

Urban change and the mesh: an ethnography of Deptford's Open Wireless Network

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Icarus ascending

This chapter engages in a trans-disciplinary discussion on urban wireless networks. It presents findings from my longitudinal participant observation of Open Wireless Network (OWN), a Wi-Fi mesh network in Deptford, inner-city London, as well as of the related 'Wireless Wednesday' workshops. It wants to do two things, while narrating some of the dense exchange I had with users, owners, and developers of the network. It firstly makes visible, on the ground, the socio-technical context in which taken-for-granted wireless works. It then investigates the inherent paradox at the centre of urban mesh networks: between localised tactics of connectedness—always in the geographically limited range of the wireless reach—and the anonymity implied by mesh networking, which the city of strangers massively expands. What does it mean for its members and developers to participate to an anonymous but open network? What are the possibilities and limitations of such an engagement in these rapidly changing neighbourhoods?

Deptford is an inner London borough with a long history of working-class labour and migration linked to the river Thames (Steele, 1993). As most of riverside London, it has been experiencing a state-led and private-developer delivered process of gentrification (Davidson & Lees, 2005). Despite the rhetoric of 'Riverside Renaissance', a vast literature now points to the cultural, as well as direct, displacement effects that this process has on local working-class residents (Davidson & Lees, 2010; Lees, 2008; Marcuse, 1985; Newman & Wyly, 2006; Slater, 2006). Emphasis on OWN social and spatial location is thus relevant to the extent that infrastructures, proximities and networks are able to work within a specific urban milieu where competences, funding, organisation, and access to digital networks matter. Both technology and gentrification are part of the daily experience of the city that both users and developers of the network have. They are connected in the sense the chapter tries to untangle.

This is my entry point to the study of Open Wireless Network. As I explain in more details below, OWN is a mesh of Wi-Fi radios: among other things, it gives free access to the commer-

cial Internet to whomever is in the wireless reach. Soon after its establishment in 2008, it picked to 60 nodes and over 400 users at one time, mostly along the now sought-after river banks of the Creek.¹ Broadband and hardware were relatively more expensive and exclusive than today, making it urgent the intervention of a few 'social hackers' in that direction. As I argue in the next section, scholars working in media and communication studies seem to have taken some distance from the production of urban space (see Lefebvre, 1991). This distance is increased by urban studies neglect for the displacement effects of gentrification (Slater, 2006). More recent interventions (Cardullo, 2014; Forlano, 2013; Tarantino & Tosoni, 2013)—combined with a renewed attention to everyday geographies of gentrification (Lees, 2000)—start to critically shape such a debate. The chapter follows this trajectory by injecting critical urban scholarship in the study of wireless networks. In other words, it wants to ask: How can we talk about the 'problem' of wireless networking and ignore the 'problem' of the city?

One very pleasurable aspect of open wireless networking is the regular opportunity to view these panoramas from high up on rooftops and highrises as we travel about installing equipment. (James, founder of OWN)



The panorama is taken from the top of the tallest council block in London, Daubeny Tower, one of the three 24-store buildings of the council-owned Pepys Estate, on Deptford riverside. Curiously, the photograph *only* depicts the Southern part of Deptford: OWN installers have their backs to the river Thames. Despite being opposite Canary Wharf, the installers look down towards residential Deptford. They scan the landscape for potential nodes and users, somewhere below, evaluating incoming obstacles to the transmission of wireless signal and potential nodes for the evolving mesh. Following the installers' gaze over the city, the wireless wave of an evolving mesh network almost materialises before us.

In 1991, a more famous panorama was drawn over Deptford riverside, a geography which will alter this social landscape for years to come. When Tory minister Michael Heseltine

1 For a map of the area see: <https://www.google.com/maps/@51.480866,-0.0195833,16z>

launched the 'City Challenge' regeneration plan, the Borough of Lewisham participated with three wards in its Northern part, including the small Deptford waterfront. This is mostly occupied by the vast Pepys Estate. Although poverty indicators reflected this areas' derelict housing and a vast low-waged population, 'City Challenge' was emblematic of a profound social change: that of a 'gateway' between the poverty of Deptford and the affluence of the capital, epitomised by nearby Canary Wharf (Centre for Urban and Community Research, 1997; Keith, 2005). Lewisham officials first took Heseltine to the bottom of Canary Wharf towers, then on a boat to Deptford riverside. Finally, 'Heseltine was taken up into the sky over Deptford's mass of derelict social housing and he toured the run-down industrial estates in helicopter. The landscape below him was almost literally turned into a map that was subsequently recognised as a space of governmental intervention' (Keith, 2005, pp. 76–78).

A few years later, Lewisham Council sold the tower nearer the river to a private developer, Berkeley Homes PLC. The tower was rebuilt with four additional floors to the top of the building featuring 14 luxury penthouse apartments and no social rented accommodations. A BBC documentary captured the story over three years. *The Tower: A Tale of Two Cities* maintains a Dickensian take on Deptford's changes: 'London, for the people who live here, can be the best of times and the worse of times', says the opening commentary (BBC, 2007). Inner Deptford remains a great cause of concern for new comers' own safety while locals are portrayed very much as *the problem*: their loud presence is often felt, but only from the safe distance offered by the tower heights (see Back, 2009). The BBC narrative seems to neutralise the displacing effect of gentrification, rather highlighting the idea that middle-classes need to live somewhere, after all. This narrative makes manifest the double tempo of regeneration: place-diagnosis (sink estates) and its subsequent cure (state-private intervention). This vignette is therefore about the spatialisation of a problem: the boundaries of the City Challenge and the evolving Open Wireless Network are both drawn into imaginary cartographies from a God's eye perspective.

OWN is therefore understood here as a sociotechnical endeavour entangled with the gentrification process in inner-city London (see Graham, 2001). On the one hand, more affluent forms of dwelling and lifestyle appear to be a threat to both the circulation of wireless signals and the communitarian 'stuff' that makes OWN what it has been. On the other, mesh networking goes beyond the sole technological deployment of newer devices and communication protocols. Developers and users of the mesh, who are also urban dwellers *experiencing* various forms of displacement, thus become the crucial link between technologies and gentrification. My case study shows how social relations—moulded around struggle against cultural, exclusionary and direct displacement—are difficult to dissipate. It argues for an intrinsic

contradiction within urban wireless networks like OWN: between forced neighbourliness dictated by wireless waves and the anonymity that both network architecture and city promise. Rather than a limitation, I suggest this might strengthen the development of OWN, at least in everyday gentrifying Deptford.

From no.2 to no.7, via no.5

Open Wireless Network is a mesh of radios and receivers that started in 2008 from the rooftops of SPC, an iconic hack-space on the border between Greenwich and Deptford. Mesh networks are composed by nodes which relay data to the network. Due to the lack of cabling, they potentially boasted high performance for relatively limited costs (Akyildiz & Wang, 2005). Bar and Galperin suggested 'a future in which ad-hoc networks *spontaneously* emerge when enough Wi-Fi devices are present within an area' (2004, p. 274, emphasis added). Speaking to a tradition of Internet enthusiasm and technological determinism, such scholarship is based on the belief that technology develops autonomously, while attributing to it a teleological role in societal development (Bijker, 2010; Fuchs, 2013).

To counter this trend, the Social Construction Of Technology (SCOT) emphasises the role played by social dynamics in technology development (Bijker, Hughes, & Pinch, 1987; MacKenzie & Wajcman, 1985). It asks questions of *how* technology is made and *how* it is used. SCOT thus highlights singularity of each technical assemblage and social milieu in which knowledge is acquired, drawing on historic and ethnographic approaches—participant observation, interviews, and archival record collection. As expanded by its critics, it ultimately focuses on structural context, that is, the 'wider sociocultural and political milieu in which artefact development takes place' (Klein & Kleinman, 2002, p. 30) (see also Bijker, 1993; Prell, 2009). 'Context' includes power asymmetry between groups, rules of access to decision-making, as well as economic resources. In our case study, 'context' is *also* gentrifying Deptford. The trans-disciplinary approach I adopt in this chapter thus suggests the significance of social space in choices over, and uses of, Open Wireless Network. Conversely, it contributes to an understanding of city inequalities in terms of power and access to new infrastructures of communication (Gilbert, 2010; Graham, 2001).

Forlano et al. (2011, p. 2) stress the diversity of mesh networks: 'no two cases are exactly alike'. Beyond the media rhetoric of 'anytime, anywhere' (Forlano, 2008; Mackenzie, 2011), the study of mesh network thus leads to broader environmental analyses. I would argue that this study encompasses critical urbanism because, by framing *how* place is made and *how*

power circulates through space, the city becomes the necessary milieu, the context, in which technology is created, modified, and consumed. For instance, my research notes clearly detect moments in which 'pressure of displacement' on my research participants, both hackers and users of OWN, is already acute. Marcuse (1985) describes this mix as a psycho-social condition due to the changing composition of one's neighbourhood and to the impossibility to choose where to live: shops become expensive, neighbourhood is felt as less friendly because of the surrounding changes in attitudes and lifestyles, spaces are sanitised, and previous social networks get dispersed. In my ethnography, talks about affordable rental solutions sometimes intertwine with discussions about switches and cables; at other times, new artisan bakeries on Deptford High Street or the nearby Goldsmiths University are referred to as 'posh bread' and 'posh kids'.

Issues around *how* cities are produced, *how* place changes, and *how* 'community' works are often underplayed in technology and media studies. I develop this argument by following Marcus Foth's prolific production on the subject of urban wireless networks. This is less of a polemic intervention towards an established scholar in the field of communication study than a writing strategy which wants to highlight the difficulties of pinning down 'community' at the intersection of people, place and technology in cities.

Foth et al. (2006) inspiringly found that, despite providing technical expertise and healthier budgets, top-down networks have generated less enthusiasm and participation than grass-root initiatives. This is due to the latter's responsiveness to immediate local needs, more directly involved forms of ownership, and ongoing support or training. Foth (2003) maintains that connectedness to the network is *per se* a poor indicator of belonging; however, social networking systems depend 'on the ability of the software to animate and support *meaningful interactions* between proximate users' (2006 my emphasis). 'Meaningful interactions' between neighbours remains a nebulous concept if not explained with qualitative methods. Conversely, social encounters in the neighbourhood are left to the networking ability of the software.

In a more recent intervention, Foth et al. (2009) uses the production of social space (Lefebvre, 1991) to explain how urban space is determined in relation to networking in urban Australia. The term 'community' now goes in inverted commas becoming a contested term. 'Community' is even disputed in terms of online and offline presence: this distinction is 'blurring' (ibidem). In the preface of the same book, however, Foth maintains the metaphor of city-body and living organism asking: 'How do the cells of the city cluster form tissue and organs?', that is, 'How do various systems communicate and interact with each other?' (2009, p. xxviii). The city is now a 'living organism', a container of human interaction and communi-

cations, which uncomfortably sits with Lefebvre's critical scholarship. Foth eventually considers 'The City' (capital letters in the original) as an 'intriguing but also dangerously complex entity to such an extent that its merits on this broad and encompassing level may not even be useful' (2011, p. 2). Without critical scholarship, I would argue, a vision of totality—such as how the 'urban process' works (see Graham & Marvin, 2001; Harvey, 1978)—is lost and 'The City' becomes a conceptual category. We are left to wonder whether there is something peculiar to *how city works* that favours or hinders the use of Wi-Fi networks for 'communities' of users and/or practice?

Methodologies and interdisciplinarity

Studying community-based media poses its own specific methodological challenges. Howard (2002) highlights these challenges as the problem posed by the concept of 'community' as a 'physically decentralized social network made up of individuals who form a community but are not members of the same formal organization'.

I come to study wireless communications from an urban ethnographic perspective where 'thick descriptions' (Geertz, 1973), both textual and visual, provide readers with the texture of place and the fine grain of social interactions that make accounts more convincing. My study concerns the particular, the specific, and the local, but sets these in the wider social landscape of gentrification of inner-city London. It encompasses many years of participation to 'Wireless Wednesday' training sessions, where both discussion about and practice of technology bring up the performativity of software and hardware (see Mackenzie, 2005), and the hosting of a OWN node from 2008 to 2011; a small range of recent interviews with developers and users; and many clues deriving from elicitation around photographs, 'obsolete' technologies, stickers, logos, hand-drawn charts, and maps. Although I was able to record only six semi-structured interviews with workshop goers, I noted on my research diary myriads of meaningful interactions, in the form of comments and jokes—something that hackers are always keen to perform (see Coleman, 2012).

Part of my enquiry consisted in going through the photographs in the SPC archive, the social and technical hub behind the development of OWN.² These maintain a peculiar place in my research methodology. Photographs contribute to make the social landscape under observation immediately available to readers (Knowles & Sweetman, 2004). In addition to their descriptive and evocative characteristics, photographs can be triangulated with other qualitative data. Whenever possible, I adopted photo-elicitation as interview strategy: this is a tech-

2 see <http://spc.org/described/bitSPACE/> and <http://bit.spc.org/>

niques that enriches meanings carried by photographs while reducing the authority of the researcher (Harper, 2002; Cardullo, 2011). For instance, I conducted photo-elicitation with James—the founder of OWN and a facilitator for a number of projects, workshops, hacks and installations—when we decided which of his photographs should be included in this study. This offered me a chance to expand on some of the stories behind the images, people, or places involved, as well as to talk about technical issues. Importantly, the set of photographs stimulated my sociological imagination and inspired this research.

The centrality of urban space to wireless networking can be grasped by looking at the photograph below and at the map of (what is currently left of) OWN.³ In the former, an aerial listens to a router which has access to the 'commercial Internet', at the bottom of the opposite tower: 'The shop at the corner [of Pepys tower block] is actually a community space, Coopepys.⁴ We used to have four routers on the Pepys Estate for many years', recalls James while looking at the photograph. In such an enclosed built environment, wireless wave is deeply constrained. Each resident of the surrounding flats as well as their visitors and passers-by are, however, potential owners or users of an evolving network. Each installation, connection, and support narrates a different story of trust, friendship, negotiation or betrayal. Of new relations and commitments. Of frustrated attempts and successful experiments. Of snowballing towards potential node owners or towards new vantage points to exploit.

Similarly, the Google-type map of OWN shows proximities and linking between different nodes. By clicking on the node icon, we can see the number of users connected to each of them. On the one hand, the flatness of this cartography makes OWN legible as data flow, for traffic and network analyses. It immediately renders visible the invisible of Wi-Fi connectivity. On the other hand, this aerial mapping erases urban entanglements of people, buildings and infrastructures, the opportunities and challenges offered by technology and urban environment.

These two images hopefully convey the sense in which 'the urban' re-arranges affordances of digital technologies. These are made and re-made in response to new problems, solutions, encounters and exchanges, which cities are always prone to offer. A daring question around OWN would then be around the impact that Deptford gentrification has on its functioning. My initial findings point to the fact that Deptford's changing social landscape is partly responsible to the development of OWN. I would argue that OWN became also an activist response to cultural displacement of working-class locals by more affluent newcomers. The social activity which goes alongside network promotion and maintenance generates a different con-

3 <http://own.spc.org/map/>

4 <https://coopepys.wordpress.com/>

nectivity made of very material, on the ground, and face-to-face encounters which had probably little to do with promises of ubiquitous wireless connection. This is what I show next, completing the 'Fall of Icarus' to the streets (de Certeau, 1984).

Icarus Descending



The panorama is taken at the bottom of Pepys tower block, in the reach of Coopepys node. In the middle of the image, a mural on the wall shows the outcome of a resident-led renovation project. It was mostly made by Pete Pope, a well-known Deptford resident and OWN participant. In another photograph from SPC archive, Pete is seen setting up an aerial in Deptford adventure playground. Pete was a 'regular' at the weekly workshops behind the development of OWN:

'Wireless Wednesday' is basically a kind of social technical club for people to go there and talk about technology, fix computers or mobile phones. It's an open space for people who use OWN to come down and discuss issues they have with it, or whatever really. (OWN owner)

'Wireless Wednesday' is a drop-in, open workshop which provides technical support to mesh users and providers. It soon became a meeting point and a social space for all sorts of small hacks, exchanges of ideas and, sometimes, improbable projects. People bring tea and biscuits and talk or practice technology, with a particular attachment to Free and Open Source solutions.

When Pete prematurely passed away, James organised his send-off. Being an expert of wireless connectivity, he paradoxically has daily face-to-face contacts with people located, by geography or interest, in the proximities of OWN. For the sad occasion, he managed to physically gather OWN owners and known users alike, as well as friends and community activists. The colourful and noisy procession of about 150 people started from OWN's node at The Birds Nest pub, on the Creekside. Accompanied by a variety of musical instruments, Pete walked once more the streets of Deptford, passing by the nodes on the Crossfield Estate and symbolically ending on the Ha' Penny Hatch Bridge. This little bridge on the Creek connects the densely populated Crossfield Estate in Deptford to Greenwich. It was built as part of the bid for the regeneration of Creekside, thanks to the initiative of local

activists including Pete. His ashes were scattered from the Creekside Discovery Centre reach, which also hosts a node, just before the Creek enters the Thames.⁵ People cheering on the bridge had again their backs turned to Thames riverside and its new luxury developments.

Pete had a peculiar attachment to these waters. In 2005, he dressed up as Lord Nelson to protest Convoys Opportunity's plan to turn the dismissed Convoys Wharf on Deptford reach into a cruise liner terminal with annexed luxury developments. His face now appears on the 'Wall of Ancestors', an art installation at the bottom of the Aragon Tower (or 'Z Apartments', as it is now called). In an interview realised for Deptford.tv, Pete declares: 'this so-called regeneration process has been grinding across Deptford for the last 20 years'.⁶

The story I chose to narrate speaks of OWN as being more than a gateway to the 'commercial Internet' or an anonymous connection between nodes. OWN is instead a lived experience at the heart of a changing urban space. It is deeply embedded into the everyday practices of local users. It mixes with other interests users might have, with places and spaces they might cross. OWN is part of their daily 'geography of gentrification' (Lees, 2000).

OWN has functioned for many years thanks to the dedication of few 'social hackers', but it is not officially maintained any more, since 'with so many people carrying Smart phones, Tablets and Laptops with 3 and 4G network access as standard, some of the passion for independent infrastructure building has fallen away' (James, lead developer). Individual owners however maintain a few nodes (the green icons on OWN map). The provision of nodes was regulated by a small one-off fee towards 'the box', the router loaded with the mesh protocol. OWN can be said of showing a sort of inertia, a machinic will to continue with its function of sharing bandwidth. In a sense, this is a reminder of an always emergent experience of being wireless.

Icarus on the ground

There was a really pretty girl that I wanted to meet but I never did. She was working in a green space in the middle of the Crossfield Estate. That is a connection which works from outside your house. You can be sitting in Deptford Park and pick up signals from an OWN node, for free obviously. (OWN owner)

⁵ <https://www.youtube.com/watch?v=iyVAT-7kp1o>

⁶ The video is available on this blog by Transpontine: <http://transpont.blogspot.co.uk/2012/05/pete-pope.html>.

This vignette, told almost as a joke, epitomises the paradox at the heart of mesh network in densely-packed urban environment. On the one hand, network users are anonymous because,

Anonymous free internet access, that is what we evolved into at the moment. Anonymous because there are no logs being kept or data. (James, founder of OWN)

Anyone who searches for open networks in the area can just connect straight away, strangers or not, and they just use the Internet.

Because it's a mesh and you have a lot of machines broadcasting, it is not really...intimate. (OWN owners)

OWN wireless technology is limited by, but also relayed through, multiple buildings, balconies, and rooftops. It matters to a multitude of users in geographical proximity who might have little or nothing in common. This relationship expands into nearby streets, forcibly within the range of wireless services the mesh provides: 'I told someone in the market once: you can get a bit of a free internet if you need it' (OWN owner). There is no communitarian ideal at the root of the mesh. The protocol registers MAC addresses only: these are identifiers for connecting devices with no hostname, location or route disclosed.⁷ No membership or registration is required. Anonymity makes 'community' a highly inoperative concept to explain urban life (see Nancy, 1991). Moreover, as Back argues, 'community is not simply an organic fact or a straightforward state of affairs... community is a moral project' (2009, pp. 3–4).

On the other hand, the relationship between node owners is much more complex. These are necessarily part of an entanglement of practice and learning which might determine encounters, ongoing support and negotiations:

5-6 years ago James brought 'the box', dug a hole in my bedroom, run cables to the roof. He made a bit of a mess [laugh] but it was all right.

We had rain water coming in once and 'the box' had to be changed. (OWN owners)

Design strategies, competences and resources are continuously negotiated within the group, in relation to affordances of technology, available resources, and users' understanding of the service provided:

There is no way to tell to users who other users are. It can be about file-sharing assuming you prepare users to do file-sharing. e.g. a music collection becomes

7 see https://en.wikipedia.org/wiki/MAC_address#Usage_in_hosts

available on demand, it is not a broadcast. That is the main difficulty: how to advertise the service, how you make that info available. (James, founder of OWN)

Technologies, which are 'black-boxed' and assimilated in our everyday practices, demand in fact induction and participation. This is where training and support become strategic, enabling a bond dictated by practice:

I think the proper social network is 'Wireless Wednesday'. Only when things break down or don't work, people want assistance. (OWN owner)

Workshop participants come around with all sort of weird enquiries, obsolete or new devices, and ideas for projects. Sometimes, they might need a refurbished laptop or a temporary PC for their daughter, swap a mobile phone or give an 'old' machine a new start. At other times, a cable is missing, a peripheral is (once again!) of a different standard, things break down or don't go according to plans. When I asked one my participants to describe what 'Wireless Wednesday' is about, he replied with an anecdote about a project parallel to OWN, facilitated by the same 'hackers':

A similar project was done by James and few others in an estate in Kingston [SW London], in 2007-2008. It was a huge estate. They found that very few people were taking up the free Internet, and you know why? No one could really afford a computer. Hardware was still quite expensive... They found a shop in the middle of the estate which was free, turned it into a club space, got a bunch of friendly geeks to do stuff and build computers, told people to come down and talk about their issues. (OWN owner).

Usually thought as automatic connectedness, wireless requires great efforts to function: 'from a sociological perspective what is remarkable is the sheer array of stuff, people and places involved in making and re-making Wi-Fi' (Jungnickel, 2014, p. 3). From years of participant observation of OWN and its 'Wireless Wednesday', I would argue that developers' relentless work supplied the missing services in the mesh. They provided links between technology and users, the 'social' within anonymised network:

It is like magic really, you still need wizards for magic to happen. You need guys that know what they are talking about to put things into place and then help people when things don't go according to plans. Because there is a whole bunch of people that take things for granted and don't really know. (OWN owner)

The profile just been sketched is that of the 'social hacker', a denomination I heard many times while mingling about SPC, bitspace, Deptford.tv, Wireless Wednesday, and other related projects. It points to people who are not strictly coders or software developers, the 'proper' hackers of mainstream literature. Their involvement with hardware and software is still central, but it is fed with other activities, which we might call 'social'. They are workshop facilita-

tors, problem solvers, friendly geeks, community activists, FOSS evangelists, event promoters, and all of these at once. Social hackers provides the 'magic' within the mesh. They re-enchant the technoscience of the everyday.

There is now a longstanding argument in social science that unpacks the workings, or rather the non-workings, of everyday technologies of connectedness. Ubiquitous digital devices, in particular wireless technologies, have proved to be prone to disruption and frustrated attempts. Despite the rhetoric of 'flow', which accompanied its introduction to mainstream technologies, wireless taken-for-granted-ness is now questioned in terms of its banal socio-technical implications (Mackenzie, 2011; Michael, 2006), in/visibility (Jungnickel, 2014), and the control it generates (Kitchin, 2011). But we can also imagine wireless digital technologies in terms of the general sense of virtualities they induce, embodied in the general experience of transitions and expectations of more things to come (Mackenzie, 2008).

How does this experience of 'transition'—a tension towards possible 'Others', whether places (Deptford Park), people (a girl on the green outside the estate) or even objects (the 'commercial Internet')—bridge with the sense of proximity and material involvement that OWN implies? This is also a tension between similarities and divergences, as in this account in relation to independent radios and Wi-Fi networks:

I was really interested in Internet radio stations in the late 90s. I was streaming comedy and presenting content around the area, SE London: places to go, or things to do...When you broadcast over the Internet, anyone who wants to tune in can listen, they can be in Moscow, or anywhere. That's the nature of the Internet. But then you are not in South East London, so it loses its context. The geographical context. Because if they are in Moscow, they won't know about South East London. So what I really wanted to do was to make a local radio station but using the mesh network. (OWN owner)

To my mind, this quote points to the sense of personal involvement with the local social scene; to direct communitarian action and DIY politics; to self-managed allotments and volunteering clean-up operations of the Creek; to estate-based festivals and art projects. It refers to the 'local' as the *locus* for direct involvement. Involuntarily, it carries over all the contradictions of the communitarian project, its spatialisation always in an unstable balance between forms of radical intervention and the parochial (Keith, 2005).

Concluding remarks

My first concluding remark is broadly theoretical. It concerns the injection of critical urbanism into studies of wireless networking. In this chapter, I have attempted to stitch back together

some of the socio-technical literature with work pertaining to ‘the right to the city’ (see Graham, 2001; Lefebvre, 1996). I have shown how OWN is both limited and amplified by the dense urban fabric in which it is set up, the latter being an important part of the 'context', as implied by SCOT scholarship. Deptford's built landscape is dramatically changing, as new blocks with more affluent residents appear to be a threat to both circulation of wireless signals and the communitarian 'stuff' that makes OWN what it has been. Densely packed and changing neighbourhoods of strangers further amplify potentialities and contradictions of wireless networks. In Deptford, anti-gentrification battles and DIY urbanism have brought these strangers together in many different circumstances. Some, against all the odds, have even become good friends.

The second conclusion I want to draw is that mesh networking goes beyond the sole technological deployment of newer devices and communication protocols. Social relations built on the ground are more difficult to dissipate—when for instance moving through a flat's hatch in order to get onto someone's roof. They are simply part of the experience of being part of OWN. According to OWN developers, the likely scenario of mesh networking is to evolve towards offline networks and ad-hoc services, such as on-demand file-sharing between peers. This would appear to be even more urgent with respect to both the advanced commodification of the Internet and the current trends towards all-knowing smart cities. In the age of mass surveillance (Bauman et al., 2014) and with the Internet becoming a network of filters and choke-points (Deibert, 2009, p. 324), newer software and hardware provisions are trying, more than ever, to respond to an increasing demand in privacy-aware means of wireless communications (see Darts, 2013). In a sense, within wireless reach of mesh network we have an *inversion* of the paradigm of Internet freedom. The latter is a tenet of the techno-euphoria conveyed by the Internet of things, of mundane devices already interlocked by places and global traffic in a wider matrix. Wireless mesh is instead a localised and closed network, potentially offering the freedom of tailored services outside the controlling gaze of the 'commercial Internet'.

But, as node owners make it clear in their accounts,

I think OWN is a shared resource and that's what makes it a little bit more interesting.

OWN is about local people who give a bit back to other local people. I have been here for 12 years ... there's not much money in the area, you know? (OWN owners)

A critical perspective on this mesh network thus brings us back to the paradoxes of active neighbourliness and anonymity, as well as to the way in which urban space is produced and

lived as a daily experience of gentrification. The chapter attempts to understand these issues with a trans-disciplinary approach which concurrently evokes production of urban space, hackers' intervention, and social construction of technology.

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