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Local Information Services in Medellin: technology, institutions, communities and power

ABSTRACT (203 words)

This article examines the politics of technology and information by exploring a case study of local information service provision in Medellin, Colombia. Local Information Service (LIS) is defined as a community centre where information deemed relevant to local communities is generated, stored, organized and disseminated through print and digital means. Using a social construction of technology approach, the article attempts to deconstruct the implementation and delivery of LIS in Medellin, Colombia and analyse how empowering and disempowering discourses form through relationships between institutions and citizens laden with social and economic inequality. The article analyses the development and deployment of this artefact and positions LIS as a socio-technical system, embedded with political, social, cultural, and economic values. We describe the unintended consequences of this deployment through a multilevel perspective of the head organisation and the smaller 195 local institutions that support it. The article challenges and operationalises the social construction of 'local' in local information by highlighting practices of social exclusion and resistance embedded within the design of the service. This case provides a vantage point from which to examine how relevant social groups interpret and engage with technological devices and the implications of this for the communities the device is intended to serve.

Keywords: (Maximum 6)

Local information; social constructivism; technology in society; digital information; public libraries; politics of technology and information

Word Count: 9,621

Part 1 Introduction

Local information services (LIS) have been prioritized by some governments in the global south as a 'next stage' developmental paradigm (Holden and van Klyton, 2016). These platforms not only have the potential to promote commercial activity but can also offer a novel form of cultural representation and with that preservation, particularly of rare, local languages, customs or rituals. Few academic studies (Betancur, 2009; Lozano, 2002; Saumell

i Calaf, 2002) capture and record the development and implementation of an LIS system empirically. Although case studies are not considered generalisable, this case offers lessons and insights on current debates on constructivist and determinist approaches that are transferable. This informs the way LIS can or should be implemented depending on the goals for transparency and shared power and informs the discourse regarding technocracy and the unintended consequences of decision-making. This case is a particular instance that reflects a problematic among different actors, including local government, larger private organisations, smaller local institutions and users. These elements create tensions that affect how local information is collected, digitalised and disseminated to residents and businesses in Medellin.

This article seeks to understand how the dynamics of technology politics work by conceiving LIS as a socio-technical system acted upon by different actors, technologies, and processes (Marx, 2010) and has clear implications for how technological systems in society are subject to both social influences and government policy. This article responds to the call by Leonardi and Barley (2010, p. 6) for research that demonstrates how various 'social construction processes come into play and entwine with the technology's material properties, as well as with the existing social structure of the context in which it is used'. Hence, this study helps to fill an important empirical gap by adopting a socio-technical framework as a means to understand and perhaps anticipate the success or failure of an LIS initiative.

UNESCO¹ claims that local knowledge forms the basis of local digital information and can thus be conceived as an expression and communication of a community's locally

¹ Definition of UNESCO for local information <http://www.unesco.org/new/en/natural-sciences/priority-areas/links/related-information/what-is-local-and-indigenous-knowledge/>

generated, owned and adapted knowledge and experiences relevant to a community's situation. Here, local information and its digitization highlights the core link of ICT in enabling all segments of society to participate in digital technology, particularly those who are marginalized through language or socio-economic circumstances. Technologies, such as local information platforms, then are thought to have the potential to empower people and encourage ownership of development policies.

However, the UNESCO definition neglects to point out the political element of deploying technology in society; potentially influencing its contributors while being influenced by their local perspectives (Salawu, 2010). This study examines a 1991 LIS initiative that began as a paper-based information collection and redistribution service for the residents of Medellin, Colombia. This initiative, even in its pre-digital form, constituted a socio-technical system that was designed and implemented by a large, private organisation, but supported by 195 smaller, local institutions. The institutions provided local information that was then converted into a technology artefact (Dafoe, 2015) and rolled out for local consumption, with varying outcomes. Within this process, technology became subject to government policy and social influences, which materialised in the diverging interests among different stakeholders.

Part 2: Theoretical Framework

This study looks at the dynamics of the provision of local information service through a multilevel perspective that primarily encompasses the main organisation, the local institutions, and users. It gives particular attention to how these actors interact as they adjust to changes within the socio-technical system. Examining only the digital portal that stores

local information does not sufficiently explain the significance of the 'material objects, social practices, social relationships and social organisation' (Johnson and Wetmore, 2008, p. 95) that constitute this socio-technical system. It is a system materialised through the development of technical expertise, the defining and codification of local knowledge, the acquisition of local materials, infrastructure, technologies to retrieve, store and disseminate information digitally, and an understanding of how to reconcile 'local norms and values' with the use of technology (Salawu, 2010, p. 65). As such, this service should become a co-productive process (Jasanoff, 2006) that provides a means to a socio-technical system. The LIS system in Medellin provides an opportunity for critical insights into the political and social interactions that underpin technologies. The article examines the social conditions (Hess, 2015) within which this new technological initiative was developed and the extent to which individuals and the local institutions are able to exercise agency within the socio-technical system.

In Science & Technology Studies (STS) literature, two main perspectives prevailed regarding the study of technology: technological determinism and social constructivist. Technological determinism arguments date back to at least Karl Marx's discussion of the hand-mill where technology was seen as having its own development outside of human control, as it were. As Leonardi and Jackson (2004) point out, technological determinism is bound by the idea that 'technological development follows a trajectory that is intrinsic to technology itself'. Furthermore, Heilbroner (1994, p. 103) argues that technologies act upon the social world 'in predictable ways.'

On the other hand, Heilbroner (1994, p. 103) points out three aspects of technology that question the use to technological determinism as an analytical lens (at least in its purest

form) for this study. First, technological progress is a social activity. As this study will show, the adoption of technologies, such as LIS, is an uneven process and in fact met with resistance based on different community attributes within Medellin. Secondly, Heilbroner argues that technological advance is responsive to social direction and is in part the result of social policy. In this study, technology was forced to adapt its modes of production to meet social needs and trends. The third aspect of technology that challenges determinism is that it must be 'compatible with existing social conditions' (Heilbroner, 1994, p. 103). Here, LIS, as a socio-technical system, could only function within the limited capabilities of the current economic and institutional infrastructures of the city. Therefore, rather than adhering to a purely deterministic view of technology, this article argues for an alternative view of technology to explain the local information services. Despite the local government's modern and futuristic visions of Medellin, what Jasanoff and Kim (2009) term as the socio-technical imaginary, evidence shows that neither the city nor its inhabitants are fully ready to make use of technologies for three reasons: the culture itself, lack of access to the Internet, and a lack of human capacity. Furthermore, these actors also have different ideas around what would be the 'best' informatics solution for their communities. Social constructivism places emphasis on the influence that relevant social groups (Bijker et al., 1987) have on technological development. Bijker et al (1987) argue that such groups can encourage the development of particular forms of technology and suppress other forms. In this way, technology becomes a social process negotiated through interactions in society. However, the LIS system in Colombia was not born in collaboration with social practices and norms. It was in many senses a disruptive technology that was initially unilaterally controlled by designers of the system, a large private organization named Comfenalco.

Given the complexity of LIS implementation and delivery, this article adopts a socio-technical approach to bring to light the ways in which the dynamics of technology politics in Medellin is intertwined with economic, institutional and social realities that bind this system together in unique and interesting ways. Within a socio-technical approach this article shows how actors' past experiences have influenced their behaviour as they moved from a print model toward a technology-based model of local information production. Hence, all of the actors transferred or modified a 'previously existing cognitive framework to a new situation', which Leonardi and Bailey (2010, p. 12) term as the interpretation perspective.

The article will next discuss the background of the country, city and the local information services, followed by a methodology section. The subsequent two sections are empirical and examine the (macro) organizational level and the (micro) community level of the LIS platform, followed by conclusion and recommendations.

Part 3 Case Background

This article shows how a number of factors affected the way communities access local information, including a national stratification system, drug-related violence, corruption, the lack of technical infrastructure and a general lack of awareness of local information in Medellin, the capital city (3.7 million inhabitants) of the department Antioquia in Colombia.

In 1988, Colombia began a stratification system that categorized citizens from strata 1 to 6 (low to high) according to housing values; which the government used to symbolise socio-economic circumstances of the population. The neighbourhoods of 24 Colombian cities were classified in this way, with strata 1-3 receiving subsidies for water, sewage and

electricity, stratum 4 paid market prices and strata 5 and 6 paid a premium² (Alzate, 2006; Uribe-Mallarino, 2008). Bijker et al (1987) use the term ‘relevant social group’ to denote different sets of meaning that groups of users attached to a given artefact. Hence, this article argues that the stratification system created a paradigm that not only became deeply embedded in the everyday lives of Colombians, but also shaped the interests of these groups, producing differentiated outcomes for how they interacted with the LIS system.

After periods of high levels of violence and corruption ending in the mid-90s, the city government began a transformative path that centred on ‘strong commitment to science, technology and innovation’³. Consequently, many IT companies and other large organizations initiated operations in Medellin, which began to shape the structure of the city. Alongside this development, the city developed its ICT infrastructure including the provision of public services and information online. Holden and van Klyton (2016) show that the production of local content in developing countries entered political agendas as a way to nation-build and preserve traditional cultural forms. However, the Colombian government did not seem to prioritise the delivery of governmental or local information much later. In 1991, a private sector organisation began what became Colombia’s oldest continuously running programme to collect, preserve and disseminate local information to communities and developed various initiatives to disseminate information across the city and into Antioquia. This service, known locally as *Infolocal*, began its online forum in the year 2000, with information supplied by 195 local institutions. The longevity of *Infolocal* combined with its transformative aims and array of actors, makes this an insightful case study to understand how the politics of technology

² Source DANE <http://www.dane.gov.co/index.php/estratificacion-socioeconomica/generalidades>

³ [https://www.oecd.org/cfe/leed/OECD%20LEED%20Policy%20Review%20Medellin_EN .pdf](https://www.oecd.org/cfe/leed/OECD%20LEED%20Policy%20Review%20Medellin_EN.pdf)

and information are central to the narrative of local information services.

This digitised process of collecting information is an uneven one because the city is characterized by high levels of economic and social inequality. Therefore, many institutions still use the analogue system, though the majority of them use the digital format. Companies and community organisations directly affiliated with Comfenalco physically came to collect documents and posters, and displayed them on their own information boards for the local community. Simultaneously, other Comfenalco institutions and its main branch began to digitise collected information and uploaded onto its online LIS platform. The combination of these practices lead individuals and institutions at the local level to ‘transfer ideas and concepts from familiar domains’ and past experiences with the provision and use of local information to ‘construct their response’ to this new digital process, which Leonardi and Barley (2010, p. 14) describe as the interpretation perspective.

Part 4: Data and Methods

This study uses case-centred (Roller and Lavrakas, 2015) and phenomenological approaches to capture the perspectives and perceptions of the organisation and its supporting institutions in the materiality and practice of LIS. The focus here is on how the organisation sees itself in the provision and facilitation of local information, how this informs current debates on technological determinism and social constructivism, and how the co-productive process between users and designers of the LIS became *a means to* a socio-technical system.

We used discourse analysis on the 25 in-depth interviews conducted with the management team of *Infolocal* and participating institutions over a period of 18 months. This

data were triangulated with secondary data on ICT infrastructure in the country and organisational artefacts such as specific campaigns and documentation (Yin, 2014). The data were collected from within and outside of the organisation and then grounded in the geographies of Medellin.

This is a single, instrumental case study approach and, like most case studies, struggles with generalizability (Creswell, 2012). However, this approach was chosen for two reasons: first, cases that show the development and implementation of local information services are somewhat limited. Second, it allows for an examination of the politics of technology and information that enshrouds this comprehensive process of digitalisation of local information in Medellin.

Part 5: The organisation and local information

Prior to the LIS initiative, citizens struggled to access and identify relevant local information, which remained hidden, uncollected, and out of their reach, with no effective systems to retrieve it. Paper-based directory services like the yellow and white pages have tried to identify, collect and organize relevant contents for their audiences. However, as they were paid services, home-grown businesses, particularly in poorer communities, were not able to afford to advertise in them. Hence, Comfenalco created its own business directory, which was stored and retrieved locally. Local information about events continue to be disseminated and displayed physically through its lockers and bulletin boards.

In 2002, the directory was embedded into a new online portal, *Infolocal*, with more contents added and a technical code that enabled Comfenalco to govern the representation of 'interest or ideology in a technically coherent solution' (Feenberg, 2005, p. 52). Using the

expansion of Internet access in the city, the organisation was able to offer a platform for the other (poorer) institutions, further embedding and reinforcing its power within the socio-technical system (Marx, 2010). As a result, the smaller institutions collaborated with Comfenalco to incorporate *Infolocal* into their operations forming a new power structure. Hence, *Infolocal* could now exercise 'operational autonomy' (Feenberg, 2005) in that Comfenalco was free to take universalist decisions that may or may not have fulfilled the individual needs of local institutions. Slota and Bowker (2017, p. 530) argue that infrastructural arrangements offer affordances and constraints, hold values and 'permits certain kinds of human and non-human relations while blocking others.' This new arrangement allowed the organisation to reinsert itself into these, new, virtual communities and potentially attract more users. It became a ready-made artefact that could be used to 'order society' and an 'inscription device' to facilitate the validation of new knowledge and embed accepted rules of behaviour into society. This digital technology had also challenged the traditional work of institutions (including the libraries run by Comfenalco) by splintering collective identities. As such, institutions needed to transform themselves into local information centres to better match their communities' needs (Lozano, 2002).

The two figures below (2,3) show the *Infolocal* web portal and illustrate how the interface channels citizens to engage with information. The Web portal stores information about the city, like events, directories, contest, guides, government procedures and so forth as a shown in figure 1.

Figure 2. Infolocal web portal

As figure 2 shows, *Infolocal* has a section for community input, but does not allow for individuals to create, update or add new content and, by extension, individuals are not allowed to create or shape their 'digital realities' (Graham et al., 2013). This process was very much institutionally driven rather than co-produced with users. Such a design suggests technological determinism in that people needed access to information facilitated through technology, however, they were also largely excluded from contributing the information on which it feeds. In some ways, this lack of visibility of users' interests reinforces Williams' (in Söderberg, 2013) argument that a hard determinism precludes the 'possibility of taking democratically accountable decisions over the design and deployment of technology'. Paradoxically, the organisation is inadvertently *imposing* an identity on users, making them 'objects of representational knowledge' (Crang, 2000, p. 147) rather than co-producers of it.

Comfenalco also collected information for citizens to learn about government services and procedures. By collecting and disseminating this information, Comfenalco inadvertently usurped the local government's role in providing information to its citizenry. Technology choices such as *Infolocal* are 'strongly fixed in material equipment, economic investment and social habit' (Winner, 1986, p. 126). Once this level of commitment is made all flexibility ends. Therefore, the socio-technical system of *Infolocal* created social change that if left unabated would have created a new social order. However, the government decided to digitally publish its own local information, thereby reinserting itself into society and interrupted the social order that Comfenalco was producing through *Infolocal*. Both the government's actions and those of Comfenalco illustrate the inherently political nature of technologies in that each one served to establish a framework that would 'unavoidably bring with it conditions for human

relationships that have a distinctive political cast' (Winner, 1986, p. 126).

We found that many of the local institutions had begun using ICTs to reach their 'communities'. Furthermore, even the notion of community began to change shape and meaning due to low-cost technologies (smartphones, the Internet, and social media) that allowed citizens to imagine new identities in line with a network that is 'partly held together by circulating technologies of representation and communication' (Jasanoff, 2004, p. 26). These socio-technological changes facilitated citizens to communicate with each other beyond the reach of organisational initiatives. Citizens could, to some extent, release themselves from the geographically-bounded dependency on local institutions providing 'local information' from *Infolocal* and from the government stratification system.

These new technical arrangements, referred to by Bijker (1997, p. 47) as the 'turmoil of technical development,' challenged the original design and intent of *Infolocal* and illustrates that despite the capital, resources and expertise an organisation invests in imposing its own platform, social practices can these strategies. This argument reinforces a socio-constructivist perspective where social group practices in using information become more powerful than the technological design implemented by more powerful institutions. Bijker (1997) argues that technology is a social process in that relevant social groups are carriers of that process.

Prior to changes in the social practices of technology for both individual users and institutions, *Infolocal* was building technological momentum and increasingly manifesting deterministic behaviour until new technologies (social media) and a new socio-technical system by the government shifted the boundaries of the relevant social groups and in fact caused the formation of new and merged groups (Bijker, 1997, p. 47). As such, *Infolocal* as a

technology artefact began to lose its shared meaning. For the government, the value of self-representation took precedence over being represented within *Infolocal*'s socio-technical system. Hence, as Bijker et al (1997) show, once relevant social groups, both locally and nationally, became better defined through economic strength (i.e. availability of social media devices and online platforms), *Infolocal* found itself in a less prominent position as a socio-technical system. In other words, technological change itself became an external force that served to stifle the technological momentum of *Infolocal*.

Part 6: The Social Constructions of Local information

In this section, we wish to unpack the 'movement and transformation' (Gillespie, 2006, p. 430) of the term, local information, through an examination of the discourses used to embed *Infolocal* into the daily lives of Medellinians. The effort of *Infolocal* to construct meaning for its LIS system illustrates how the process of social definition shapes technology where 'those invested in it struggle not only to implement the technology, but also to narrate what it is and what it is for' (Gillespie, 2006, p. 428). In this case study, the social definition is linked to demarcating what and *who* is considered 'local'. This representation of the 'local' touches back to deep-seated social and identity issues within Colombian society that have been transferred onto the digital space, and hence absorbed into the socio-technical system.

Using three constructions of the concept of local information⁴, we examine the (re)-interpretation of local information. We make a comparison between how the concept is framed at the international level (UNESCO) and at the organisational level (*Infolocal*). These framings illustrate the representative power of language (Foucault, 1970) and set a specific

⁴ <http://infolocal.comfenalcoantioquia.com/>

tone for the practice of local information generation and dissemination for Comfenalco and the communities it serves. The language used to describe the expected experience for users of *Infolocal* contributed, in part, to users' developing a new conceptualization of themselves within this system. In practice, local communities were already using local information to reconceptualise themselves. One community leader commented that individuals came together in order to build organisations to promote events as a means of resistance to the ongoing gang violence that resulted in many homicides and terror in some neighbourhoods in Medellin from 2002-2008.

When the conflict was at its highest peak, the community reacted by creating many different new cultural and artistic groups to promote events and to show *another* perspective and vision of the commune. It was a response to the violence and a way to seed hope within commune members" INF02

Hence, this community used local cultural information to mask the pain of conflicts and to reconstruct their collective identities. *Infolocal* responded to this local institutional initiative by reconfiguring its socio-technical system to absorb local community objectives into its own, developing, at least superficially, a co-productive approach that highlights the necessary 'interconnection between the macro and micro' (Jasanoff, 2004, p. 4) for local information provision. As illustrated in Table 1, the blending of objectives between *Infolocal* and the community led to subsequent discourses of unity, inclusion, and open participation, albeit in a hegemonic fashion.

Table 1. **Infolocal Objectives of local content**

- | |
|---|
| <ol style="list-style-type: none">1. Stimulate reflection, rescue and appreciation of cultural identities and the processes of community support and participation; strive every day to provide greater wellbeing to citizens, based on innovation, training, organization and effectiveness. |
|---|

2. Local information is that which is generated *in, with, and for* the community; is one that allows the inhabitants of a territory can know and recognize their living conditions. In turn, local Information constitutes support of the socio-cultural activities and policies developed in the community that contribute to understanding, participation and decision-making for local development

3. Is a local information service for participation and development of the southwestern area of Medellin, where it is collected, organized, disseminated and energizes intentional and systematic information generated in the locality in various aspects of their development, with the aim of strengthening cultural identities and encouraging processes of citizen and community participation, without letting go of the *general context of the city* so that, the community besides knowing their realities can develop strategies to transform them

In the table above, the first objective appears in the opening pages of the *Infolocal* website. It emphasizes the importance of identifying and preserving local traditions by any means. The terms, reflect, rescue, and appreciate, imply that at some point cultural identities and memories had eroded, were unknown or undervalued. Jasanoff (2004, p. 39) argues that *making discourses*, such as these, is one of the four instruments of 'co-production operating at the nexus of natural and social order'. Here, *Infolocal's* suggestion of 'providing greater well-being to citizens' attempts to reassure the public of the benefits of this new system. Furthermore, 'training', prioritizes education as an opportunity for citizens, which was reinforced through a preponderance of different programs and initiatives.

The second and third objectives express a unifying element by using inclusive language (*in, with, for, contribute, participation*). The second objective implies community empowerment in decision-making, with an implicit repositioning of library parks and community centres as loci for local social development. However, the objective does not mention information generated *by* the community, which language indicates how participation would be defined, controlled, and practiced through embedded rules or a

technical code (Feenberg, 2005). This, in turn, has implications for how representation of the 'local' can influence how identities are constructed. Foucault (1970, p. 53) argues that language possesses 'new power and powers peculiar to it alone'. The words found on the web portal act as representations (Hoeppe, 2015, p. 1080) that emphasise and reinforce particular forms of practice. In doing so, 'their practical uses establish what they do, how they mean, and what is done with them'. Representations found in this language can 'speak in the name of the "real" only if they are successful in obliterating any memory of the conditions under which they were produced' (Certeau and Conley, 1988, p. 208). Hence, the selection and value of particular language governing LIS practices become an integral part of the socio-technical system. This is in line with Gillespie's (2006, p. 431) argument that 'materials and the linguistic shape of the artefact are designed together, with the future deployment of both already in mind.'

One stated purposes of local information is to enable users to '*recognize their living conditions*'; hence, their realities become imagined in a digitized form. The organisation implemented a number of programmes designed to actualise this purpose. The LIS forums are an example of how representation was embedded within the designs of this socio-technical system. Since 2006, the pace and frequency of these initiatives have increased and diversified. The forums are gatherings where relevant social groups, such as politicians, community leaders, and local people, discuss different themes of general interests. These forums are live streamed and occur periodically throughout the year with new ones only slightly distinct from previous ones. These forums contribute to the legitimacy of *Infolocal*, further embedding it into Medellinian society.

The third objective offers a subtle but instructive sentiment. The language enables

self-actualization; but at the same time, creates clear boundaries for the development, strategies, and ambitions of local communities, i.e. keeping *within the general context of the city*. Going from the broader vision of *Infolocal* (objective 1) to the institutional level of constructing local content (objectives 2 and 3), directives and statements of purpose become more prescriptive. We argue that the main organisation is less restrictive as to how local information is defined at the macro level but implements a more rigid definition of how local information should be generated within communities. The levers of control found in the language govern the practice of LIS, becoming more pronounced for local levels. Gillespie (2006, p. 451) argues that designers of technology are not only vested in the material and symbolic shaping of the artefact, which are designed together, but also produce language that can ‘intervene’ in the use and interpretation of the artefact. Hence, language is constructing an embedded power structure between *Infolocal* and the local institutions that becomes more crystallized through technological dependence.

Representation of local information is contested at different levels of society and as a result engenders different sets of practices. The UNESCO definition of local content shows a broader approach and does not use any restrictive language in its ideal:

An expression and communication of a community’s locally generated, owned and adapted knowledge and experiences that are relevant to the community’s situation’ (UNESCO, 2011*).

Comparing the *Infolocal* construction of local content with the UNESCO definition, it is clear that *Infolocal* has reinterpreted local content to fulfil its own objectives. Our analysis shows that local content for *Infolocal* narrowly materialises as cultural events or the selective preservation of historical cultural artefacts or documentary heritage (Jaramillo and Marín-Agudelo, 2014), with little scope for the representation of an indigenous or contemporary

Colombian identity. Content is filtered and packaged by a set of institutions that then present it for consumption to local communities. Hence, the LIS system is not an inclusive process. Rather, it is a non-neutral force biased towards a particular 'hegemony', where technical codes are 'reinforced by individuals' perceived self-interest and law' (Feenberg, 2005, p. 52). Given this circumstance, the question arises as to the ways in which this system is actually co-productive. Understanding the social construction of local information requires an understanding of the codes that result in a 'negotiation' of various actors and is as much an explicit process as it is an implicit one. But how does this play out in practice? The designers of *Infolocal* say that the programs they offer elicit 'memories of dossier'. When asked how themes and issues for one programme *para verte mejor* ('to see you better') were identified and approved as 'memories of dossier', the following response was given:

Issues for the *para verte mejor* were identified in the planning, they had dates, what was required, what will be accepted and when people sent in the videos they had to include a synopsis of the theme of what was in the video and the different themes that each video covered. Then we analyse the videos, and decide what is important. For each of the categories that were identified as themes we had experts (judges) who determined which ones were of more importance. They evaluated the quality of the video and the ones that passed became part of the collection for local content.

INF011

In the filtering process described above, *Infolocal* relies on handpicked judges to evaluate submissions and to select according to their own established guidelines. These events are designed in a way that reinforces a particular vision of the city. Hence, the guidelines facilitate particular constructions of 'local'. The respondent also noted that prior to these initiatives, the organization conceived 'local' as the city boundary. However, the addition of new programs designed for the surrounding areas of Medellin (for example, *Bello here we are*, *Let's talk about Itagui* and *Para Verte Antioquia*) allowed the organisation to expand its socio-

technical system. This is achieved by identifying new relevant social groups outside of the city who would eventually become part of the socio-technical system of *Infolocal*, further embedding *Infolocal*'s vision and reconstructing the meaning of local and reinforcing its control over the process of representation to a more geographically-dispersed audience.

The representation of marginalised communities in 'local' content

Through interview data, two groups of marginalized people within the city were identified that would also form part of the construction of the 'local'. Both groups were from poor areas, however, the first group were poor non-indigenous Colombians and the other group indigenous. Table 2 contains quotes by the designers of the portal discussing each group in relation to the digital space created by *Infolocal*, which in many ways illustrates the politics of exclusion in a socio-technical system:

Table 2. The politics of production of 'local' content

Two types of marginality (INF012)	
(1) Connected - On the periphery	(2) Not Connected - Indigenous people
<i>Many of the zones that were on the periphery of the city found themselves marginalized as they didn't have access to resources or basic capacity. They don't have access to public services, water, light and other necessities that they would need on a daily basis. They were able to use the local libraries where Comfenalco could then penetrate and reach these people. Through some library services the public could be connected.</i>	<i>These communities adapt to the dynamics and the culture of the city. For example, there are individuals of the native tribes studying at the university but they don't implant any of their native dynamics inside the campus. They just live or try to adapt to the way that we live in the city. So that is why we are not very familiar with their culture and language.</i>

The first group were seen as a necessary addition to the story of the city. Comfenalco knew of their existence but because these communities lacked technological resources, they

remained out of reach of digital representation by *Infolocal*. Although both social groups were invisible until 2015, the company launched a contest for local filmmakers to digitally capture representation of the non-indigenous group; making their realities visible. Ironically, only members of this group who lived in areas with access to digital technology or were close to more developed libraries would have been able to see their realities in digital form. More importantly, this represented a shift in the practice of generating local information because, previously, contributions were created only by participating institutions. This new strategy brought *Infolocal*'s definition of local content closer to the UNESCO definition.

However, the organization's approach toward indigenous Medellinians (on the right panel) tells a different story. It reveals that the lived experience of marginality for indigenous people had been inadvertently transferred to the digital spaces of *Infolocal*. However, the lack of representation of Colombian indigenous culture within the socio-technical system was not the result of a pre-determined outcome of technology. Rather, it was produced through design that elicits a 'particular social effect' (Winner, 1986) rooted in overarching structural discourses of Colombian society, bringing forth questions of governance and accountability of socio-technical systems. While their continued invisibility may be due to small numbers in Medellin, the systematic omission of their narratives reinforces particular interpretations of the 'local' and obfuscates the 'meaning and designs of the artefacts' (Winner, 1986, p. 125). This illustrates the inherently political nature of technology in creating certain 'social options and closing others' (Mackenzie and Wajcman, 1999, p. 3). If the respondent's observations in Table 2 are taken at face value, then the indigenous people are making efforts to adapt themselves to fit within the general context of the city. This results in their becoming defined by the city and the technological processes of digitisation rather than the city reflecting their

values and beliefs, potentially resulting in differences in the meanings attributed to *Infolocal* by different social groups.

The realities of both groups can be understood better through Feenberg's (2005, p. 60) process of decontextualization, where objects are torn out of their 'original contexts and exposed to 'analysis and manipulation', while positioning them for 'distanced control', with one group deemed worthy of representation and the other excluded. *Infolocal* (as subject) worked through the local institutions to achieve a desired outcome, which in this case was the inadvertent exclusion of indigenous languages and traditions. More recently, a new programme (*para verte mejor*) was designed to give voice to some marginalized people and broaden the social construction of Medellin society.

Questions remain as to the extent that self-representation is occurring through this LIS system or whether people are being represented by the same (reincarnated) institutional forces that are processing the city. Some local institutions did not have technological capacity or served communities with low digital literacy (or both). Comfenalco, through *Infolocal*, encouraged these inert institutions to participate in new methods of generating local information and increased their relevance for local communities. This new collaboration helped Comfenalco to make connections with marginalized people. However, the management of local information was still under the control of Comfenalco and hence so were the levers of power. The film capture enabled some communities to access visual content and hence participate in redefining the 'local'. However, these technology choices 'do not depend merely upon technical expediency or economic efficiency but on balancing the interests and values of the social groups involved in these choices' (DeNardis, 2012, p. 722). Hence, the newfound inclusion and representation of the marginalized within the digital

space may not make a significant difference in terms of self-empowerment.

As discussed above, indigenous populations in the city experienced a different form of invisibility than the marginalized poor. Comfenalco recognized the marginalized poor as part of the city discourse, but were not fully aware of the realities they faced. As their connection to the network materialized through the film capture, we argue, using Grimes and Feenberg (2013, p. 126), that these groups should have been able to 'learn about the technologies that support the network' and identify their vulnerabilities and 'bring pressure to bear.' However, the indigenous people, with their displays of traditional culture and language excluded from the network, would be unable to learn about themselves through this artefact. Their inclusion revolves around their ability to mimic the dominant culture and language; keeping within the general context of the city. If we deconstruct *Infolocal* into what Bijker (1997, p. 75) terms as 'working' and 'non-working' artefacts, both of which are socially constructed assessments, we can see the resulting privilege that it offers to some users based on the politics of social class and race in Colombia. This was reinforced through the language 'designed and deployed to intervene in debates about what a technology can and should do' (Gillespie, 2006, p. 450).

Part 7: Local Content through Public libraries

This section explores the complexities of maintaining a socio-technical system by examining one of the key types of local institutions within the system, the library park.⁵ The 1999 Copenhagen Agreement proclaimed libraries to be at the heart of economic and social growth in communities through their provisions of local information (Morillas and Pulido, 2007). From 2005, the city government of Medellin began developing these spaces as a global

⁵ Data collected for this study showed that of the 195 participating in LIS, 62.6% were libraries.

first. Library parks have become a distinctly Colombian feature appearing in Medellin and Bogota. They are essentially a library surrounded by public spaces that conjoin to become a community focal point and generate local information. There are currently ten⁶ such parks in Medellin funded by the local government and, in some cases shared funding by international organisations.

These libraries are part of the public sphere (Habermas, 1989, p. 36) because they foreground and help construct a 'common concern' and give a new opportunity for the public to question the 'problematization of areas' that had previously been 'presupposed' by dominant institutional and societal ordering. They possess an inclusive quality that in theory allows for everyone to participate in shaping issue representation. In fulfilling this purpose, libraries can be an invaluable reference point for the construction of a collective memory (Saumell i Calaf, 2002) and a local identity. However, we argue that this co-production of local content and local histories is complicated by an opposing socio-technical system derived from the national stratification system. A system that problematized different issues for different groups of people based on socio-economic indicators, which in some ways works against the notion of the public sphere in preserving 'a kind of social intercourse that disregards status' (Habermas, 1989, p. 36).

Here, we examine the *Comuna*⁷ of Belen as an example of a community engaging with *Infolocal*. According to the national stratification system indicators, Belen has a variety of strata represented within its boundaries. The distribution of socio-economic strata in Belen

⁶ The ten library parks in Medellin include the following: Parque Biblioteca la Ladera, Parque Biblioteca España, San Javier Library Park, Library Park Doce de Octubre, Las Estancias Library Park, Guayabal Library Park, San Cristobal Library Park, and Library Park San Antonio de Prado (source: www.medellin.gov.co).

⁷ The city of Medellin is unique in many ways. One of which is that the city is divided into 16 *comunas*, large areas containing several neighborhoods.

(figure 4) has 61% of its population categorised as strata 1-3 (lower income groups), 24% belong to stratum 4, and another 15% belong to stratum 5 (with none in the top tier), representing different social groups.

The parent company of *Infolocal*, Comfenalco, developed a collaboration with the library park of Belén (el Parque Biblioteca Belén) where the local government provided space, facilities and infrastructure, and Comfenalco provided skilled employees (librarians) and managed the LIS system; which was housed in its own space on site. The service lends its space to different groups and hosts programmes where local residents are encouraged to contribute knowledge about the local community. The output of these programmes are kept in analogue form, due in part to social and economic inequalities within the community. *Infolocal* has supported local groups like '*Vigias del patrimonio*' (Heritage Watchers) by supplying them with paper-based content about the community. The Heritage Watchers designed initiatives to identify and preserve local heritage and were able to compete and win a government-sponsored contests to fund initiatives for local information.

The Belen LIS branch librarian commented the following with respect to the means through which information is provided:

Well we want to be in touch with communities to build programs. So our Local Information Services is engaged with government institutions to provide resources to encourage locals to create content and store them through our facility. However, our branch is not involved in digitizing content, nor do we have the resources to digitalize content. So, we send important local events to the main branch to be digitalized and uploaded onto the web portal. And we received the posters in printed form and post them on our bulletin boards. (INF03)

Here we can see that the digital form is not as relevant as the paper-based for supporting the local communities because of digital illiteracy. At the same time, the government is trying to encourage communities to produce local information in electronic formats and in includes a digitally-enabled outcome in its annual competition for funding, as shown in the quote below:

Our materials from past contests are stored in printed form, but now, the latest government-funded contest “Heritage Watchers” required them to be in both forms, printed and digital. (INF03)

These quotes highlight that the state is moving in one direction (towards the digital), yet the local users still lack capacity to take advantage of digitised information. Hence, there is high likelihood that the government’s programme may have limited success due to high levels of digital illiteracy. When the *Infolocal* librarian was asked about difficulties with the initiatives in the commune she replied:

We were trying to create a program that collected information from the local communities in Belen. However, most of our users belong to strata 2 and 3, and that is another reason why we do not focus on digital content. While some neighbourhoods (within Belen) have had some class conflicts, because a high class neighbourhood (for example, stratum 4) does not feel like they are part of the rest of Belen for certain programmes and activities. So they did not want to participate with the other [lower class] residents, or they even tried to create their own programme. (INF031)

Here, the respondent is alluding to how fragmented the conceptualization of ‘community’ can be, which results from competing social orders. The government stratification system has constructed boundaries that have created particular social groupings within the community, which affects how these different groups interact with the socio-technical system. The portal is a technological artefact and has become multiple artefacts because, as Bijker (1997, p. 77) points out, there are as many artefacts as there are social groups, with each group attributing different meanings to an artefact. Therefore, for users in strata 2 and 3, the portal itself has a different value and meaning than it does for users in stratum 4. Ironically, the differences in meanings also reinforce different social group positions within the socio-technical system.

Figure 5 shows the programme, Toma Barrial, led by *Infolocal* for the neighbourhood called “La Gloria” (stratum 3). The programme was intended to bring ‘relevant’ information to the community and to collect part of the memories and heritage from within the

community. In this particular case, a small sector within La Gloria called 'La Nubia' (stratum 4), refused to collaborate, because, according to the respondent, they did not feel part of La Gloria. La Nubia in fact has its own board for community action (*Junta de Acción Comunal*) apart from La Gloria.

In another instance, a sector called 'Rodeo' (see figure X) between the neighbourhoods of Rincón (strata 2-3) and Hondonada (stratum 2) in Belen contains housing complexes that belong to the Hondonada neighbourhood, but residents of Rodeo see themselves as stratum 4 and they have their own interests distinct from Rincón and Hondonada. This has implications for consensus around initiatives in Belen:

When [the Rodeo sector] go to the local budget meetings (*presupuesto participativo*), they want to build a soccer court in front of their complexes. Despite Rincón's having plenty of sports facilities, the Rodeo people do not want to go there. Most of Belen's neighbourhoods ask for budget to improve the sewage system, because it is too old. However, Rodeo claim that they do not have such a problem because their apartment complexes are new. So, they do not vote for it and they are not at all concerned about Rincón and Hondonada needs. (INF032)

The initiatives described above point to the same problems found in the politics of technology and information, the social construction of difference. Winner's (1986, p. 124) argues that new technologies or programs can often reveal a 'panoply of human motives, not least of these is the desire to have some dominion over others.' In each case, one sector of the neighbourhood had different interests from the other sectors, interests rooted in maintaining social class distinctions, crystallized by the national stratification system. The real and imagined sectors of stratum 4 in Belen are exercising human agency by resisting not only the local initiatives but also particular forms of representation that they perceive as unfavourable. They are, in fact, challenging the 'authority mechanisms' (Crang, 2000, p. 146) through which the initiatives are credentialised and, as such, reshape their socio-technical

system, at least to an extent.

Although the public were encouraged to access information collectively created in a localized context, discord within the community produced a contested, uneven process, complicating efforts to form a collective local memory to offer up to *Infolocal*. So although public access to information gives the illusion of horizontal comradeship, the reality is far more complex. Jasanoff (2004, p. 14) argues that science and technology are 'indispensable to the expression and exercise of power'; that they act as political agents. By this she is referring to a co-production process in which the management and the regulation of new technologies are ordering and reordering society. Hence, in a broader context, any technology, including LIS, requires a particular political and cultural environment in which to develop. Hence, such technologies are not disrupting society, but reinforcing social class differences. This also presents complexities for the institutions charged with facilitating access to information and their efforts to encourage communities to produce local content.

When the LIS librarian was asked about the work they conduct with stratum four neighbourhoods she said:

We do not work too much with them, because they do not come too often to the library to use its services and they do not want to participate in our programmes. So our services are more focused on the low-middle class, rather than the middle-high class within the community. (INF03)

This illustrates how organizational initiatives intended to provide information and empowerment to local communities resulted in excluding technology because of digital illiteracy. Hence, the government's push toward digitization has been unintentionally ignored at the local level. The irony is that representation of the *entire* community will draw on experiences and realities of the poorer inhabitants to the exclusion of wealthier inhabitants. This concurs with Bijker's (1997, p. 30) argument that the meaning of technology is

interpreted differently by different social groups and that social processes enshroud technological development. This also is a materialization of 'interpretative flexibility' of technologies, where technology is purpose dependent, but that purpose is often in dispute (Bijker, 1997). Hence, the result will be a distorted representation of the people of Belen because these programmes are digitizing identities of the part of the population least likely to use them.

Part 8 Conclusion

The history and episodes of local information services in Medellin presents a unique case that opens a window into the development and deployment of a socio-technical system; a system shot through with social norms and values and is itself a social product. Thus, LIS, with its constraints, becomes a case where society and technology co-produce each other with some unintended consequences, emphasising the importance of considering the politics of technology and information embedded within LIS systems.

The case draws into question the extent to which technological development leads to a reorganization of power relations or merely reinforces existing power relations. This case illustrates the sort of monolithic organisational structure that is controlling a vast amount of information, distributed to the people of Medellin carrying with it particular representations. Comfenalco developed a socio-technical system, infused it with capital and resources and then diffused 'limited' technology and resources to local institutions, maintaining a centralised power base. Rather than being user generated or inclusive, the process was dominated by institutions that provided controlled and monitored initiatives packaged for community consumption. Here, the 'design and deployment of technology' (Freedman, 2002)

resulted in institutions exercising power over society by promoting particular understandings of society to themselves based on the representation of information. As such individuals were not encouraged to reflect on or represent their own histories and realities in digital form.

The national stratification system that predated *Infolocal* impeded access to information and in actuality defined 'local' for the local information service. The community episodes showed how differences in socioeconomic conditions among inhabitants were reinforced through the socio-technical system of LIS. The public sphere became a battleground for reinforcing status, which was reflected in conflicts of how technology and other infrastructure projects were received within the community. The division of interests between wealthier and poorer residents produced unintended consequences that also affected the success of government initiatives for going digital. Hence, the social and economic inequalities of Belen (and throughout Medellin) created distortions as to how technology was applied within these development programmes, resulting in the need for careful consideration of the politics of technology and information, central to the narrative of LIS.

What is clear is that technological change brought about changes for some inhabitants of Medellin, particularly with the expansion of Internet services. Improvements in ICTs encouraged and compelled Comfenalco to embrace a wider audience of participants and contributors. However, the (re)-presentation of local information is still controlled by Comfenalco. Despite the digitization of local information, lower-middle class sectors (strata 2 and 3) still rely heavily on papers-based sources, hence that technology is 'merely opening a door; but not compelling one to enter' (White, 1962, p. 28).

From a practical standpoint, we argue that LIS institutions play an important role within communities encouraging and empowering them to identify and generate new content, which the examples of the heritage watchers and the forums demonstrate. However, as we saw, different forms of local content generation began to emerge when small institutions and individuals exercised agency in creating and disseminating their own content through the use of new technologies, particularly through social media, regardless of the designer's intentions for *Infolocal*. This further support a social constructivist perspective for examining local information services. The success of a local information service is contingent upon developing a clear understanding of community needs, interests, and capacity and then working together to address gaps in these areas before technology is introduced. We call for more research on episodes of the politics of technology and information through similar cases to form an engaging discussion that will enrich the practice of LIS and facilitate access to information for more diverse groups of stakeholders.

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Appendix



Figure 1 Collection Box
Casillero cultural

Figure 1: Source
infolocal.comfenalcoantioquia.com



Figure 2: Source infolocal.comfenalcoantioquia.com

Figure 3. Local content section in Infocal web portal

MENÚ CONTENIDOS LOCALES

- [Aprende](#)
- [Formación Ciudadana](#)
- [Infórmate](#)
- [Noticias](#)
- [Hojas Ciudadanas](#)
- [Directorio de ciudad](#)
- [Biblioteca Digital](#)
- [Participa](#)
- [Foro Ciudadano](#)

Inicio > **Participa**

CONTENIDOS LOCALES

Publicado en: Contenidos Locales Visto **16214** veces tamaño de la fuente - + Imprimir Email

Contenidos locales es una sección donde encontrarás información generada por la comunidad y aquella que sirve para la toma de decisiones y participar activamente como ciudadanos.

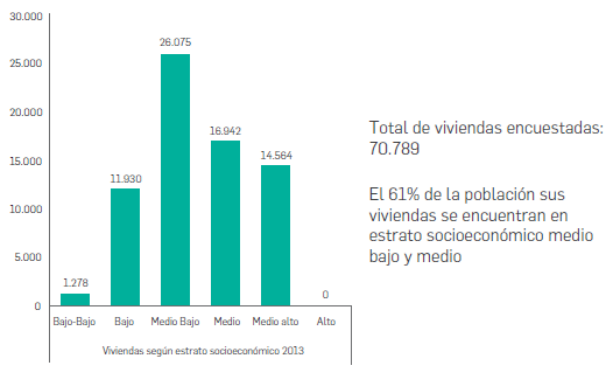
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Etiquetado como: Infolocal Comfenalco Contenidos Locales

[volver arriba](#)

Source infolocal.comfenalcoantioquia.com



Fuente: Alcaldía de Medellín, 2013

Figure 4. Housing according on socio-economic Stratum

TOMA BARRIAL

Belén La Gloria

PROGRAMACIÓN

Hora	Actividad
2:00 p.m. - 3:00 p.m.	Cita/taller responsable de mascotas: La Perla.
2:30 p.m. - 3:30 p.m.	Taller de promoción de Lectura infantil.
3:30 p.m. - 4:30 p.m.	Taller de Origami.
03:00 p.m. - 4:00 p.m.	Recorrido en bicicleta por Belén La Gloria.
3:30 p.m. - 4:00 p.m.	Conversatorio con Planeación Municipal sobre el Plan de Desarrollo Local en el barrio Belén La Gloria.
3:30 p.m. - 4:30 p.m.	Taller para niños: "Concéntrate en la ciudad".
4:00 p.m. - 5:00 p.m.	Taller: todos sabemos algo del barrio.
2:00 p.m. a 5:00 p.m.	Exposición fotográfica y audiovisual.
2:00 a 5:00 p.m.	Recolección de fotografías antiguas del barrio.
2:00 p.m. - 5:00 p.m.	Promoción de servicios del Parque Biblioteca Belén.
3:00 a 4:00 p.m.	Adopta un perrito del Centro de Bienestar Animal La Perla.
4:00 p.m. - 5:00 p.m.	Promoción de servicios del Cedezco.
4:00 p.m. - 5:00 p.m.	Viviso Concierto del recorrido.

Lugar: Calle 20 A - Al lado de la Iglesia San Francisco Javier

Fecha: Sábado 30 de Julio

Figure 5. Toma Barrial en la Gloria
Source Infolocal at Belen Library Park



Figure 6. La Nubia sector
Source: Google Maps

Figure 7. Rodeo Sector
Source Google Maps

