it as well. The increasing interface with a market economy has not yet been rationalised by the community, so they are not comfortable to discuss it. It is unclear how the exchanges happening outside the community are computed in the collective division of chores, and how they are paired with unremunerated activities. It is also not clear how the supermarket fits in the community organisation either.

Overall, the three communities have provided converging evidence that family economy is at risk, as "many campesinos are maintained in a permanent state of semi or sub-proletarisation, in extremely precarious working conditions, either in the countryside or in the city" (Marques 2008: 56)[7]. The apparent complementarity of family economy and market economy is only a necessary element for capitalism to reproduce itself by permeating collectives situated at its

[7] In the original: "Muitos camponeses são mantidos num estado permanente de semi ou sub-proletarização, em condições de trabalho extremamente precárias, seja no campo ou na cidade."

margins. When market economy gains ground in these communities, it helps shape the space and interferes with local socio-spatial practices, as will be further discussed.

6.2.2 Socio-spatial processes and levels of rurban coherence

The village as a spatial construct is an important element that defines the peasantry, because it is the basic unit of social organisation (Marques 2015). Nevertheless, the village by itself is not enough to define current ruralities. As pointed by Keith Halfacree, "clearly defined rural places—the neat, bounded, distinct kind of spaces that demographic analysis is inevitably likely to prefer—are no longer synonymous with or equivalent to either rural representations or rural experiences" (Halfacree 2012: 398). If the relations of production are directly related to the production of space (Lefebvre 1991b), the slow shift in the economy of rural communities from family-based to market dependent discussed above means that there is also a correspondent change in their socio-spatial processes. And if the rurban is the socio-spatial organisation where urban and rural conflictive relation is challenged, it is expected that socio-spatial processes of the rurban will have some similarities with those of the rural, but will be affected by the process of extended urbanisation.

This section aims to explore the relevant changes in socio-spatial processes led by the rurality-urbanity encounter, which was perceived as conflictive in the fieldwork. The discussion that follows draws from Halfacree's concept of rural coherence (2007) that has been slightly altered to embrace the idea of the rurban, as it can be seen on (page 42).

Pendeen and Salto's dependence on the mining economy that was superimposed onto the rural economy reflected on the formation of their urbanised cores, in the second half of 19th and first half of 20th century, respectively. And with the crisis in the mining industry, a second wave of spatial change could be observed at the end of the 20th century in both communities. However, the inhabitants were less able to return to rural forms of production, as they had become more dependent on an industrial socio-spatial organisation. Let us see how differently these changes occurred in each community.

Pendeen is a contradictory and disjoint rurban community. There is a general consensus that the qualities of the community are the tranquility, relation to the nature and communitarianism[8] and there is the desire it continues to have those rural features. At the same time, people expect better infrastructure that is also consistent with the activities that they are daily engaged with, which are more and more related to urban contexts, within and outside the community[9]. Inhabitants, for example, expect to have improved internet for social activities, not only for those related to work.

From the three communities investigated, Pendeen shows the least signs of a peasantry socio-spatial organisation, as it industrialised quite early in history. Since the 16th century, the strong

[8] Consistent with the analysis performed by Halfacree (Halfacree 1995) in six British parishes in the 1990's. The author argues that there is a construction of the rural as a social representation—"As a social representation, the rural is an organisational mental construct which constitutes what is 'visible' and must be responded to, relates appearances and reality and even defines reality itself; both conventionalises and prescribes. As a social representation, the rural consists of both abstract concepts and concrete images, both of which are organised around a 'figurative nucleus', which is 'a complex of images that visibly reproduce, a complex of ideas'" (1995: 2).

[9] During the Digital Neighbourhoods project, in one of the villages investigated, Stokesclimsland, one of the complaints of the participants was the lack of superfast broadband in the region, as his trading business relied on the internet. Because of that, he had to set the company in a nearby village.

tin industry in the region worked side by side with widespread agricultural activity (Council 20--). The decline of all economic activities and the shift to residential and secondary homes has caused conflict in the community between older inhabitants and newcomers. The persistent subsistence agriculture is not widely present to configure a family economy. In the global division of labour, Pendeeners are, in their majority, part of the marginalised labour force.

Even if, to some extent, the village is the basic unity for social organisation, there is a high dependence on nearby villages, due to the lack of a fully developed urban core that could provide employment and infrastructure. This leads to a continuous flow of out-migration that commenced with the termination of the mines. To avoid migration and bring income and jobs to the community, they have resorted to seasonal tourism, illustrating the shift to consumption-oriented spatial practices, "leisure, residence, counterurbanisation, dwelling, contemplation" (Halfacree 2007: 131), but not sufficient for economic independence.

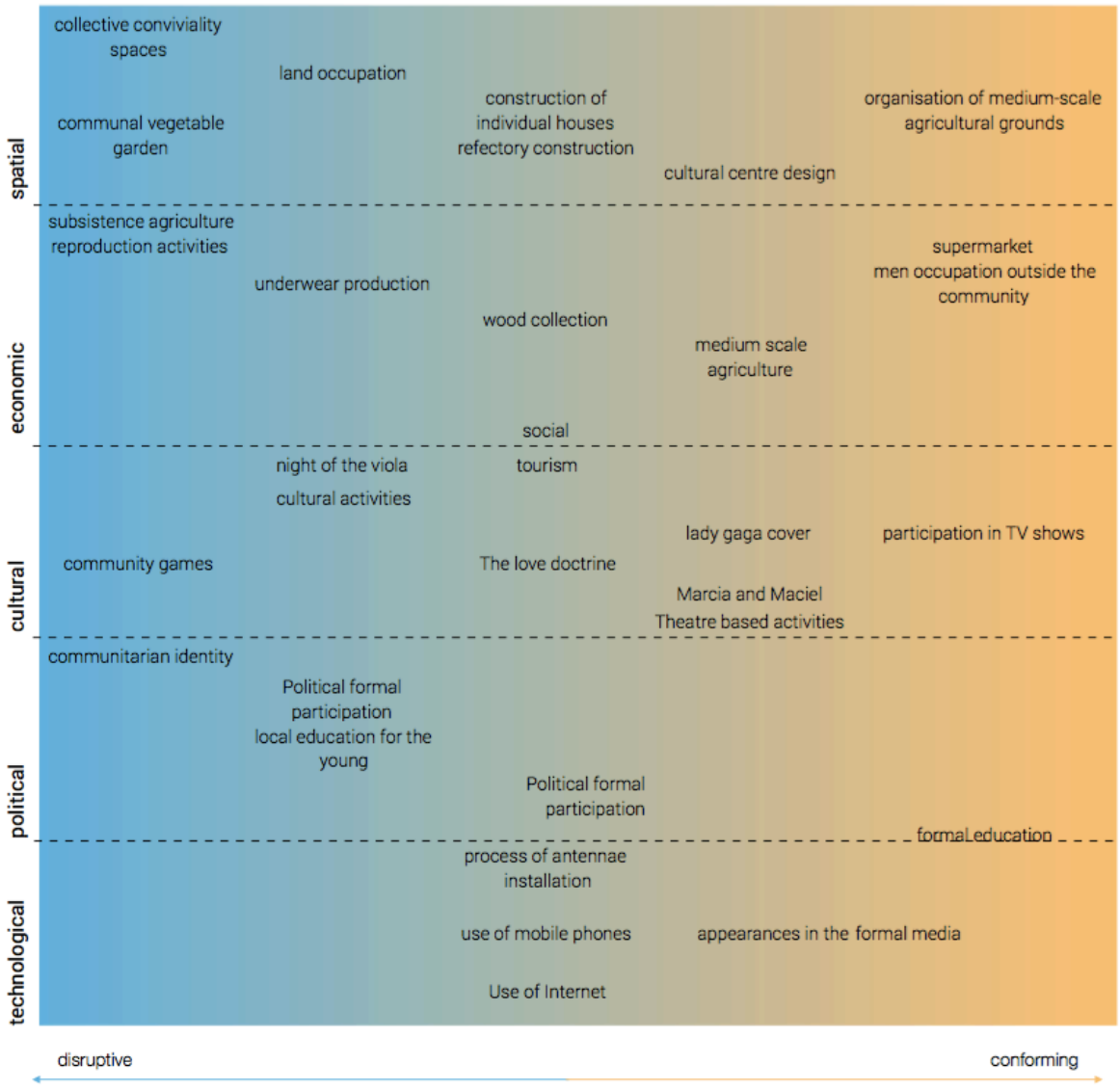


Figure 66: Dimensions observed in the community, when seen from the collective perspective. Source: the author, 2016.

Similarly, Santo Antônio do Salto can also be classified as contradictory and disjoint. Following a path similar to Pendeen, the district had a relatively rapid growth spur due to the mining activities, with the implementation of basic infrastructure during that time. The lack of historical documents of the region does not allow us to account for the earlier development of the region. Still, it is possible to infer that it was with the arrival of the mining that the current spatial organisation of the district was delineated: the division of the land in smaller plots based on economic means for fencing, the establishment of a village core south of the river and the canal (with a church and commerce, and later on with the school), and the introduction of waged labour in the community were fundamental factors for the change in its socio-spatial processes.

In contrast to Pendeen inhabitants though, Saltenses in general do not currently have an idyllic view of their rurality (they are highly influenced by the imaginary of the urban). Paradoxically, the community is still organised based on family ties, typical of the rural: plots are often subdivided to house single-family units, and extended families organise productive and reproductive labour within themselves (reliance on family economy with a highly gender-based division of labour).

The conditions that support the community are changing. There is a lack of perspective specially amongst the young. Santo Antônio do Salto suffers from high deprivation levels, and the decrease in subsistence agriculture and the gradual substitution with industrialised products impoverishes the community even further, as it halts the economy (people mostly shop in Belo Horizonte and Ouro Preto, for example). The end of mining activities, the largest employer of the region, had serious consequences for the families in Santo Antônio do Salto. Attempts to improve the quality of the life through diversification of activities is observed, but it is not widespread. Just like in Pendeen, some of these activities are directly related to consumption, either of space, through scant attempts for rural tourism, or of the local culture, through the slightly more successful attempt of the gastronomy festival.

Noiva do Cordeiro, in turn, is going through a rapid and violent process of change in its socio-spatial organisation. The role of religion in the shaping of the community is clear, even nowadays, with the idea of the collective being imprinted in the socio-spatial organisation, particularly in the practices related to social reproduction. It can be said that until the beginning of the 2000s, Noiva do Cordeiro's economy was strictly rural[10], and to use Halfacree's framework, it was a congruent and unified rural community. There was a clear gender based division of labour, with men participating in the work force working in Belo Horizonte and women responsible for the household chores and subsistence agriculture.

The peculiar way women organised themselves for the everyday chores is one of the elements that helped de-stabilise the strictly rural character of the community and reflected in the socio-spatial organisation of the space. Pluriactivity was organised to support the community, and it was often done so in innovative ways, as the lingerie factory proved to be. Noiva displayed a series of socio-spatial practices that tended to be disruptive of the capitalist logic, as shown in

[10] Shanin (2012: 03) characterises the peasant economy as extensive forms of autonomous occupation, represented by family work, the control of the means of production, subsistence agriculture and multidimensional occupational qualification, with the prevalence of agricultural activites over manufacture.

Figure 65[11]. So even though the community was still subaltern in a global context, Noiva do Cordeiro created an internal organisation alternative to the capitalist dictates.

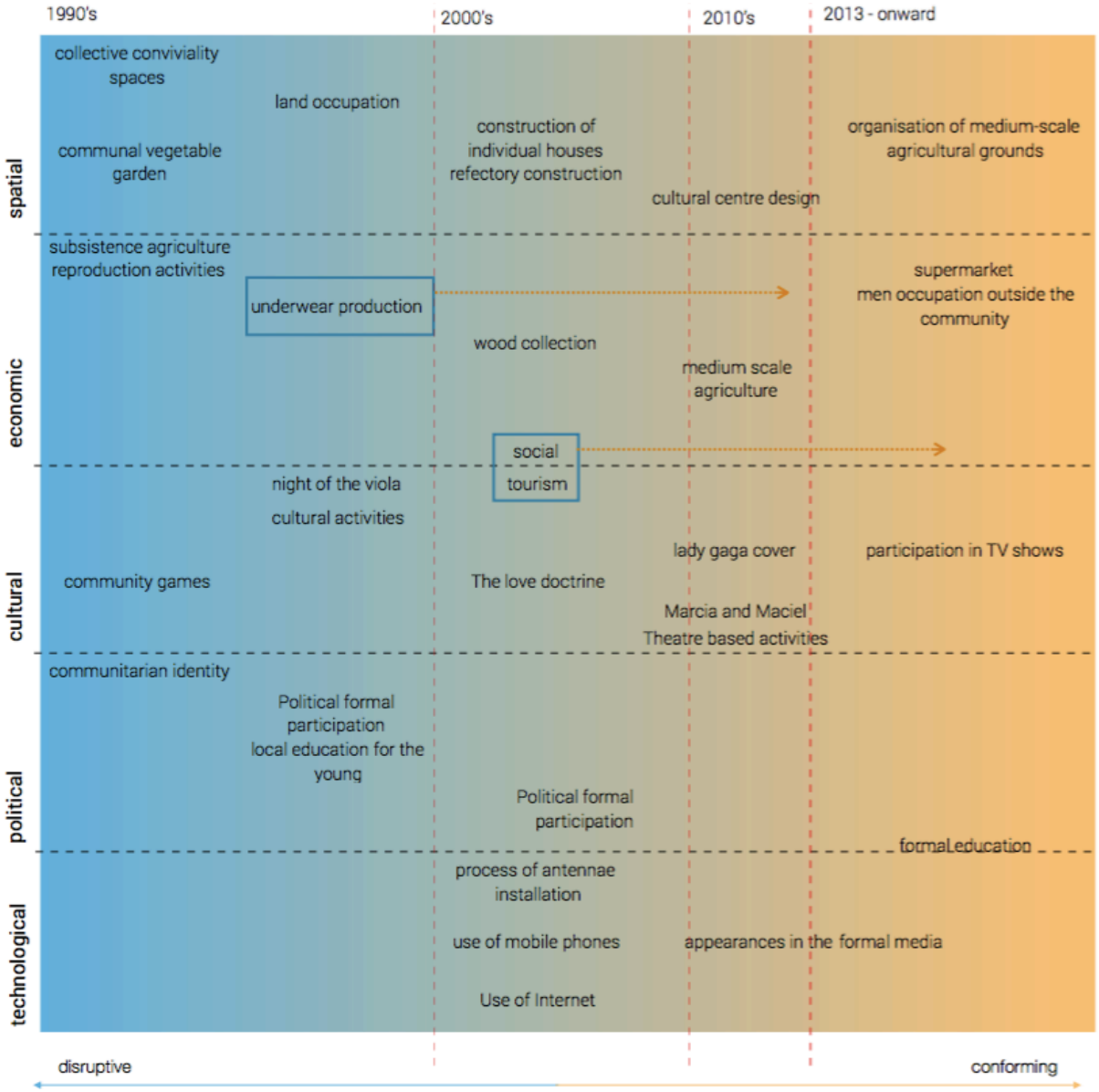


Figure 67: Dimensions observed in the community, when seen from the collective perspective, with a time perspective. Source: the author, 2016.

Building on Figure 66, Figure 67 shows how the dimensions of activities are shifting from more disruptive to a more conforming approach over time, in a much exponential speed[12]. To discuss that, I would like to focus on the changes in the socio-spatial practices of two very important activities in the community: underwear production and social tourism.

[11] A note of caution is important for the **Error! Reference source not found.**. It is dangerous to quantify disruptiveness, at the same time, I felt it is important to situate some of the activities within a capitalist framework, so that the dimension of change in the community can be draw. Not being able to devise a more appropriate way to do it, I kept this system.

[12] With some exceptions, such as the male out-migration from the community has happened before the 1990's.

Before 2015, the work at the underwear factory was, as described by Baltazar (2013), a "collective autonomy":

> If observed quickly, from the outside, the sequence of work in the factory seems to follow the logic of alienated labour, because each woman is responsible for one production stage in a kind of assembly line of the pieces. However, the stages are separated to enable each one to make the part they like the most in the production of pieces […] and at the same time to make production feasible (so people are not in line waiting to use a particular machine). There is no concern with productivity, although production seems to have become so important, as well as profitable to the community, [it] is also committed to participating in fairs and supply to retail outlets[13].

Figure 68: Lingerie factory in 2013 and in 2016. Source: Zerlotini (2014) and Maria Laura de Vilhena, 2016.

Nevertheless, during field work conducted in 2016, the author observed that there was a change in the way production was organised, due to the increase in demand that resulted from the association with an outside factory. That reflected not only on the approach towards work (as presented before) but also on the spatial organisation of the factory (transferred to the new building that also houses the supermarket, Figure 68).

Another important factor on the current socio-organisation of the community is the way social tourism dictates the everyday of the community. It was observed that, over the years, the community polished itself based on what they think the visitors' expectations are. Two elements suggest that: the use of a welcome video produced by the community that seems to seek validation from the visitors, with the prevalence of clippings of newspapers and TV programmes; and the allocation of people to receive visitors with a unisonous initial discourse that seems to construct a local identity for the visitor.

[13] In the original: "A "sequência" do trabalho na fábrica se observada rapidamente, de fora, parece obedecer à lógica do trabalho alienado, pois cada uma das mulheres é responsável por uma etapa da produção numa espécie de linha de montagem das peças. Contudo, as etapas são separadas para viabilizar que cada uma faça a parte que mais goste da produção das peças (cortar, montar, overlocar, colocar viés e elástico, assiar (aparar?) e dar acabamento) e ao mesmo tempo viabilizar a produção (não ficar todo mundo em fila esperando para usar uma máquina específica). Não há uma preocupação com produtividade, embora a produção pareça ter se tornado sim importante, pois além de rentável para a comunidade está também comprometida com feiras e pontos de venda."

Currently, it can be inferred that Noiva do Cordeiro is a much more chaotic and incoherent community. While idyllic rural life and the community ties are highly praised, and the Mother house and the collective lifestyle are considered the basic unity for social organisation; there is the encroachment of capitalist values, such as that of the comfort through consumption or the public exposure in television shows. The long established familial organisation is in dispute with elements of capitalist economy. Noiva, in its own way, illustrates the contend of a radical rural project, that, for Halfacree (1997), might lead communities to become even less coherent in the pursue of alternatives to the capitalist socio-spatial organisation.

The three case studies have been affected by extended urbanisation that has led to profound changes in the formal rural, as a result of the global trying to outcast the rural by transforming the relations of production (Brenner and Schmid 2015). The result is a dislocated rurban, where the different elements of rurality and urbanity clash. The analysis of the communities suggests that the interface with urban elements hinders the possibility of disruptive socio-spatial practices. Especially by investigating Noiva do Cordeiro, it became clear that resistance to capitalism encroachment is based much more on exclusion and necessity than on activism and the development of organised citizenship on a local scale. The most striking element in the three communities is the adaptation of socio-spatial practices for consumption as described by Terry Marsden (1999: 507): "The survival of late capitalism embraces such consumerist relations and rural areas become one spatial manifestation of their evolution".

It is in this socio-spatial context that the internet is being implemented and adopted: communities where rurality is already contested, but urbanities are not clearly defined. Building on the socio-spatial layer just discussed, the next section will further discuss the political implications of the internet as a socio-technical ensemble in the rurban.

6.2.3 Democratisation of the internet in the rurban: new forms of organisation

This section discusses whether the introduction of the internet in rurban communities may foster micropolitical actions and lead to any sort of positive social transformation, which, agreeing with Marcelo Lopes de Souza (2003), implicates in a transformation of the social relations of production as well as of the space. The premise is that, if it may so, this transformation will happen in the micro-local scale and the everyday level, in the fractures of extended urbanisation.

Micropolitical action is context specific and focuses often on single issues and single locations, and may lead to punctual, from below, democratic interventions (Feenberg 2011). Democratic interventions, in turn, happen in different ways, such as by people getting involved in conflicts over technological development, participating in its design, or simply appropriating technology creatively. These interventions are essential to “challenge harmful consequences, undemocratic power structures, and barriers to communication rooted in technology” (Bakardjieva and Feenberg 2002: 186).

Among socio-technical ensembles, Feenberg considers the internet as inherently democratic, for it was envisioned as a governmental tool “but reworked by innovative users with technical skills” (2011: *online*). He argues with Maria Bakardjeva that online communities, for example, despite all the deserved criticism, contribute to the development of the community model of the internet, that by building stable and long-term associations, it “involves the participatory engagement in a collective practice aimed at constructing collective identities. As such, communities are

inherently capable of self-articulation and mobilization vis-a-vis society at large" (Bakardjieva and Feenberg 2002: 182).

Given the possibility of online articulation through access to the internet, do rurban communities advance towards positive social transformation, that is, do they mobilise their online achievements towards a transformation of the social relations of production and space? This research has shown that these sorts of arrangements are not common. Let us recall the mobilisation in Pendeen and St Just for the maintenance of the Library in St Just that serves both communities. The action was an association of online mobilisation to raise awareness in the community and to organise a resistance, and of coordinated spatialised action, with the groups occupying the library and borrowing books to show the local council the importance of the institution for the region. This has been an attempt of micropolitical action, that, even if very timidly, addressed issues of social justice and increase in quality of life. Nevertheless, it cannot be said that, if successful, it would have led to any social transformation; rather, it was a tactics to resist the imposed system in order to survive within it.

This section has two parts. The first discusses the socio-technological hegemony and the ways it limits the rurban with peripheral roles. The second discusses the regional and its everyday limits and the implications for peripherality and the articulation between online and territorial networks.

The internet and the rurban: the contended movement of networks

The comprehensive process of informatisation of the society has changed some of the ways networks are formed. According to Manuel Castells (1996: 470)

> Distance (physical, social, economic, political, cultural) for a given point or position varies between zero (for any node in the same network) and infinite (for any point external to the network). The inclusion/exclusion in networks, and the architecture of relationships between networks, enacted by light-speed-operating information technologies, configure dominant processes and functions in our societies.

In the context of globalisation and at the structural level, it is believed that a meta-network is defined by the social construction of dominant forms of space and time that deactivates subordinate groups and out-of-interest places (Castells 2009), increasing their distances within the network

> Not that people, locales, or activities disappear. But their structural meaning does, subsumed in the unseen logic of the meta-network where value is produced, cultural codes are created, and power is decided. The new social order, the network society, increasingly appears to most people as a meta-social disorder. Namely, as an automated, random sequence of events, derived from the uncontrollable logic of markets, technology, geopolitical order, or biological determination (Castells 2000: 508).

It has already been argued that the reduction of the city to its structural forces and to the socio-economic relations, as done by Castells, fails to acknowledge agency and the role of people and their practices in the constitution of cities and their positioning in the world (Smith 2003). The network theory proposed by the author and widely used today to describe globalisation and the processes that it engenders is not enough to grasp the relationships happening in the peripheries, because this model forces a horizontality that camouflages the relationships of dependency and domination, while ignoring peripheral nodes entirely. That often means getting

lost in the simplification processes implied in network visualisation and consequently, blurring the processes of control exerted from central nodes. For research, that also means taking the network as the object to be studied, rather than the relationships it is supposed to help unveil. Thus, rurban communities and the collective role of individuals are engulfed by the macro-processes that define the networks and altogether ignored despite their importance for the maintenance of urban networks, as argued in 1.2.3.

It is understood with Pedro Demo (2007b) that more than excluded, the elements that compose the socio-technological peripheries, be them individuals, groups, whole societies or spaces, are marginalised. Blindfolded of their essential role in the stability of the network, they continue to perform subordinate activities that respond to interests defined elsewhere by the centres. That is so, because the high levels of political poverty lead to an inability of the people in these peripheries to grasp their condition as subaltern and to organise themselves against subjection.

In fact, the importance of the nodes in a network is dialectical and mutable: core nodes of particular networks can be secondary of others, depending on the selected attributes that define their limits[14]. This is evident in the case of Noiva do Cordeiro. A peripheral periphery in the 1990s, with no importance for the region, Noiva do Cordeiro became, through the engagement of its citizens and the assistance of ICTs, an important node of the rural and rurban communities nearby Belo Vale. It has also become a central node in the region (which is still peripheral in the broader context), offering services and cultural activities, when before it was not even recognised.

These other networks are only understood through the juxtaposition of already existing geographical networks and those being built with the use of the internet. Said differently, socio-technological marginalisation should be spatialised, i.e., seen as a socio-technical process, it should be regarded as one of the composing elements of a network which configure *centralities and peripheralities* rather than determine fixed *centres* or *peripheries*[15].

Socio-technological peripherality: means of appropriating technology and their unfolding

Before proceeding to discuss socio-technological peripherality, it is necessary to resort to Lefebvre's understanding of centrality. For the author, centrality does not relate only to a concrete geographic position, but it is an increased possibility of encounter owing to the synchronicity of objects and people around a given point, as both an act of thought and a social act: "Mentally, it is the synchronicity of events, of perceptions, and of the elements of a whole. Socially, it amounts to the convergence and combination of goods and activities. Centrality can thus also be understood as a totality of differences" (Schmid 2012: 47). Mirroring the concept, peripherality can be understood as the decreased opportunities of encounters that result from the inexistence of fostering conditions for people and objects to chance on one another in a given space.

Let us then use this construct to formulate our networks rather than models based on centres and peripheries, and discuss the networks that are formed through their affordances[16]. Even

[14] As a rule, the criteria used by ANT is the possibility of convergence. An actant should be disregarded when including them means undermining the alignment and convergence of the network.
[15] It is relevant to remember that, in the capitalist context of asymmetrical social relations of production most attempts of peripheries to become centres are frustrated.
[16] Here understood as "functional and relational aspects which frame, while not determining, the possibilities for agentic action in relation to an object" (Hutchby 2001: 444).

though the communities studied are all geographically and socio-technologically marginalised, they each had distinct experiences in regards to the introduction of the internet as chapters 4 and 5 have shown. In these three case studies, the internet plays a key role—becoming an actant in their networks—, either reinforcing the peripheralities or presenting tools for community development. Another important aspect is the way the internet is being incorporated in each of those communities.

Santo Antônio do Salto is a stereotypical example of internet implementation in small communities in Brazil[17]: a top-down process that focuses mostly on including people as consumers of technology. What is seen is an individual appropriation of the internet, mostly through mobile phone subscriptions. The service is expensive, so it will be used moderately. They have limited tools to grasp the breadth of the internet: there is a general confusion of what it is and a limited number of people will use it for anything rather than the social networks.

The analysis of the recent arrival of the internet on Santo Antônio do Salto shows that, as with most technology that arrived at the community such as mobile phones and landlines, it has not yet functioned as a catalyst for encounters on Lefebvre's terms. Clearly they all have facilitated the communication among inhabitants and the outside, by increasing (and furthering) their spatial network, as they can contact family, do business, call for a doctor without depending on the low-quality pay phones. Nevertheless, people from Salto are mostly using the internet to reproduce their social offline networks, only excluding those that do not have the access to the tool.

The marginal role of the internet in the community can be explained by the extreme level of hindrances they are faced with daily: they not only suffer from economic poverty, that reflects on their conforming socio-spatial practices; they also lack the most basic conditions for encounters to happen. One important element missing in the district is a spatial central node that draws the community to discuss local matters. Socially there is no engagement for common matters as individual interests overtake collective ones. There is a sociocultural gap that reflects their inability to organise themselves not only mediated by ICTs, but also mediated by space itself. As they say, in Salto "each one is for oneself", and that appears to be so also online.

The inability of the district to elect a council representative illustrates the lack of collective engagement of the community. Many inhabitants stated they would never vote for a Saltense, because they would not give this sort of power to **one** inhabitant, as the elected would become richer and more powerful than themselves. Contacted over Facebook to describe how she felt, Jeiniele stated "It didn't work, right, the community has to develop an awareness before that happens!! Meanwhile four years longer Santo Antônio do Salto will continue the same."[18]

Pendeen also represents the stereotypical way rurban communities access the internet in UK, specially in Cornwall, a very deprived area. The introduction of the internet was also a top-down decision of British Telecom to improve the quality of signal in the framework of Superfast Cornwall project, and had little activity focusing on digital inclusion. Still, the interaction with

[17] A similar process was revealed during the 'Smart Urbanism' trip to Salvador. Small communities in Bahia rely on private smaller providers to deliver internet. The service is expensive and low quality, but as stated in the workshop, it is currently one of the only possible ways to bridge the digital divide.

[18] Private conversation on 05.10.2016 on Facebook Messenger. In the original: Não deu certo viu a comunidade tem que se conscientizar muito ainda pra isso acontecer!! E enquanto isso mais 4 anos Santo Antônio do Salto vai ficar na mesma!

the internet differs from Santo Antônio do Salto. The population of Pendeen is gradually assimilating the internet as a tool that can help them overcome some of the limitations imposed by geographical isolation and the lack of resources. The internet is mostly used in a conforming manner, but it is being appropriated according to need. Examples of use are the Patchwork club, individual shoppers, students and homework, and Lil's fish and chips. People are also aware of social media, and frequently use YouTube, Facebook, Skype among others, not only for individual communication, but also for some collective issues.

Nevertheless, the existence of the Centre of Pendeen gives a different dynamic to the use of the internet in the community, as it functions as a physical node and a digital hub. The activities offered in the centre are essential for people to have not only the tools, but also the confidence to use the internet. Besides the peer-to-peer support, the Centre of Pendeen fun page is a reference for the community, housing different topics that are actively engaging the community in bringing back the history of the community.

The access of the internet in Noiva do Cordeiro, in turn, is a result of the interaction of the community with different governmental initiatives, in a way that a grassroots ambition drove the government to act in the region. Because of that, they received the title of *rural pioneers* in 2005, and since then its inhabitants explore the arrival of ICTs to collectively develop. The access to mobile signal was due to their own initiative to buy a repetition mast, and the rural internet access came when they learned how to demand it from the government. Furthermore, the way the inhabitants also shared the knowledge on how to use the internet among themselves gave a collective meaning for it. Internet use for collective matters reflected the also collective socio-spatial organisation of the community: collection of information for Noiva do Cordeiro's production in the agriculture and underwear fronts, the gathering of information and application to government funds, the search for information and knowledge to be shared with the community, the 'discovery' of their star Keyla Gaga.

Nevertheless, the speed of which the community was exposed to the outside has also had important implications. The increase in tourism and the professionalization and diversification of production led to an improved interface with capitalist activities, which in turn led to the neglect of activities that constituted the essence of the community, such as the substitution of the play games by theatrical plays that focused on issues that needed to be discussed by the community.

The three communities clarify, on their own way, that the means of appropriating the technology follows, generally, the levels of peripheralisation in the community. Santo Antônio do Salto and Pendeen suggest a much conforming approach to the internet, as it is not used as means to overcome peripherality as such, but as means to improve the quality of life with very limited production local knowledge. Differently from Santo Antônio do Salto, though, Pendeen shows an appropriation of technology that, in part, returns and celebrates their own heritage, and looks inwards, as means to remediate the isolation they face (not in fact producing any outcomes that challenge it). There is a marginal intention to mobilise in collective issues, with an also marginal improvement of collective quality of life.

Noiva do Cordeiro glimpsed the opportunity to use the internet to challenge peripherality, even still being a periphery. Even though they have not innovated the use of internet per se, the information they gathered and the way they mobilised towards the production of knowledge used locally contributed to their modes of thinking, which to a certain extent, questioned

capitalist mode of production. They created tools that allowed them the possibility to become a centrality in the region. At the same time, it is the same internet that contributed to the fast increase of capitalist interfaces, and the re-construction of some of the community ties on this framework led to the neutralisation of the internet, and the impossibility, under these circumstances, for it to become a disruptive tool. To further investigate how internet is affecting the broader positioning of the communities, the next section will discuss the regional implications of the internet in the communities.

6.2.4 The regional gap: situating access in a broader context

When centralities are being built elsewhere, peripheries as spatial constructs are further pushed outwards to the edges of the networks they partake. Let us use Paul Baran's (1964) model of communication networks (Figure 69) to build the argument. In a visual trinary model of communication, the author defines three different communication networks; i.e. centralised, decentralised and distributed. If analysed from a political perspective, the first and the third models are of little use here. They either no longer exist (if they ever had), in the case of the former, since there is not absolute centrality; or they do not exist yet (if they ever will), in the case of the latter, as there is not a perfectly balanced communication network with no centre, and therefore, equally important (but also dispensable) nodes.

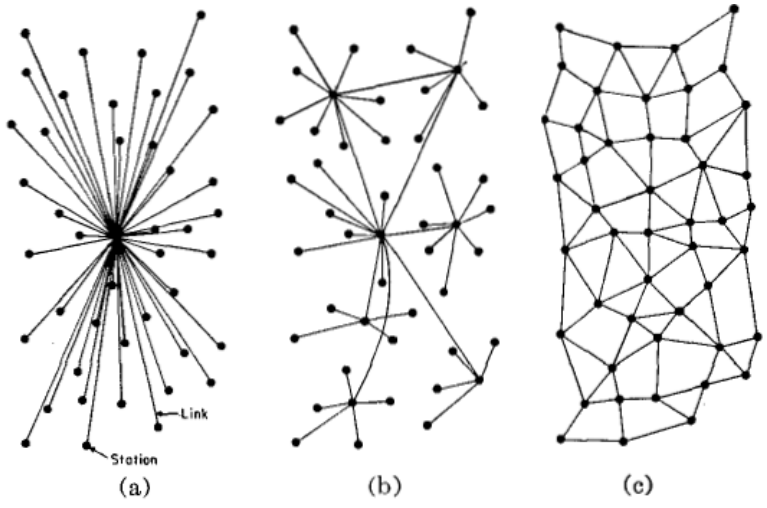


Fig. 1—(a) Centralized. (b) Decentralized. (c) Distributed networks.

Figure 69: Baran's model of communication. Source: Baran (1964)

If spatialised, Baran's model will provide us a similar approach: both first and last models can't be used, because, worldly, power is not concentrated in one sole node (country, city, region) and is not equally distributed either, as the last model. More importantly, Baran's decentralised model illustrates a more conventional centre-periphery relationship. Networks are determined by connections among central nodes, which also connect to more or less peripheral ones. The more connections a node provides, the more central and essential it is. In the case of the three communities, geographic isolation was also caused by the lack of regional cooperation ties with nearby communities, leading to dependence on asymmetrical relations built with stronger centres.

Santo Antônio do Salto is a good example of insufficient cooperation ties at a regional level, mainly due to lack of a basis for action both in terms of spatial and technical infrastructure and

of social, cultural and economic capitals, internal disputes and little engagement of the population. There is little exchange with other communities, and most inhabitants are absorbed as low skilled labour in the region. The introduction of ICTs in the community has not filled in this gap, in as much Santo Antônio do Salto is still a peripheral periphery. The image below (Figure 70) is a diagram that shows the overall networks in the district. The direction of the arrows shows the direction of the network; its thickness, the importance of the networks. The continuous lines show the existing geographical networks, and the dashed ones, the online networks.

As it can be seen, most the online and spatial networks coincide. The district's microlocal network is the most prominent among them all (a fact for all the communities analysed). It is strongly based on personal relationships, as there are not many collective networks in the district. There is solidarity among its inhabitants in a day-to-day basis, shown in practical situations, such as help carrying an old lady's bag, or in traditional events, where everyone contributes for local festivities (even though virtually every person interviewed in the village would say that people are not united, revealing the local inability for collective engagement). With the introduction of the internet, in special social media, these ties are being reinforced, which means that people that are excluded from the offline social groups are not being included online either. Online networks are increasing in importance, and implications in the organisation of the space are also observable. One example is how the house of one of the girls interviewed has become a hub for her friends, as she is one of the few that have internet access on the computer. The girls will spend the afternoon at her house using Facebook, instead of sitting outside on someone's step or in the square, typical activity in the district.

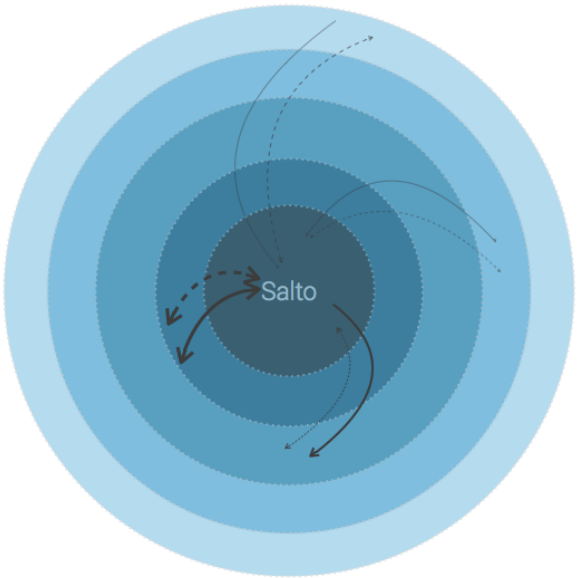


Figure 70: Diagram of Extension of Networks in Santo Antônio do Salto. Source: The author, 2016.

Regional connections, which were already weak, remain weak. Note that spatial connections are most one-direction, reflecting the migration process in the region. Most of the online connections at this level are communications among inhabitants that have out-migrated and the ones that have stayed in the community. At national and international level, connections are virtually inexistent, reinforcing the peripheral role of Santo Antônio do Salto at a global level as expected.

It can be said that historically, Pendeen's conceptual model would be quite similar to that of Santo Antônio do Salto. According to one of the inhabitants interviewed, until recently Pendeen was very isolated, as there were no strong local social connections in the region. Even though the village is still quite peripheral, the recent introduction of the internet has led to a different pattern of connections. The community's local connections have not been massively changed by the introduction of internet tools, especially for the older inhabitants (Figure 71). Traditional forms of communication, such as door-to-door conversations and letters, are still used in the community.

Over the years, the village has managed to improve its regional ties, particularly with nearby villages (both spatially and online). According to local accounts, in the recent past, there would be disputes between them, but now they are able to work together. Regional ties are not developed only within the familiar circles, but also regarding the needs of the community. This is clear with the mobilisation of the villages to fight for their rights, such as the attempt to avoid the closure of St. Just library, that served the whole region.

Those living in the region also visit Pendeen for its pub and restaurants as well as for its beaches, contributing to the local economy. Neighbours know and help each other in different everyday occasions; such as with travelling to nearby areas especially for shopping, due to the lack of a reliable and affordable public transportation system. There is a strong idea of 'sense of community' which helps the inhabitants to cope with material deprivation.

The Centre of Pendeen, for instance, has become a community hub not only for Pendeneers, but for inhabitants of the whole Parish of St Just, offering regular social encounters through the various activities and clubs. Online as well, the webpage of the community is a reference for the population. People use the Facebook page to update themselves and engage in discussions of issues that are important in the region, even leading to spatial mobilisation, such as gatherings to clean the beach. Nevertheless, these ties are not strong enough for the communities to challenge their peripherality.

Mining had an important role in the development of geographical networks in Pendeen. Since its onset, it related to migration processes that had been defining general population patterns as well as occupation since centuries. In the last two centuries, immigration occurred when the industry needed workers' support, while the opposite movement happened when there was a lack of employment of the region. The rapid urban growth in the 19th century gave the community a regional role, as it could supply the demands of this new population with shops and institutions. Furthermore, it brought cultural diversity to the settlement.

The decrease in production led to the emigration of part of its population to other countries where mining activity was still growing in importance—Australia and South Africa, among others. As a consequence, Pendeen lost its regional relevance, regressing to the status of a small village. Its inhabitants depend on services and employment provided by nearby settlements—specially St. Just and Penzance—as the village does not provide the needed infrastructure for self-sustenance.

A second consequence of this movement was the creation of a global network. Miners who emigrated the UK have still family and friend ties with those who stayed in Pendeen. With the arrival of ICTs in the village, these ties are being reinforced at a rapid rate, and global digital

networks are very present and important in the community (though they always existed with other communication means).

Currently, national nodes seem to be quite frail, reflecting the peripheral role of Cornwall in the English context. The region receives an influx of tourists during holiday season and there has been a steady relocation of people after retirement to the region, though no connection with the internet introduction can be currently defined.

Noiva do Cordeiro was, until the end of the 20th century, a very isolated community. Regional ties were built through religious commonalities with the two other Noiva do Cordeiro communities. These were, since the onset, essential for the survival of the community, as more immediate regional ties were unattainable. Though based on familiar relations, these connections allowed for exchange of knowledge and information, with Noiva do Cordeiro always playing a central role among the three. With the opening up of the community in the 2000's, the regional prominent role of Noiva do Cordeiro was slowly built by the women in the community. The first effort was the creation of the itinerant CIDEC. Later on, the community was able to elect a city representative in the city council, and during the campaign, Rosalee, the candidate, was able to de-construct some of the prejudice towards the community that hindered their regional incorporation. Since then, regional connections are not only based on familiar relations, and have contributed to the repositioning of Noiva do Cordeiro as an important node in the region. It has, in many ways, become a centre for the region.

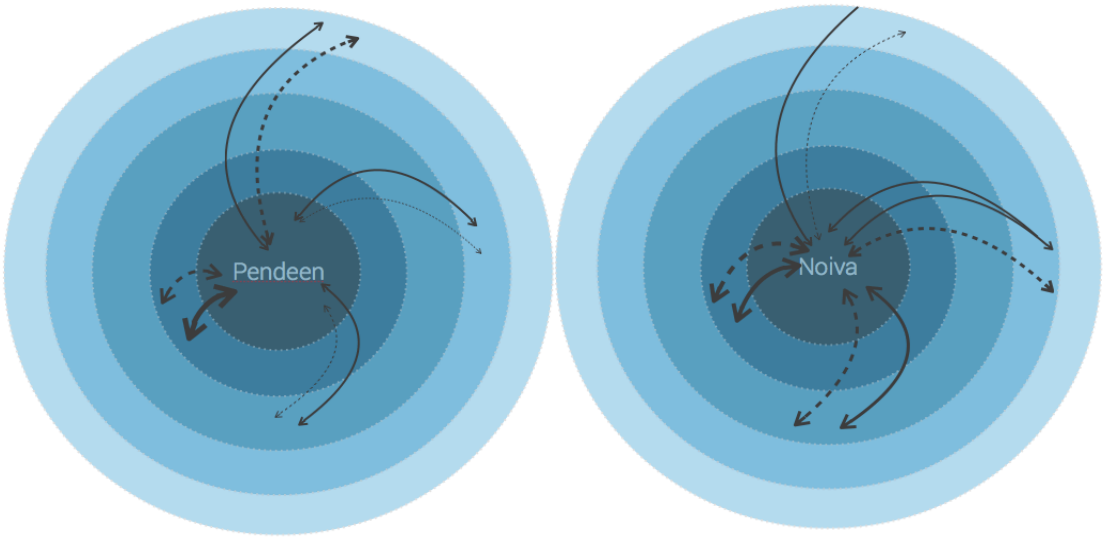


Figure 71: Diagram of Extension of Networks in Pendeen, on the left, and Noiva do Cordeiro, on the right. Source: The author, 2016.

Local connections were always very important for Noiva do Cordeiro, since they were living under religious dictates and afterwards, through the love doctrine. There are many internal activities that aggregate the community, such as the Night of the Viola. The internet has brought different dynamics to the everyday activities in the community, specially with WhatsApp. The app is available for most devices, is usable under slow connections and it does not consume much data, making it an optimal tool for internal communications. Now, instead of calling people from door-to-door, the app has become the standard means of gathering people.

Another important change in the community in the 2010's was the increase in influx of national and international tourists, improving these spatial networks, specially inwards, matching the increase in the community also online, observed by the prevalence of international messages in their Facebook page. There has been a steep of visitation numbers (outwards-inwards), but outward trips are not common to the population as a whole (though that is true for the cultural groups for example, in special Keyla Gaga, who travel to São Paulo and Rio de Janeiro, on tour).

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To conclude, there are two important elements linked to regional connections: the scale and breadth of action and local redefinition of peripheries. As it could be seen with Noiva do Cordeiro and with Pendeen, building stronger regional links was essential for them to improve their living conditions. These connections, whether done in person or online (or a mix of both) led to spatialised action, showing that, at this scale, it is possible to develop meaningful interpersonal communication.

Pendeen and Noiva do Cordeiro have improved on their peripheral condition by connecting to other peripheral communities, though differently. Pendeen has not transformed itself into a central node, but it created connections in the marginal nodes of the network in the everyday level. Using Baran's model again, that would mean creating connections just as those market in red in Figure 72). It is important to note though, that these connections are still very limited, and even though there has been an improvement in the quality of life there was not much improvement in social justice, letting us assume that there has been little development in the community, as understood by Marcelo Lopes de Souza (Souza 1997).

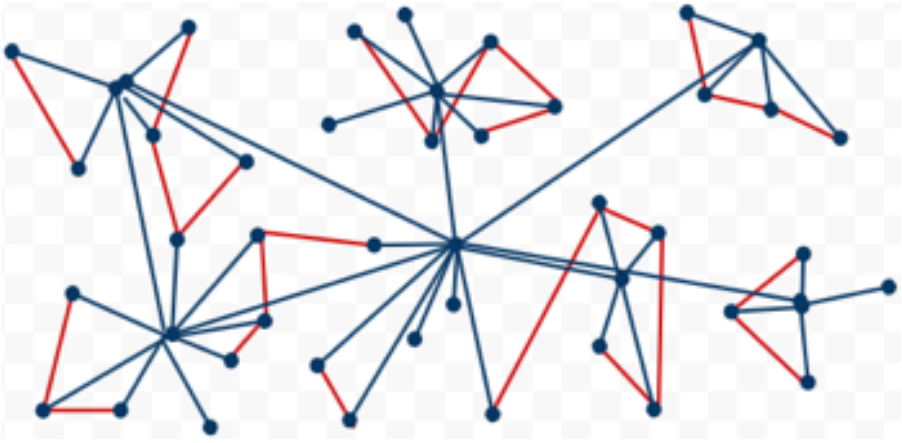

Figure 72: Decentralised model with regional cooperation. Source: the author, in addition to Baran's model (1964)

Noiva do Cordeiro, on the other hand, has become not only a centrality in the region, but it has also assumed hierarchically a central position among the peripheral communities nearby, becoming a sort of peripheral centre. The improvement in their living conditions not only brought better quality of life for the population, but allowed for a community to conduct its everyday based on social justice, even if internally. Every inhabitant in the community seemed to more or less justly share the work and the small income that entered the community.

With the ground breaking introduction of internet in the region and the unfolding results from 2006 onwards, the community gained respect in the region, and with national and international recognition, changed their everyday. Since then, the community has been transforming its socio-spatial practices so radically that a new process can be observed, as discussed in 1.1.1. The

increased interface with remunerated activities and the ingress into more capitalist forms of production has shifted Noiva do Cordeiro's situation in regards to regional networking again. If before it had become a not only a centre, but also a centrality for the region, exactly because it offered an alternative socio-spatial organisation that allowed for encounters (in Lefebvre's sense), it has now invested in creating/strengthening ties with the already established centres. By concentrating its efforts in connecting with those centres, and, it appears without acknowledging it, Noiva do Cordeiro undermines its own ability to operate as a centre at a regional level, and becomes again a peripheral node. The difference is that now, one might say, it is a 'better positioned periphery'.

6.3 Bottom-bottom tactics as means to social transformation?

6.3.1 The internet, knowledge and the (im)possibilities to overcome political poverty

The quandary just presented above with Noiva do Cordeiro was only possible, in the first place, because knowledge was perceived as very important the community. It was using their own local knowledge (which Feenberg calls knowledge from below) and culture that the community concerted to fight extreme poverty and famine. The community decided to amplify this knowledge by offering the children and the young additional education that fixed the 'wrong predicaments' they were taught in formal schooling. That means they created a system to pass on through the generations the values and knowledge they had built over time.

They also searched for technical knowledge that could help them improve their lives. The use of the computer since the time of CIDEC aimed at benefiting from this type of knowledge to bring more efficiency in the subsistence agriculture. Later on, technical knowledge was used to access governmental funds for agriculture, expand the production and search for their niche in the market.

Information and the balance between the types of knowledge were certainly essential for the community to create an awareness of their situation: the needs to fight poverty and to keep the community cohesive, the chance to overcome the isolation they were forced almost a century before and the possibilities of expanding production to improve their quality of life. Having access to the internet, but even more, using it effectively, was a key factor for the course of their more recent history.

At this point, it is important to highlight that the internet by itself does not contribute to the overcome of political poverty, as access to digital technologies will not naturally lead people to organising themselves to self-determination. The mobilisation of Noiva do Cordeiro can be considered an exception, rather than the rule. Building *organised citizenship* (to use Demo's terms) requires that the community develops through the stages of critical awareness: building political consciousness of the social injustice to understand the underlying reasons of injustices; restoring local cultural identities to become subject of their own destiny rather than objects of political manipulation; and finally, developing the need for the community's political organisation to fight the problems identified.

> Building a dignified life in the countryside that ensures access to citizenship to the entire rural population runs through the overcoming of the different forms of domination, which implies the emergence of the subaltern classes in the countryside as political subjects. This means that we must recognise in the

> social groups living in the countryside the ability to formulate their own alternatives. At the same time, it is necessary to maximum expansion of access to information by rural subaltern classes so that they can think critically in the world[19] (Marques 2015: 110).

The dramatic change in the community in the last two years demonstrate how developing critical awareness to the point of overcoming political poverty is a very strenuous process. Noiva do Cordeiro is exponentially conforming their activities to a capitalist mode, which clashes with the very elements that differentiated it from other rurban communities. Some examples already presented are the gradual substitution of games by theatre plays to an extent that some of the inhabitants don't even recall they existed; the opening up and spetacularisation of the Night of the Viola; and the homogenisation of the community's knowledge to some extent, exemplified by the relative disembodiment of the love doctrine, which gains force in the level of the discourse.

If on the one hand it is possible to observe conforming uses of ICTs, such as through participation in popular shows in TV[20] , on the other, Noiva do Cordeiro still uses the internet as a political tool. The latest example is their online endorsement of Dilma Rousseff's government, during the turmoil of the impeachment process, which was also produced in the spectacle frame[21].

Although it is still early to say, Noiva do Cordeiro inhabitants are embodying the capitalist organisation of labour, and signs can be observed in their everyday: in their new socio-spatial practices, in the imbalance of knowledges in the community, in the increasingly conforming ways of using the internet. This reflects the encroachment of the hegemonic project of extended urbanisation, that uses also technological development in order to conform the peripheries. The next section will discuss how socio-technological hegemony is performed in the everyday.

6.3.2 The socio-technological hegemony and its everyday limits

Let us first understand the importance of socio-technological hegemony. In the text *Understanding Podemos*, Pablo Iglesias defines hegemony in accordance to Antônio Gramsci as "the power of the leading elites to convince subaltern groups that they share the same interests, including them within a general consensus, albeit in a subordinate role." (Iglesias 2015: 7). Hegemony was also seen by Lefebvre as a contingent process that fusions macro and micro dimensions of reality in which capitalist totality is constructed (Kipfer 2002).

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[19] In the original: "A construção de uma vida digna no campo que assegure o acesso à cidadania a toda a população rural passa pela superação de diferentes formas de dominação, o que subentende a emergência das classes subalternas no campo como sujeitos políticos. Isto significa que é preciso reconhecer nos segmentos sociais que vivem no campo a capacidade de formular suas próprias alternativas. Ao mesmo tempo, faz-se necessária a máxima ampliação do acesso à informação pelas classes subalternas rurais para que estas possam se pensar no mundo criticamente"

[20] Such as the MTV show called 'A adotada' (The adopted) in which Maria Eugênia, a party girl who each week goes and lives with a different family. Another interesting account is how, during a visit in 2014, the women in the community seemed to disregard the repercussion of a sensationalist news peace from the Telegraph that regarded them as single women searching for men, or see the positive outcomes of it, as the community became famous in many countries. Another show was the 'Hora do Faro', presented by Rodrigo Foro in Record in the 06.03.2016, which, according to the presenter in his Instagram, reached 15 points of audience and leaded TV broadcast for almost one hour on that day (@rodrigofaro, 06.03.2016).

[21] The video can be seen here: https://www.facebook.com/noivadocordeiro/videos/1036306853116234/.

In the socio-technological domain, at a global level, hegemony relates to the ways through which the leading elites (the so-called developed countries) manage to build a narrative that leads subaltern groups to believe that technological development is a linear process already in motion, hence the terminology developing countries. Nevertheless, it is important to think with Marcelo Lopes de Souza that

> it is unrealistic to imagine that the "development" of (semi)peripheral countries is a simple "matter of time", and that these countries are currently at a "stage" that the core countries have already experienced in the past: the chances that those countries that industrialised first and became colonisers and imperialists had, are historically located and irreproducible in the same way they happened in the past, and these odds, (semi) peripheral countries did not have or do not have—exactly because these countries were the "other side", the colonies of exploitation, neo-colonies ... there exists room for manoeuvre to overcome the problems, but historically very different situations cannot be compared (Souza 2003: 95).

It is not only in the semi-peripheral context, such as that of Brazil, that this situation can be observed. Endogenous peripheries, such as Cornwall, also suffer similar process of dependency creation in the technological domain, even if not in similar historical framework. These divisions created at the global level reverberate in the urban as a "terrain and medium for the survival of capitalism and, simultaneously, a source and stake for revolutionary claims to its transformation" (Kipfer 2002: 146).

In the urban level technology is feeding the already existing divides by reinforcing the individual's and groups' position in the capitalist relations of production, "now digital technologies saturate the quotidian and the public realm, and they increasingly fall to the hands of digitally literate, highly educated (hence, intelligent), highly skilled young people and their creative collectivities, belonging to the knowledge economy (Leontidou 2015: 84)[22], ultimately implicating the everyday.

That brings us to the second element to be discussed, the everyday. If we talk about the limitations imposed by socio-technological hegemony onto this level, the everyday itself might also defy hegemony. Let us further the first part of this argument, so that in 6.3.4 we are able to discuss the second. Power, for Lefebvre, is everywhere: in the government, in space, in everyday discourse and common sense (Lefebvre 1976). In the socio-technological domain, that means it is also in technocracy, that renders the majority of the population with a passive role in the use of technologies, making it virtually impossible for any spontaneous democratic interventions in this area (Feenberg 1998).

The way the internet is being introduced in rurban communities confirms the exertion of power from the different social levels onto the everyday. Technology being mainly produced in central countries and the top-down implementation of the system (without any bottom-up active response) leads to conforming uses of internet that contribute to the reproduction of the oppressing conditions. Those, in turn, reinforce peripherality. In Halfacree's (2007: 130) words, the changes of the rural are often a result of involution, rather than of questioning the system:

> the 'differentiated countryside' model is very much an internal, even incremental, expression of rural change, whereby such change is largely driven by

[22] Even though we might be able to collect a series of case studies that might contradict this argument in the first moment, the fact is that there have not been significant changes in the capitalist framework that would result in a real transformation of the urban, and consequently, to the relations of production (or the other way around).

> developments within capitalism as the dominant mode of production, differences being more induced via involution than produced in a challenge to the dominant system. In Lefebvre's (1991 [1974]) terms, change remains internal to the abstract space of capitalism—a spatiality homogenised by exchange value but through the same logic also highly differentiated—and does not suggest the kind of counter- space that Lefebvre saw emerging from within the contradictions of abstract space as elements within it could no longer be contained internally and developed into the more 'explosive' condition of contradictory space (Shields, 1999).

The author highlights that the hegemonic process of extended urbanisation affects the rural, rendering it ineffective as the alternative Lefebvre once saw for the widespread of capitalism. In fact, what can be observed is a symbiosis among the different social levels that transforms the rurban into an impoverished synthesis of the rural and the urban.

Of all three communities studied during this research, the one where a passive appropriation of the internet could be mostly observed is Santo Antônio do Salto, as the activities carried online reproduce the dullness of their everyday—"insofar as it is saturated by the routinized, repetitive, familiar daily practices that make up the everyday in all spheres of life: work, leisure, politics, language, family life, cultural production" (Kipfer 2008). The overall use of social media reveals a shallow exploitation of the internet that can be grasped by understanding the hegemonic construction of access. Thus, it is possible to observe that "media (institutions, technologies and representations) disembed social practices and experiences, while simultaneously making these practices and experiences dependent upon the media as such" (Jansson 2010).

Yet, Lefebvre also highlights the role of the everyday for the success of a 'total project' that aims at a radical new type of living; in Gramsci's work, a counter-hegemonic[23] process: "it is urban life and the everyday where the project takes the form of practical elaborations and attempts at a radical change" (Lefebvre 1976: 36). One of the goals of this research was to find any evidences that would corroborate that a given set of socio-spatial practices could lead to uses of the internet in rurban communities that fostered positive social transformations. In fact, Noiva do Cordeiro was the apple of the research's eye. In the least, it showed over the years a strong process of resistance (or anti-hegemonic processes), through a series of micropolitical actions, already discussed throughout this thesis. The next section will dwell on the possibility of positive social transformation through bottom-bottom tactics, first discussing the micropolitics of the rurban and then focusing on Noiva do Cordeiro.

6.3.3 Micropolitical action in the rurban

Let us resort to the concept of micropolitics, understood by Feenberg as "a situational politics based on local knowledge and action. Micropolitics has no general strategies and offers no global challenge to the society. It involves many diverse but converging activities with long-term subversive impacts (Feenberg 1999; p. 104). Even though the author is developing the concept on a technical context, arguing that it "is important for the technical sphere, where it is difficult

[23] "In a Gramscian problematic, a viable counter-hegemony draws together subaltern social forces around an alternative ethico-political conception of the world, constructing a common interest that transcends narrower interests situated in the defensive routines of various groups" (Carroll 2009: 21).

to conceive totalising strategies of change", micropolitics can be expanded to the socio-spatial domain where socio-technical ensembles become important agents[24].

Feenberg highlights three needed conditions for micropolitics to blossom: power, knowledge and appropriate occasion, as presented in 1.1.1. I have also proposed that beyond these elements, when discussing spatialised micropolitics, there is the need to consider a fostering space, which is very intricate[25] but also, essential in the case of rurban communities. The reason I put so much emphasis on the fostering space, is that, in the case of these very fragile communities, space is essential for the capitals necessary for micropolitics to be actually constructed and embedded in their everyday (that the author translates as power, knowledge and appropriate occasion). By using framework developed by Feenberg and extended to embrace space, it is possible to better situate bottom-bottom initiatives and then discuss whether they can lead to any positive social transformation, and essentially to local development.

Let us start with Santo Antônio do Salto, a stereotypical rurban community that together with Pendeen, functioned almost as a 'control group' to the research. In Salto, the internet has expanded people's networks almost exclusively on an individual basis, with the consequence that the meagre knowledge acquired online tends not to be shared offline and vice versa. This research suggests that the slight increase in quality of life brought by the aluminium company demobilised the community, who did not see the need for further political involvement. The improvement happened in a specific timeframe, but recently the mining company Novelis removed not only aid, but also job positions from the community. The community is very disempowered, specially due to a high level of political poverty; so a closer look at the relations of power shows that it is mostly externally exerted, emanating from the global distribution of wealth and the consequent division of labour; and it is reinforced by the uneven, precarious infrastructure that renders the community a very peripheral position in the region.

Furthermore, the internet is rarely used to search for information or improve knowledge, reinforcing, again, the high levels of political poverty of the community. At the same time, much of the traditional locally produced knowledge and practices have been superseded by generic, global practices, such as the consumption of non-local food and products. The internet is being used within this same framework, following much more a consumption than a community model (Bakardjieva and Feenberg 2002).

Because of the lack of collective engagement, appropriate occasions are also very rare, and even when they exist, the lack of empowerment and knowledge makes it almost impossible for their needs to result in action. The most successful endeavour of the community is the gastronomy festival that needed a community effort to be put into motion. Although the festival would appear to offer an appropriate occasion for the community to empower itself, the lack of an understanding of their own need to mobilise limits the change it can foster.

[24] The importance of approaching our object of study through the lenses of micropolitics is because it differs from the idea of development from below as it is much less ambitious, but have equally powerful effects on the everyday lives of the people involved in it. It does not require formal procedures and it matures through need. It is much less perceivable and quantifiable and, therefore, difficult to be shaped or measured by the outsiders, such as all well-intentioned researchers (like myself) and practitioners, and is seldom sparkled by our work.

[25] Agreeing with Lefebvre (1976: 37) that "the deepest problem is the problem of producing and managing a space that will correspond to the possibilities of technology and knowledge and also to the demands made on social life by and for the 'masses'".

One possible conclusion is that the timid urbanisation of the village left too little spaces for social encounters that could lead to political mobilisation. Collective spaces are scarce, and currently, the village does not have resources (social, economic or political) to initiate a change in space. Furthermore, daily routine has withdrawn the inhabitants from the public space: women are introverted and mostly busy with daily household activities; men are often working in other cities; young people find the space uninteresting and less and less occupy it; and children are kept close by their mothers because of the perceived danger of the canal.

Attempts to empower the community through collective activities that came from outside have mostly failed due to lack of interest or mobilisation. Examples are the implementation of rural tourism and the collective production of vegetables for retail. Those ideas were brought by NGOs and external agents, who tried to adjust 'best practices' to the needs of the inhabitants. Nevertheless, Saltenses still need to bridge the existing socio-cultural and political gaps that define their peripheral position. Only then will they understand the importance of mobilisation for their own benefit. These frustrated initiatives illustrate how development from below, when not backed up by local practices and spatial settings that foster collective engagement hardly succeed.

Spaces that enable rather than spaces that constrain

Pendeen suffers from a lot of the elements presented above: the dependency on the mining industry that failed and the lack of employment in the region; the substitution of local produce by industrialised ones; the lack of public spaces for collective encounters; a top-down establishment of commercial and expensive internet. Nevertheless, it differs from Salto in some crucial points, such as the desire of the community to value their rural heritage and to continue to be so (formally, Pendeen is classified as a rural area, just like all the other communities). Because of that, the community is much more cohesive and that is shown in many situations when it had to organise itself, such as for the establishment of the Centre of Pendeen.

In this episode, it can be observed that the community had both the power (the collective urge to mobilise and liaisons in the local government), the knowledge (of some members of the community) and the appropriate occasion (the existence of government funds to invest in community centres) to transform an underused building into the Centre of Pendeen. This moment in time allowed for the establishment of a fostering space for the community, as the lack of public spaces for socialisation grants the Centre an essential role in bringing people together. Because it is locally managed, the community caters for Pendeen's own needs by offering many different activities for various social groups. It can be said that it was through micropolitical engagement that the centre exists today and is highly functional in the community.

The Centre is also a pivotal player in the widespread of the internet in the community, not only because it offers the infrastructure (that many would not be able to afford otherwise), but also because it offers 'digital inclusion' courses and workshops, and a space where people can gather. The question that remains is whether the implementation of the Centre has supported the community in the attempt to resist the encroachment of the urban and the weakening of their rurality. This research reckons that yes, to some extent, as the Centre (as a socio-technical ensemble in itself) has actively contributed to actions such as the resistance to the closure of St. Just library. It also fosters cohesive community models being exploited locally that use *effectively* internet (Gurstein 2003). One example is the Patchwork club, that uses its facilities to

meet weekly, and at the same time, has also an online community connected to other Patchwork groups around the world.

The Centre enables rather than constrains local engagement, having a potential role in micropolitical actions, that, one day, might lead the community to seek anti-hegemonic practices. Nevertheless, it is important to highlight that the Centre is embedded in a context where there are still high levels of political poverty (though much less than Salto), which means that its breadth for action is still quite limited.

More than actively engaging citizens to resist (and ideally transform) the oppressive relations that lead to isolation, deprivation and peripherality, the actions at the community centre are mostly conforming to the system, and the activities there proposed aim to equip its inhabitants in this context, rather than to foster transformative socio-spatial practices. Thus, the internet is largely used within the consumption model[26]. There is a clear improvement of the quality of life of the population, but not necessarily one that leads to a change in the relations of production, or in the space.

Pendeen is a stereotypical rurban community and the access to the internet is, in many ways, reinforcing its peripheral character through a series of conforming activities, such as online shopping. But still, the community is finding its ways to foster, online and offline, a communitarian identity that many of its inhabitants are keen to preserve. The Centre of Pendeen has become a centrality in the community, showing the importance of spaces that enable collective action.

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Out of the three case studies, Noiva do Cordeiro is the one that better illustrates the importance of spaces that enable collective action for the internet to have a positive impact. Even though it is not clear how they firstly managed to mobilise for change[27], the existence of a socio-spatial setting in the village open for collective action and change is essential. The fairly collective household activities allow for the women to constantly meet and discuss their wants and needs, and therefore mobilise towards it. The shared activities also give them more time to dedicate themselves to other activities, therefore they are always involved in cultural ventures managed by themselves. Years later, the understanding of the collective that was embedded in the way they produce their space was transferred to the appropriation of the internet.

[26] The consumption model is further reinforced when Superfast Cornwall focused on 'access' rather than 'effective use'. For example, one of the main variables to measure the project's impact was job creation rates. Even though it might be argued that improving job availability could lead to further social inclusion, John Clayton and Stephen MacDonald (2013) have argued that the benefits of ICT access in relation to employment prospects and levels of income are directly related to previous socio-economic levels of given population. That means, that, under marginalised conditions, "benefits accrued from the use of technology, particularly the internet, for those from lower occupational groups have been shown to not match formal definitions of either digital or social inclusion" (Clayton and Macdonald 2013: 962).

[27] Most of the accounts of the population are very romanticised. There was, for example, in the 1990's a 'anthropological study' in the community done by researchers at UFMG, but further information is unavailable due to a change in the research group and the fact that they do not approve of the methods of the former group. Some information of the study could be found on http://belovalecultura.blogspot.co.uk/2009/07/opiniao-rainha-do-mundo-nao-esta.html, last accessed 10/10/2016.

The internet as a game changer

In the first moment, the internet helped them enhance existing practices that praised their culture. For instance, it was used for information gathering for the weekly events where they passed on knowledge through generations to reinforce local ties. Over time, the internet contributed to changes in the community, with direct impact on their socio-spatial practices, as follows. The community became known as rural pioneers and started offering access to the computer to nearby communities erasing the prostitution stigma that was linked to them. They started using the internet to access information that was not available before, improving subsistence agriculture and later obtaining a federal loan to acquire land and machinery to implement a medium scale agricultural business. They first learned who Lady Gaga was, and seeing similarities with one of the inhabitants, they created the Keila Gaga that is now very successful. They started using social media, specially Facebook, to advertise their community inviting more people to know their culture and everyday which led to the organisation of a much disputed social tourism. They also developed new production partnerships with outside partners, by supplying their produce to CEASA, or by associating with another clothes factory. Finally, they built a supermarket to respond to the internal demand for industrialised products with the initial intent to keep local revenue circulating locally.

These changes led to some immediate impacts already discussed. They are summarised here:

New forms of communication, also locally. The emergence of the internet and the individual acquisition of smart phones facilitated the communication with the outside, but also changed the internal dynamics of the community. For instance, the knock-from-door-to-door practice for harvest was gradually substituted by WhatsApp messaging. Facebook also became ever-present in the community.

Adaptation of space and of practices for tourism. The increase in economic importance of this activity in the community resulted in a series of arrangements not existent before. Over the years, the number of ladies responsible for receiving tourists went from two to twelve. The practice of receiving tourists was also systematised, and a room in the Mother house was converted into a television room, to 'give tourists more comfort' while watching the movie that introduces the community. Currently, tourists are also fare welled with a theatrical presentation of the community. Overall, there is a staging of the lifestyle of the community, a perceived way to match the expectations of the tourist.

Change in the organisation of productive activities. The increase in importance of production in their everyday had also impacts on the ways it is perceived in the community. While before seamstresses would work 'until the backs hurt', now when it hurts, they 'give it a stretch' and go back to producing. Also agricultural activity is a result of high investments and need dedicated members of the community to work around the clock to deliver the products in CEASA.

Intensification of exchange practices based on currency. Existent family economy based on women's collective reproductive labour (and contribution to income generation through tapestry, underwear production and cleaning products) and men's formal and informal work in Belo Horizonte co-exist with an increased interface with capitalist activities, such as Noiva do Cordeiro em Show (specially Keyla Gaga and Márcia and Maciel), medium scale agricultural production, social tourism, and the opening of a supermarket.

Overall, these changes indicate that if the internet was first appropriated according to socio-spatial practices in place, its use, in turn, influenced these practices, leading to more or less drastic changes of the rurban. The next section interrogates whether it is possible to glimpse positive social change with the introduction of the internet by further discussing the implications of changes such as those above presented in Noiva do Cordeiro.

6.3.4 Is there possibility for an insurgent rurban?

This chapter aimed to investigate how the global and the urban are observed in the everyday of the rurban, and whether, in the everyday, it is possible to glimpse positive social transformation. A positive social transformation, as construed by Marcelo Lopes de Souza, would mean a transformation in the relations of production and in space itself. i.e. counter-hegemony, and not just resistance, anti-hegemony. These changes could be associated with what Halfacree (Halfacree 2007: 131), calls a 'radical rural':

> In contrast, what I'm calling 'radical visions' strive for the production of a truly different form of rural space. Consideration of such visions not only extends the scope of rural possibilities but also raises key issues concerning the ideological underpinnings of the other species of rural space 'on the table' today. Radical visions imagine produced rather than induced difference: they seek to 'shatter' the 'system' (Lefebvre, 1991 [1974], p. 372) and take rural development in a fundamentally different direction to that which dominates today. Specifically, a radical rural is not 'internally acceptable' (Lefebvre, 1991 [1974], p. 396) to the spatial 'logic' of capitalism in its rural setting. On the ground, in its trial by space, it will feature centrally a struggle between this drive for produced difference and the gravitational pull of dominant spatialities towards the ultimate conformity of a reduced difference.

For the author, this would mean having everyday experiences that celebrate the rural context and accepts extra-rural experiences.

Nonetheless, when discussing the peripheral rurban communities investigated, we find ourselves in a conundrum. Feenberg states that "action on the margin is usually reincorporated into strategies [institutionalized means of control embodied in social and technological systems], sometimes in ways that restructure domination at a higher level, sometimes in ways that weaken its control" (Feenberg 1998: online). Likewise, Halfacree raises the risks of the attempt to produce a 'congruent and unified radical rural', leading to "a contradictory and disjointed rural, where the erstwhile radical rural becomes a 'reduced' difference, 'forced back into the system' (Lefebvre, 1991 [1974], p. 382)" (Halfacree 2007: 131). As the empirical research highlighted, there is a difficulty of the subaltern to mobilise in counter-hegemonic ways and manage to transform the *status quo*, even in a very local scale. Let us resort to Noiva do Cordeiro, to further discuss the matter.

In the first moment, the community proved that it is possible to work within the margins and become a centrality for those equally marginalised. Its particular set of social relations and socio-spatial organisation meant an equitable community, that together, was fighting for the collective improvement of quality of life. (It is important to underline that the concept of quality of life changed in the community over time: while at the end of the 1990's it meant overcoming starvation, nowadays it is much more related to material comfort, with a high influence of consumerism and this will be further discussed ahead). Even more importantly, Noiva do

Cordeiro women challenged, in their everyday, the heavy chores imposed on them by a repressive religion[28].

As they account, it was through knowledge that they could question the actions of the minister, toward greater levels of individual (control of one's own body) and collective (organisation of a community that liberates women from the reproductive labour towards production and leisure) autonomy. The internet was another means to access and produce knowledge and to overcome isolation: "the world is in there", an inhabitant said. Here, one might argue that this is not, by any means, an example of a counter-hegemonic process. Noiva do Cordeiro was, more than anything, resisting the contextual pressure that seals the destiny of many of the marginalised communities. And certainly, the community's resistance was a result of exclusion, and not a result of overcoming political poverty, as it was already argued.

Let us now return to the relation between socio-spatial practices and internet availability. The cunning aspect of the introduction of the internet in accordance with the socio-spatial practices is that, as Feenberg already highlighted, the internet is assuming, progressively, a consumer model character. And if the socio-spatial practices have affected the way the internet was implemented in the Noiva do Cordeiro, it is, in turn, also influencing local socio-spatial practices. It now seems that the world internet opened up to the community is, in many ways, the world of consumption of which they want to be accepted, and not only cast-outs. It is true that they want 'the best of both worlds', meaning they want to still live in the tranquillity and with family in the countryside, but they also want the (material) comfort that they can see in the soap-opera, they want to be able to stride over the community with a fancy purse, for example; or even more, they are satisfied with being themselves, part of the make-believe of television (as for example, participating in the MTV show 'A adotada').

This is where, admittedly, the project of a 'radical rurban' failed. Even though Noiva do Cordeiro has embraced both the rural and the extra-rural (to use Halfacree's words), it was absorbed into the system even before it could establish a radical position consonant with their own internal patterns of change and now it remains it the margins of resistance. Two of the indirect outcomes of this process are the further specialisation of the space and the weakening of local practices that reinforced local ties, and they certainly affect each other, as discussed below.

Until recently, specialised spaces in the community were all collectively owned and related activities shared according to taste. We now observe relevant changes in the spatial organisation of the community, represented by the increase of individually owned houses; the construction of a 'commercial centre' where the supermarket and shops catering for the tourist are located; and the construction of the TV room having tourists in mind, for example.

There is also a weakening of some of the local practices. Some reflect the changes in the production structure in the community, such as the new organisation of work load in the community, already exemplified by the shifts in the underwear factory and the medium scale agriculture. Also mentioned, the substitution of the games in the community for theatre plays is also considerable, because it inverts the communication logic in the community. Finally, the

[28] Consistent with Teresa de Lauretis (1987: 25) view on micropolitics: "micropolitical practices of daily life and daily resistances that afford both agency and sources of power or empowering investments; and in the cultural productions of women, feminists, which inscribe that movement in and out of ideology, that crossing back and forth of the boundaries-and of the limits--of sexual difference(s)."

Night of the Viola, formerly a private event where the community would deal with their issues, has been spectacularised and made public.

The issue here is that radical thinking is deeply rooted in politics. It requires, in Pedro Demo's words, an organised citizenship, i.e. the development of critical awareness and the overcome of political poverty, and all the three communities have not yet done so. It is possible, therefore, that we may not find an insurgent rurban anywhere. Yet, as a marginalised group, the rurban needs to find viable tactics of survival. Drawing from Michel De Certeau, Feenberg (1998: *online*) argues that

> Social groups which lack a base from which to act on an exteriority respond tactically to the strategies to which they are submitted, that is to say with punctual, shifting actions that fall more or less under the control of the dominant strategy but subtly alter its significance. Tactics are the response of the dominated to their domination, unfolding on the terrain of the Other, and operating in the usage of the hegemonic system.
>
> Tactics are not overtly oppositional, but rather subvert the dominant codes from within, through the way they distribute their effects over time, combine with each other, pay lip service or exaggerate in the application.

Or maybe, the insurgent might be on the making in other rurban communities around the world, exploring subversive tactics. There is, thus, the urge to consider bottom-bottom initiatives that, though not undermining existing macro structures, are just as much micropolitics. Micropolitics is also related to self-representation and subjectivity (Lauretis 1987) at the local level of resistances. That means that the development of self-awareness is essential for the community to appropriate whatever tool is available to empower themselves. Resistance, in this case, is a means to understanding, with a certain level of complexity, the power relations present at the everyday level, to then act on it. Micropolitical action leads to the improvement of quality of life and social justice, at least in the local level (if that is possible). Tactics may, at some point, lead to a local defiance of the rules of the capital, just as Noiva do Cordeiro proved possible, even if momentarily. But as Noiva do Cordeiro also proved, co-option, is, unfortunately, a strong possibility on the process.

Therefore, detecting the insurgent rurban is a combination of patience and fortuity. Seeds might abruptly appear, and in the same intensity, be re-absorbed into the system. Any attempt at making this study widely applicable at this stage would prevent that the contextualised nature of this research field be fully developed. Hence, the diversity of the cases and the richness of elements found in each of the arrangements studied suggest that need of an *open theory of the connected rurban* to continue investigating the delicate relationship between the everyday, the socio-spatial practices and the assimilation of the internet in marginalised and fragile contexts. For Harvey, an open theory should be

> "one that acknowledges the power and importance of certain processes that are specifiable independently of each other but which can and must be brought together in a dynamic field of interaction. This implies the construction of arguments about how the web of life and accumulation by dispossession and accumulation through expanded reproduction work together and how the dynamics of political and class struggles power continuous change in capitalism's uneven geographical development" (Harvey 2006: 76)

An open theory, would, as proposed by Marcelo Lopes de Souza, "enable the formulation of other theories, that while are aware of their limits, are also bold in the integrative character of the 'constitutive dimensions of the social processes', there is, the integration of the social space, history and the social relations (Souza 1996a) [29].

This thesis is the outcome of an important stage of a broader theory on the making. It the need to delve into the everyday to understand the intricate relationship between existing socio-spatial practices and the introduction of the internet in rurban communities.

[29] In the original: "possibilite a formulação de outras teorias, que conquanto se mostrem conscientes de seus limites, são também ousadas em seu caráter integrador das "dimensões constitutivas dos processos sociais", leia-se, a integração entre o espaço social, história e relações sociais".

7 Conclusion: A socio-spatial technological framework for the connected rurban

7.1 For an open theory of the connected rurban

Peripheries have been undervalued in current capitalist model where economic and technological developments are the milestones for measuring influence at a global scale, despite their local importance in supporting centres. This diminishing position is often reinforced by current models of network thinking that blurs the singularities faced by those marginal spaces. It leads to a disconnection between the models created in a global scale and the observed experience in a microlocal one. Locally, urban issues are favoured by academia and authorities as urban population pushes the limits of Planning fields. Nevertheless, Henri Lefebvre suggests we understand the potential of peripheries for a renewed society, where ICTs play a central role.

Three distinctive arrangements of socio-spatial practices and appropriation of the internet in rurban communities have been presented in this research. They were classified as rurban because this concept does not exclude peripheral places from either global peripheries or centres. On the contrary, it reconciles them as it values the hick and the provincial that characterised the once rural communities that are now undergoing rapid change. Santo Antônio do Salto operates on a conformist model of spatial and social ownership. The internet is not embedded within central spaces to make them easy to access, but is distributed among individual homes and mobile access based solely on who can afford it. The introduction of the internet has improved some people's lives, but there is little evidence it has caused impacts on the public sphere. The lack of places that could be appropriated to support digital skills represents the limited opportunities for community development. But even more importantly, the lack of public spaces altogether affects the way people interact and engage in collective matters. In Santo Antônio do Salto, "each one is for themselves", reinforcing the stagnation of the district. Pendeen is also based on traditional modes of spatial and social ownership. The arrival of superfast broadband has not necessarily led to the widespread of the internet, as it is still unaffordable for many of the inhabitants of the village. Nevertheless, the Centre of Pendeen starts to function as a centrality, offering access, knowledge, but most of all, becoming a space that enables collective activities to happen in the community. The Centre changes the prerogative of access on account of wealth. The 'connected centre' has provided some important changes in the community, but these are mostly in the form of conforming actions. Differently from the other case studies, Noiva do Cordeiro displayed enough elements to discuss an autonomous/disruptive appropriation of the internet in relation to existing socio-spatial practices. When the internet was introduced in the community, a tactical use was fostered by the singular socio-spatial organisation of the community. However, over time, the use of the internet has, in the least, accelerated changes in the community that threaten the delicate balance between the everyday and the power hierarchies rooted on the urban and the global.

The work concluded that there should not be to a generalised theoretical framework to be replicated in any rurban context. Rather, to grasp all the nuances of socio-technical-spatial arrangements, an open theory of the connected rurban needs to be produced. The findings of this research often corroborated (and richly illustrated) the theoretical framework devised. The following section systematises some of the findings of the research in a series of assumptions that could be considered when investigating the introduction of ICTs in marginalised rurban

communities, despite the particularities in their socio-spatial settings and different means of access to the internet.

7.2 Constitutive dimensions of the relationship between socio-spatial practices in marginalised rurban communities and the introduction of the internet

Based on the analysis and discussion of the recent introduction of the internet in marginalised rurban communities in Brazil and in UK, this section will set forth some of the assumptions that may compose an open theory of the connected rurban that summarises the research. A word of caution is necessary, though. The assumptions below are specific to this research framework, and therefore are suggestions of elements to be regarded in similar situations, where an understanding of the interrelation between rurban communities, the internet and socio-spatial practices is desired, and should not be generalised beyond this scope.

1. There is a conflictual relationship between rural and urban elements in rurban communities and these are enhanced with the introduction of ICTs. The rurban is, as a rule, contradictory and disjoint. The process of extended urbanisation that permeates formerly rural sites is forcefully brought to the everyday of these fragile communities. The rurban then reproduces the logic of an impoverished urban, reflecting an asymmetry in extended urbanisation, both in peripheral and central countries. The internet may contribute to their fragmentation, inasmuch as it stimulates the consumption of an urban mode of life without even offering the infrastructure needed to do so. Furthermore, there is little evidence that grassroots strategies suffice to change the increasing tendency of the internet to serve and reinforce capitalist interests in rurban communities, as it is being observed overall. That is so, because due to high levels of political poverty, access to the internet is still very instrumental and without political engagement, its use tends to conform with the rurban marginalised status quo, allowing, when much, small changes within capitalism.

2. The way the internet is introduced in the rurban has an impact on the way people appropriate it. With the three distinctive cases presented, it is possible to suggest that the more heteronomous the access, the less self-determining its use will be. Santo Antônio do Salto was the case where the internet was simply commercially provided and no support was given to the community and also where there is an unfamiliarity with it (the internet is confounded with Facebook). Pendeen, on the other hand, had a top-down distribution of the internet with minimal support given by British Telecom, but the volunteers at the Centre of Pendeen took up from where it was institutionally left and improved conditions of use, leading to a slight effective use of it. And finally, in Noiva do Cordeiro, the internet was demanded by the community and provided by a governmental programme. Its inhabitants were able to grasp its role in knowledge building and local improvement. Furthermore, as with any technology, a heteronomous access to the internet does not contribute to fight political poverty. Santo Antônio do Salto, for example, displays the highest levels of political poverty of the three, while Noiva do Cordeiro seems to have used the internet as means to face its limitations, though not overcoming them.

3. Still, even under marginalised conditions, there are indications that the introduction of the internet may lead to or enhance micropolitical actions. Local actions can concretely subvert and defy the consumption model of internet appropriation that is being designed abstractly in the global level and is imbricated in the different social levels. In this research, they were analysed as bottom-bottom actions, which have little impact on the overall structure, but produce relevant

outcomes in the micro-local scale. Such examples were seen in Pendeen, with the involvement of the community in the St. Just library issue, or in Noiva do Cordeiro, where the internet was first used as a means for the community to improve their quality of life and to reinforce the local ties through games. The fact is that the internet can either contribute to or hinder the process of organising citizenship to surpass political poverty.

4. The collective appropriation of the internet has a direct relationship with existing socio-spatial practices, and it needs, therefore, a fostering space to occur. The assumption is that there is a close relationship between the way micropolitics unravels and the social-spatial practices that are in place; it is, therefore, a micropolitics linked to space. The three communities show different arrangements in the way the internet is appropriated, specially collectively, suggesting the influence of the already existing socio-spatial practices. In that sense, increased access to internet in rurban communities does not automatically lead to less heteronomous social relations or to development. This becomes clear in both Santo Antônio do Salto and Pendeen, where access has contributed to an improvement of the quality of life, but not led to an increase in social justice. In both communities, inhabitants continue to be exploited in the conventional forms of labour, for instance. Noiva do Cordeiro, on the other hand, has shown that particular spatial settings contributed to contextualised uses of the internet that, in turn, led to positive changes in the community, pointing to the possibility of development.

5. Despite the hopes of a liberating potential of the internet, its introduction in rurban communities tends to change socio-spatial relations in a heteronomous manner. Despite Noiva do Cordeiro's intentions to use the internet to disrupt the adverse conditions they face, the lack of interest in alternative paths of development placed the community again in a peripheral position, at least from the social point of view. In the first moment, when they focused on their internal needs and on strengthening the relations with local communities, Noiva do Cordeiro became a centrality on its own in the region. Now that they are shifting their attention to broader networks, they seem to neglect the important bottom-bottom articulation they created in favour of asymmetrical relations with established centres elsewhere. Without a political consciousness of their relative position in each of the associations above presented, Noiva has fallen into a short-sighted perspective of development as economic improvement that is changing its spatial organisation to embed new socio-spatial practices.

Unfortunately, and despite the research's expectations, none of the three cases exemplifies situations where a socio-spatial development was achieved (or even hardly initiated) with the introduction of the internet in vulnerable communities. There has been clearly an improvement of quality of life of considerable part of the population, but that has not necessarily mobilised them to fight for more social justice. One of the reasons for such an outcome, the research suggests, is the tendency of the internet to follow a consumption model rather than a community model, as defined by Andrew Feenberg. Pendeen is the clearest example of how, despite the existence of an infrastructure that could support alternative uses, the internet is being used for routinised and demobilising activities, such as search for jobs or shopping.

In summary, even if the internet is introduced in a context with a relative autonomy in socio-spatial development and initially enhance this autonomy, it may, over time, foster socio-spatial practices that are heteronomous and conflictive with the initial intentions of the community. That is possibly so, because the consumption model hinders any sort of technical agency, regardless of the level of coherence or autonomy found in a given community. There is a vicious

circle where gains in autonomy allowed by effective use of the internet are further absorbed in the system because of access to it. Figure 73 diagrammatically shows the assumptions and the relation with the case studies presented.

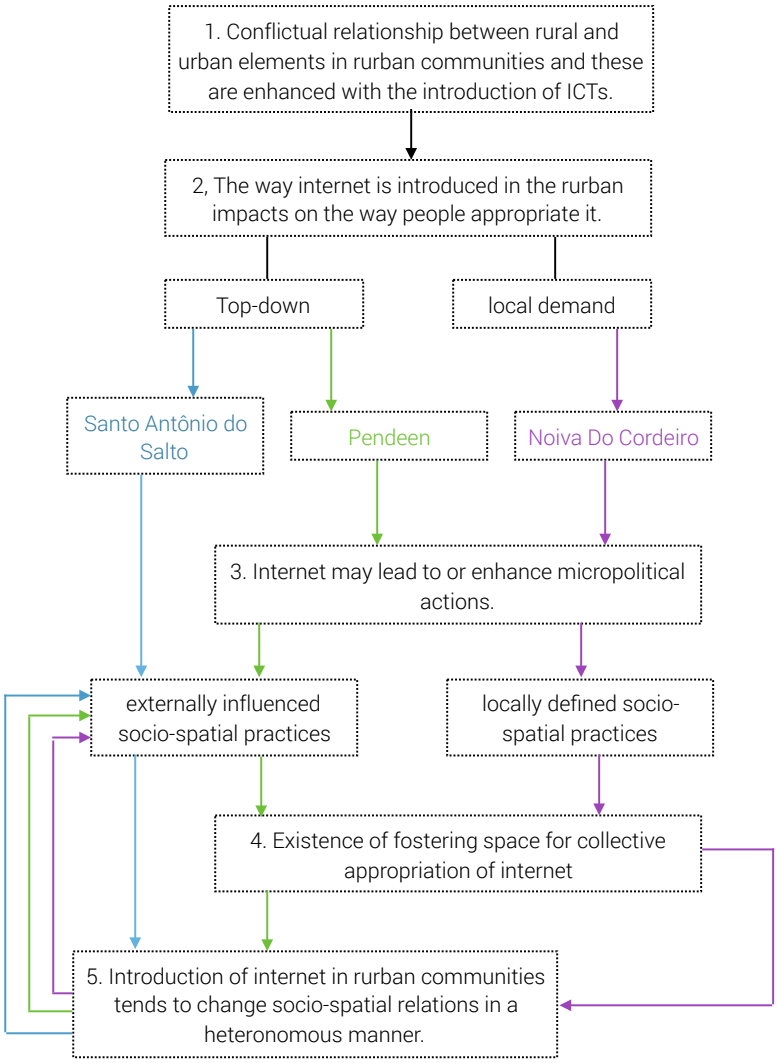

Figure 73: Diagrammatic model of the assumptions and their relation to the case studies.

7.3 From development from below to micropolitics: or how to overcome the conflicts between micropolitics and the everyday

Along this research, the intersections among rurban spaces, socio-spatial practices and the recent introduction of the internet were discussed. It departed from both liberating and hindering potential of such networks to investigate ways in which the internet might have been used to counter the advance of extended urbanisation and led to development. Its results suggest that global relations of dependency and the top-down delivery of technology (in that case, the internet) contribute to the further peripheralisation of the rurban.

To counter socio-technological peripheralisation, one must look into bottom-bottom relationship between the marginalised that reinforce local ties, creating, in this way, local centralities. Centrality is not about fixation—not of people, situations or space. Nevertheless, as much as it

is related to social relations, it depends on how such relations are spatialised. Said differently, communities that are politically poor, and therefore have weaker ties, tend to reproduce the pattern in the physical and digital spaces they occupy. That is the case of Santo Antônio do Salto, which besides being a periphery, have developed no centrality—it is a *marginalised periphery*.

The space, in return, acts onto people fostering or hindering action. Even though Salto has a formal centre—where the Church, the square and small commerce are located—it has no centralities. Its longitudinal spatial configuration, reinforced by two spatial discontinuities, the river and the water channel, becomes an actant—that is, upon encounter, it hinders action and contributes to the reproduction of political poverty.

Similarly to Salto, Pendeen is a rather marginalised periphery. Nevertheless, it has managed to develop a local centrality that extrapolates its limits with the establishment of the Centre of Pendeen. It was only possible due to already existing collective engagement of some of Pendeen's inhabitants and, in turn, it stimulates this engagement through targeted actions that also contribute to marginal micropolitical action. By doing so, the community centre is actively contributing to the improvement of livelihoods in the region.

Noiva do Cordeiro shows a pendular movement in regards to positioning themselves. In the first moment, more than any of the other communities, it developed a centrality through the strengthening of their own connections, reinforced by newer connections mediated by ICTs. Delina's house, the community Centre, became also a centrality acting as a nodal point where action was shared and bonds reinforced. It became a *centralised periphery* regardless their economic-geographical position, which no longer strongly defined who they were. After all, being a periphery is not always a bad thing. Noiva do Cordeiro certainly benefited from being on the outskirts of capitalism developing their own conviviality rules and creating interfaces with capitalist society when seen fit. The arrangement allowed for them to improve their living conditions while maintaining their beliefs and social structure. In fact, its centrality was not connected to production capital, but to information and knowledge—their lifestyle was a valuable capital to be traded.

This process left the question of whether centrality is unassailable from centralisation. Noiva do Cordeiro became a reference for the nearby communities, because it was provided with something the others were not—be it technology, knowledge or a social organisation that calls the attention of outsiders. That granted the community a symbolical capital that, seen as such, becomes again a source of power. Could Noiva do Cordeiro become a new centre that feeds off from newly defined peripheries?

The recent developments in the community suggests that it has not established itself as a centre because of its difficulty in operating in the outskirts of capitalism without being swallowed by it. Looking from outside, it seems that they are willing to bypass the regional ties built over the years (and even the central position they occupied) in favour of closer relationship to already established centres, such as Belo Horizonte or São Paulo. In conversations with the inhabitants, they do not seem aware of the compromises that such a decision demands. Drastic changes in their working patterns are being followed by adaptations in their socio-spatial organisation, affecting their own everyday. Nevertheless, the long-lasting consequences of this shifts are still not clear.

To conclude, the more ICTs become essential to the maintenance of capitalist structure, the less likely they will formally mediate social change. Even though NGO assisted grassroots movements have been seen as a viable alternative to government led top-down development, this approach has not yet proven successful in reducing poverty and improving quality of life in a significant scale. The most relevant issue is the fact that a focus on economic growth that foresee top-down outcomes reduces the potential these technologies have for change (Kleine, 2010). Furthermore, models of development from below often assume that peripheral low-income communities do not have means for mobilisation, and though that might often be the case, bottom-up initiatives have also to be designed according to tools and practices available locally.

The collective strengthening of the peripheries, has to, therefore, happen in another way than to simply envision that peripheries become centres. One of the possible ways to do so is that peripheries prioritise ties among themselves, that just as centre-centre relationships, are not based on structural dependency relationships, and may, therefore, be a viable alternative for local development. Put in another way, it is possible to think of a reconfiguration of the network of relationships to reverse the dependency relations with centres, that is, in which peripheries appropriate technologies made available by the centre, in order to transform them for the future. This network exchanges, i.e. bottom-bottom encounters, can lead to new forms of micropolitics, and to the redefinition of centralities as envisioned by Lefebvre without relying on the relations established by the capitalist mode of production. The remaining question is whether this sort of arrangement, if widespread, would undermine capitalism or continue to be forms of insistence practices. The case studies ascertain that, to envision changes from within, communities need to produce fostering spaces for the internet to be better explored and for the stultifying tendency of the everyday to be overcome, towards micropolitics.

7.4 Limitations and Challenges for the future

This research highlighted the essential role of socio-spatial practices in the appropriation of the internet in the case of rurban communities. It also uncovered uncanny similarities in the processes of socio-spatial peripheralisation reinforced by the uneven access to ICTs that crosscut the North-South divide, making evident the need for further studies on the unfolding of the internet use in rurban communities. Another crucial element the research revealed was the need to consider the socio-spatial processes in place if one wants to understand the vicious circle that engulfs the marginalised and hinders the chances of disruptive actions in the connected rurban within the context of extended urbanisation. Nevertheless, some limitations and shortcomings, both theoretically and empirically, should be noted.

The greatest challenge encountered during these last four years was to find a methodological framework that would allow the understanding of different scales of analysis and of action. Henri Lefebvre's social levels provided a clear framework of study that guided the development of the theoretical body presented. Regarding the construction of the research object, it was a great challenge to devise a methodological tooling that embraces both Marxian-grounded and poststructuralist theories. In this research a Marxian based theoretical frame was associated with ANT as an empirical method. The feedback between the first and the second parts of the research was essential for it to become a full and single body of work that addressed the challenges proposed. This decision, though contentious, was needed and further use of this tooling would allow its improvement.

A second limitation relates to the attempt to challenge EuroAmerican centrism in research but at the same time not to invert it. To do that, different theories were mobilised to dialogue, understanding that much of what is produced in Brazil has been highly influenced by EuroAmerican scholars, not losing their originality and appropriateness to the local context. The timespan of the PhD proved challenging any intentions to develop of a generalising theory of the connected rurban. Even the usefulness of a generalising theory will need to be questioned in dedicated future research that draws from the results obtained here.

There were also some limitations relating to the empirical work devised in this research. The main possible shortcoming of the research is the number and the location of the case studies selected. The lack of a peripheral community in a peripheral country cannot be overlooked. The choice of cases was based on the feasibility to conduct the studies. Initially, the research would encompass only the two Brazilian communities, who were being researched in the project 'Time Museum', coordinated by Prof. Dr. Ana Paula Baltazar. In the meantime, there was the opportunity to research rurban communities in UK as part of the research 'Digital Neighbourhoods', coordinated by Prof. Dr. Katharine Willis. Even though any responsibility of what has been produced here is solely mine, being part of these two researches was essential for the field work to be enabled. Future research should focus on marginalised communities of peripheral nations, so that a full panorama can be devised. Furthermore, more studies on other central and marginalised contexts could contribute to the development of contextualised theories and enough evidence gathered for understanding possible patterns of peripheralisation that while enriching the bigger picture, scape the overgeneralisation typical when dealing with the subject.

The last issue that needs to be addressed is my own personal strain to work with fragile communities. Despite all the training in fieldwork, I found it hard to distance myself of the local struggles and avoid acting as a well-intended researcher that gave simplistic solutions for an issue that is deep-rooted in socio-economic and political issues and focused on the underlying elements that composed the object of study.

In all, it became clear that a dedicated body of research of the connected rurban has to be strengthened. Besides furthering the understanding of rurban communities that illustrate urbanities in the rural, another possible positive development of this research would be to focus on rurban communities within the cities. The richness of ruralities found in these territories and their conflicts with local hindrances, are certainly diverse from those found in this research.

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