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## CHAPTER

Pioneers, subcultures and cooperatives: the grassroots augmentation of urban places

*Mark Gaved and Paul Mulholland*

### **Introduction**

Rather than bringing about the death of neighbourhood and driving the ‘great good place’ (Oldenburg 1989) from local café to online noticeboard, information communication technologies (ICTs) may augment and strengthen the sense of place felt by city dwellers. While some authors have relished the concept of a ‘city of bits’ (Mitchell 1996) and community without propinquity, ICTs may reduce the ‘friction of space’ but not the importance of place (Hampton 2004). ICTs may offer the opportunity for urban residents to reclaim rather than relinquish their neighbourhoods.

Since the 1990s, city planners, politicians and technological evangelists have envisaged and developed a wide range of digital city projects, seeking to revolutionise urban living through the deployment of ICTs. Proposals have frequently been couched in terms of technological progress and economic benefit, aiming to provide citizens with access to the new ‘information superhighways’ (National Information Infrastructure 1992) drawing people into the new, post-industrial ‘knowledge economy’. Often high budget and supported by national or international funding such as European Commission Framework Programmes, these initiatives have focussed on developing urban telecommunications

infrastructures, building web based information systems to engage citizens and undertaking computing initiatives to overcome the ‘digital divide’ (Ishida 2002; Tanabe, van den Besselaar et al. 2002; Aurigi 2006). Many projects have been influenced by the telecoms industry ‘conduit and device model’ (Lievrouw 2000), concentrating on the physical hardware needed to connect people, or the media industry influenced ‘broadcast model’, emphasising the development of systems capable of broadcasting content to consumers and informing citizens of civic information. While the internet is increasingly becoming accepted as a non-extraordinary part of our everyday lives, such projects have often struggled to engage citizens who in many cases feel alienated by external interventions that disrupt rather than enhance their lives (Warschauer 2002).

At the same time, grassroots activists have been appropriating ICTs, adapting them to enhance urban living and undertaking local initiatives that are often minimally funded and little reported. These explorations may be driven by a variety of motivations, such as perceived lack of access to resources, a wish to improve one’s own community or simply a desire to experiment. In this chapter we shall explore several such examples of grassroots appropriation of ICTs, exploring types of groups, their activities, and modus operandi.

### **Grassroots Appropriations of ICTs**

Sandvig (2003) argues that as a new technology emerges there is an opportunity for amateur action: with no established profession or legislation to control the unstable and as yet unframed innovation, any interested party has the opportunity to participate in its development. This brief, chaotic period allows for bold innovators and entrepreneurs to

shape new or disruptive technologies before larger, more organised financial and business interests step in (Hughes 1983). Such activity has been identified by academics across a wide range of scientific and technical domains, from electricity generation (Hughes 1983) through to telephone services (Fischer 1987) and radio (Sandvig 2003). Parallel ‘pro-am’ innovation may also occur alongside more commercial and large scale explorations of technologies (Leadbetter and Miller 2004). Working alongside a number of grassroots community based ICT initiatives, undertaking fieldwork drawing from ethnographical and participatory action research methodologies (Friere 1970; Hammersley and Atkinson 1983; Ritas 2003), we have identified this kind of innovative activity being undertaken from small groups of hackers rigging antennae for wireless transmissions on tower blocks, through to skateboarders recording and uploading their exploits in urban environments and community activists running data cables between houses over municipal telegraph poles. As town planners and politicians envisage the possibilities of technological interventions to enhance cities, individuals and groups within local communities are also appropriating communication technologies in their own vision of how these tools can to augment city living.

### **A Simple Taxonomy**

A broad range of grassroots ICT activism is taking place in urban environments, sometimes parallel to or preceding large scale policy lead ‘digital city’ projects. We arrange these broadly into three groupings: pioneers, subcultures, and cooperatives.

*Pioneers: Technology Experts Exploring New Possibilities*

‘Death to the communications monopolies! May ten thousand autonomous systems bloom!’<sup>1</sup>

We refer to the first group of grassroots initiatives as *Pioneers* - innovators and early adopters appropriating new networking technologies. Historically, new communications technologies have been appropriated by pioneering enthusiasts and innovators. Telephone provision began with thousands of small companies offering their own services (Fischer 1992), and radio was similarly dominated in its early days by amateur operators (Sandvig 2003). In the last ten years, the standardisation of wireless networking protocols and inexpensive hardware has led to pioneers creating city-wide alternative communications infrastructures, providing low cost or free internet access and connecting likeminded innovators.

Originally developed to provide connectivity to home and office environments, low powered wireless networking equipment operating on unlicensed radio frequencies grew rapidly in popularity when a standard set of operating protocols was agreed in 1997. Often referred to as ‘wifi’, the relatively inexpensive hardware and software tools offered businesses and individuals the ability to connect computing equipment in more flexible configurations and allow a limited amount of ‘roaming’ within the workplace. Data could be transferred at much higher speeds within the workplace network than across the internet, and at no cost to the organisation. This made wifi attractive to innovators who took it out of the office and reconfigured it to provide alternative telecommunications networks in densely populated areas.

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<sup>1</sup> Consume General FAQ retrieved from

<http://web.archive.org/web/20030207140645/consume.net/twiki/bin/view/Main/GeneralFAQ>

Across the world, groups such as Seattle Wireless, Ile Sans Fil (Montreal), and Berlin's Freifunk network have sprung up. Forming a loose global movement, they are nevertheless firmly grounded in their own cities; local instantiations of a global ideal. A common rhetoric describes the desire to set up decentralised, often free access networks that encourage the participation of local residents and they are often described as 'community networks' in contrast to the more commercial organisations that provide wireless access for profit (Verma and Beckman 2002). However they require a high level of technical expertise from participants; individuals must commit to maintaining their own connection and provide their own equipment, which requires time, learning and financial commitments.

Pioneer groups can tend towards 'social club(s) for technical elites' (Sandvig 2004), attracting members who wish to explore the limits of the technologies (Bina and Giaglis 2006b). Frequently there is a sense of playfulness or ludic investigation, engaging with the technologies as an autotelic activity (Csikszentmihalyi 1978; Steel 2004) and a willingness to explore interesting rather than commercially attractive avenues. Activists have run audio feeds from local bus stops live onto the internet, mused whether collaborating with graffiti artists might result in spray-on radio antennae that could extend the reach of their networks, and equipped roller skaters with wifi connected video lunchboxes for interviewing local residents. Wireless networking is firmly grounded within locality and engages directly with the physical environment. Connections need to be line of sight, and the legally permitted power levels of transmission limit the effective range of signals to a few hundred metres

unless supported by expensive equipment. Hard surfaces may reflect radio signals, offering unexpected reception, tall buildings may block signals between apparently close neighbours, and the physical siting of radio antenna requires direct interaction with the substance of the city. Neighbours in high apartments or strategically placed properties overlooking further points of connection are particularly treasured and physical rigging skills are as valued as software or hardware expertise.

*Case Study: Consume*            In the mid 1990s, a group of artists and electronics enthusiasts in London set up an internet connection into and around their workspace as a community resource. This 512kb connection, rented from the national telecommunications provider (BT) cost the group £40,000 per year. To connect another building 5 metres across the street, BT insisted on a second similarly priced connection. To save money, two of the members of the group, Julian Priest and James Stevens, purchased wireless networking equipment and set up a wireless link, forming the Consume wireless network. Neighbouring individuals and groups were invited to buy their own equipment and join the network, and gradually the network blossomed to over a hundred users, able to collaborate and share data at no transmission cost, and connecting to the wider internet. Consume began to offer workshops on antenna building and software configuration to help more people to participate and at a lower cost. Wireless access points run by members offered connections to their neighbours' wireless equipment forming a mesh of transmitters across the local area. At its height, the group was running nine mailing lists, holding regular meetings, acting as a wholesaler of equipment (negotiating favourable equipment prices for members through bulk purchasing), and had set up a web based portal (NodeDB) enabling

individuals to register themselves as a ‘node’ on this alternative networking infrastructure, and increasing its coverage. Consume inspired local offshoots in different localities across the UK, and the key members participated in international collaborations with other well known groups, promoting the ideals of grassroots networkers taking over from the major telecommunications providers through their self-provisioning: Consuming the Net. After several years, the group fragmented and individuals moved on to different activities, however the objective as noted by one of the founders ‘to play and set the agenda’ had been successfully achieved.

### *Subcultures*

‘Beneath the pavement, the beach!’ (May 1968 Paris slogan<sup>2</sup>)

The second group of community activists we identify as *Subcultures* - early adopters focussed on a specific interest, based within a particular locality and utilising ICTs to enhance their activities. For these groups, the availability of ICTs has either enabled a practice not previously achievable, or enhanced the practice by improving communication, knowledge management, or community memory. The key actors in such groups may be domain experts who have developed ICT expertise, or technology experts who have taken an interest in the domain and work in collaboration with domain experts. Subculture participants appear to be motivated to use ICTs to better engage with their interests ‘as a means to attain some separable outcome’ (Bina and Giaglis 2006a) such as a platform to enable a community to share local information, or the creation of a high speed network to

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2 “Sous les pavés, la plage!” [http://www.infoshop.org/wiki/index.php/May\\_1968](http://www.infoshop.org/wiki/index.php/May_1968)

exchange work in an artistic quarter of a city. We have found a variety of subcultures using ICTs to enhance their practice and share resources within urban areas, and we consider three particular groups: electronic artists, cartographers, and skateboarders.

*Case study: Electronic artists - East End Net*      One of the longest running wireless network in London is East End Net. However while it may have many similarities to the Pioneers, East End Net is distinctive because of the high number of electronic artists using the network to enhance their practice. The initiative covers a limited area in East London, including two former industrial buildings that are now multi-tenancy live-work apartments occupied by artists. Wireless connections provide the backbone of the network, with Ethernet cables run between individual apartments in the larger buildings, connecting neighbours to each other and out to the wider internet. This model of local wired 'islands' connected by a wider wireless network is somewhat analogous to large scale commercial metropolitan wide area networks.

Whereas the participants within the Pioneer networks are using the networks to explore networking technologies (as well as self-provisioning their access to the internet and each other), here we find artists using the network to enable and enhance their professional practice. Through access to a high speed, local network, the artists are able to share work, exchange resources, and communicate upcoming local events to each other. One active group within the network, [ambienttv.net](http://ambienttv.net), occupies an apartment in one of the former industrial blocks, and creates electronic art including gallery video installations, online streaming videocasts, and sound and music pieces. In constructing the works,

individual members of the collective will develop, edit, and re-draft work, moving it between computers within the network and out to other art studios. Finished works may be put online, and in some cases presented at parties at the studio apartment, sometimes performed and re-mixed live while the party itself may be streamed live over the network.

These artists have created a hybrid virtual/physical quartier through their use of ICTs; their community is in part defined and bound together as much by the cables snaking over their shared warehouses and wireless signals bounced between studios as their meeting in local cafes and shared performances in industrial properties. In a similar manner to their physical performances and spheres of engagement within the city, so the virtual layer is limited by its capacity to negotiate the physical environment. The implementation of ICT by this group has created a network within a private space, grounded in the locality, occasionally leaking out to passers by and fellow residents within the neighbourhood.

*Case Study: Community Cartographers - OpenStreetMaps* Our second ‘subculture’ is the OpenStreetMaps community, a mixture of technology innovators and cartographic experts mapping their own localities. Drawing from the philosophy of the open source movement, a group of cartographers and technologists are creating their own maps, using ICTs: ‘(t)he project was started because most maps you think of as free actually have legal or technical restrictions on their use, holding back people from using them in creative, productive or unexpected ways’<sup>3</sup>. In the UK, published maps are subject to strict copyright laws and the national standard maps produced by the Ordnance Survey are strictly protected with re-use and repurposing very restricted.

With the advent of relatively cheap handheld GPS (Geographical Positioning System) devices and open source mapping software being developed to interpret data collected by these tools it is now possible for community activists to create their own highly accurate maps of their local areas, adding in elements that they are interested in, and uploading to the web for free public access. The OpenStreetMaps participants travel around their locality, walking, cycling, or driving the area street by street, gathering raw geographical data via handheld GPS units. The data is uploaded to computers and run through open source software packages such as JOSM<sup>4</sup> to produce simple traces of where the participants have travelled, adding to existing traces drawn down from a central database. These traces can then be manipulated in an image processing package like OSMRender<sup>5</sup> to produce

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3 <http://wiki.openstreetmap.org>

4 <http://josm.eigenheimstrasse.de/>

5 <http://svn.openstreetmap.org/utils/osmarender/>

maps suitable for display on the web or for printing. The maps are made available as they are created on the community website<sup>6</sup>, which acts as a portal for mapping groups internationally. Directly interacting with their physical locality, these map-makers seek to reclaim the geographical knowledge of their local environment for the residents themselves, allowing local people to map and define their own space, rather than being dependent on external professional bodies that reserve rights when manipulating the data and controlling its reuse. Whereas the electronic artists of East End Net could be described as creating a private hybrid physical/virtual space, the cartographers of OpenStreetMaps might be considered to be generating a public, alternative articulation of their neighbourhood space.

*Case Study: Skateboarders, Knowhere and YouTube*      Our final example of a ‘subculture’ is the community of skateboarders. It could be said that the skateboarders interact more directly with their urban environment than any of the other groups so far described, often appropriating physical spaces in direct conflict with authorities (the slogan ‘Skateboarding is not a crime!’ is a popular sticker found attached to skateboards). As Borden notes:

‘Skaters produce an overtly political space, a pleasure ground carved out of the city as a kind of continuous reaffirmation of the notion that beneath the pavement, lies the beach.’ (Borden 1996)

Skaters are also a subculture in the sociological sense of the word – a specific demographic (young people) with their own particular culture, rituals, and dress. While

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<sup>6</sup> <http://wiki.openstreetmap.org/>

there is only a loose sense of organisation, a community formed around a shared interest, there is nevertheless the desire to share knowledge and build community memory. The development of the internet as a public content creation and distribution tool has allowed this community to share resources more effectively: filming feats of expertise for posterity, to advise other skaters of good or bad places to skate, and to promote local events or political issues (e.g. authorities' responses to skating in certain areas, or the development or destruction of favourite skating locations). The skate community like other youth subcultures has a strong tradition of underground zines (small circulation, low budget fan magazines) and a number of high quality commercial magazines, and the internet has allowed individuals to publish their own thoughts and communicate with others in their community in a more decentralised fashion. Skateboarding shops and favoured skating locations allow for informal exchanges of knowledge at a face to face level, but the internet, combined with hand held video cameras, has allowed for more permanent storage of community memories and exchange of local knowledge and feats of skill at a global level.

In the UK, one of the first websites to consciously grow from the skating community was Knowhere, which 'started out as a list of places to skateboard in the UK. It is a compilation of (unedited) information and views supplied by users like yourself.'<sup>7</sup> The guide is divided by geographical area, and broad categories of interest, originally just for skating but now a broader range of street cultural activities, and requests user input through web forms, which allow individuals to upload their own recommendations and discuss or argue their opinions. The spread of easy to access discussion boards across the web means

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7 <http://knowhere.co.uk/skindex.html>

that now there are a large number of similar resources, though like many other territories occupied by youth cultures they are often used and discarded as short term temporary spaces. As social spaces for young people, they offer what Bey describes as Temporary Autonomous Zones or 'TAZ' (Bey 1991); temporary spaces that elude formal structures of control. This echoes Borden's declaration that 'skateboarders are part of a long process in the history of cities: a fight by the unempowered and disenfranchised for a distinctive social space of their own' (Borden 1996). The internet offers opportunities for skaters to create a hybrid physical/virtual TAZ, beyond the control of others, yet able to be discarded when no longer useful. Like the wireless networking pioneers, the skateboarders do not need to consider long term sustainability of their community, but operate in a more fluid temporal space. The internet does however offer a means of capturing their activities and giving permanence to their actions through online publishing sites such as YouTube and MySpace. Combined with the increasing availability of video cameras and video enabled mobile phones, skateboarders are recording their activities, specifically setting up shots of their best moves to record for posterity and distribute to a global audience. A search on YouTube reveals over 101,000 entries tagged 'skateboard' and evidence that mobile multimedia increasingly allows youth subcultures to 'document, edit, and upload their lives' with the hand held self produced images offering credibility and authenticity, and 're-territorialising' experiences and communication (Hjorth 2006). Skateboarders can be seen to be utilising ICTs in urban spaces as a means of creating an alternative articulation of a public space.

### *Cooperatives*

‘...the very fact that the project is not dependent on external money means there is nothing to run out of!’<sup>8</sup>

We call our third group within our taxonomy *Cooperatives*: local residents and technology enthusiasts working alongside residential groups such as housing or neighbourhood associations to provide shared low cost internet access and intranet services within clearly defined neighbourhoods, using ICTs to support community activities and residents’ own objectives. They engage a broad spectrum of participants and seek to reach the whole population of their defined locality, often achieving near-ubiquitous coverage within their defined neighbourhood, using ICTs to support local social interactions. While some authors despair that neighbourhoods are no longer so important in peoples’ lives, with less communal activities undertaken (Putnam 2000) and theorise a move from local socialisation in urban areas towards ‘glocalization’ or networked individualism (Wellman 2002), Cooperatives are an example of grassroots activism proving the contrary, that place is still important for people (Hampton 2004), and that ICTs can enhance rather than reduce the opportunities for residents to communicate with one another (Foth 2004). The motivation for such groups is to support a broad demographic in a defined area, enabling people to better undertake their activities when given access to an ICT infrastructure. In many cases these Cooperatives have been driven by lack of appropriate commercial provision: following earlier technological developments such as the telephone, previously marginalised groups are usually the last to be offered access to new innovations (Fischer 1992). Lead members of Cooperatives seek to engage as many residents within a defined

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<sup>8</sup> Redbricks Online in conversation with Will Davies:

<http://www.theworkfoundation.com/Assets/PDFs/proxicomcommunication.pdf>

area as possible, and are willing to support those who are not technically able to support their own connection. While the Pioneer groups are highly decentralised, Cooperatives tend to be highly centralised, with a small number of experts supporting a wider demographic.

Cooperative groups are very much defined by their locality, and their ICT usage reflects the needs of the community and the affordances of the environment. Cooperative groups will be more likely to use whatever technology is available to them to achieve their goal of networked neighbourhoods, rather than seeking cutting edge solutions, and work with the environment to achieve this goal, whether it is running computer cabling across rooftops, using the highest properties to mount antennae, or appropriating existing telegraph poles to run their own cables between streets. The Cooperatives we have identified have highly centralised structures, often a small number of technology experts from within the community working alongside community activists to set up and maintain the network infrastructure. Users of the networks are more like subscribers of a commercial internet service provider, though they have often made a conscious decision to support their neighbourhood initiative, seeing it as more responsive to local needs, more understanding of the local situation and more accountable. Generally running at very low budgets with little or no outside support, the Cooperatives operate from the subscriptions raised and in some cases 'sweat equity' offered by members. They offer shared internet access at low cost, but place great emphasis on the provision of local intranet services; mailing lists, discussion boards, file sharing servers and the like, seeking to provide tools that can enable local social interactions, build local knowledge repositories and support community memories. The groups do not seek to replace social interaction between neighbours, but

offer means of enhancing these through the affordances provided by ICTs. We have found members to be pragmatic in their usage of these services, utilising the networks as means of improving local communications (e.g. for sharing photographs with a large number of neighbours) but maintaining their existing communication channels, such as walking round to their neighbours for casual conversations.

*Case Study: Digcoop, London*      Digcoop is a community network initiative based in a housing association in London. At the time of formation (2001), broadband internet connections still required a significant expenditure and degree of technical expertise to set up. The Cooperative grew from a highly active neighbourhood that had previously set up their own housing association and purchased and renovated 29 Victorian properties in two adjacent streets. A group of the residents decided to create a shared network to provide low cost internet to members of the housing association, and to build a server that would act as a management tool to help run the neighbourhood and as a community asset enabling the sharing of resources and documents amongst the residents. The team offered their work as ‘sweat equity’; regeneration of the locality through voluntary work rather than external loans or grants.

Each house in the housing association has since been connected to a central server, originally linked by cables run across roofs and gardens but now with a hybrid of both wired and wireless links, using equipment loaned from a nearby networking group. A content management system was set up on a recycled PC in order to store minutes from committee meetings, host a noticeboard informing residents of local activities, and run a

neighbourhood discussion board. Residents were asked to help with the basic manual tasks such as running data cables to their own properties, and charged a low monthly subscription. Most of the work is carried out by a small group of the residents who are technological enthusiasts, with the help of one resident managing the accounts. The team provides informal training, troubleshooting when problems arise. Support is offered on an ad hoc basis when requested, for example connecting webcams or setting up anti-virus programs. Rather than phoning a call centre in the USA or India for technical support, residents pop round to their neighbours, or resolve problems over a pint in the pub at the end of the road, the unofficial 'support centre' for the Cooperative.

The Cooperative has become an integral part of the housing association infrastructure, with work, learning, socialisation and communication taking place over its network. Its presence has affected the internal layout of properties, with the domestic PC, formerly partitioned in spare bedrooms as the home office device, migrating into the living room, and becoming the home entertainment centre, providing radio, music and video. Take up of intranet services within this Cooperative, however, has been slow, echoing Wright's findings in an Australian neighbourhood intranet (Wright 2005), and maybe for similar reasons. While used well for specific tasks, such as uploading minutes of housing association meetings, and providing a central knowledge repository for the technical team themselves to hold information, it has yet to be adopted by the broader range of subscribers. It may be that such services have not yet been "domesticated" (Ward 2003) and accepted as an aspect of the residents' everyday life, or may be seen as otherwise alien or irrelevant (Arnold, Gibbs et al. 2003). The one instance where it became heavily used was when the

local council proposed the construction of a large tower block opposite to the street. At this point, residents began to post copies of the letters that they'd sent to the council on the discussion board, using the board as a place to keep others updated of the latest council proposals, and a passionate debate flourished. Interviews carried out with subscribers to the network (Gaved and Mulholland 2005) suggest that users are pragmatic in their choice of media tools when communicating with their neighbours, using them as part of a broader 'ecology of communication' (Altheide 1994). Only when a crisis occurred within the community did the affordances of intranet make it more useful than those offered by existing communication media.

## **Discussion**

In conclusion, we see a wide range of grassroots activism, with urban residents appropriating ICTs to augment their experiences of the physical city. Whether hackers exploring the possibilities of new technologies, subcultural groups enhancing their own practices through the use of ICTs, or local neighbourhoods supporting social interactions and the sense of community, networked technologies are being used to augment city living. Developed in response to residents' own goals and needs, they may be more enduring than external projects imposed upon the communities: as one community activist noted, the very factor that they have had no outside funding means there is none to run out of (Davies 2004). Alongside policy led and exogenous interventions into communities that offer grand visions of digital cities, local residents are undertaking parallel innovations, augmenting the city with their own visions and actions. Their goals may be different from those of the larger scale schemes: cooperative groups may aim to permanently enhance the

communications infrastructure of their neighbourhood, members of pioneer groups may engage in playful exploration and seek to set a broader agenda than offered by the dominant commercial model, and members of subcultures might offer alternative articulation of public and private space through their engagement with their practice through the use of ICTs.

We have identified a range of activists and see three broad groupings: Pioneers, Subcultures, and Cooperatives.

- Pioneers are explorers, investigating the cutting edge of new technologies. Often motivated by a desire to play and to set a broader agenda, they represent a technological elite who may move onto the next innovation as it emerges.
- Subcultures represent a specific demographic within a locality drawn together by a shared interest defined by geographical area and moderated through technology. Membership, like with the pioneer groups, can be highly fluid.
- Cooperatives tend to be highly centralised and emphasise service to a broader community. They have a high commitment to long term sustainability, and geographically narrow but demographically wide membership. They strongly identify with a specific locality and are highly embedded within it.

These groups can be further understood by examining their key characteristics (see Figure 1).

[insert Figure 1 here – portrait]

Drawn from local communities these activists may be more likely to develop a more meaningful, fully engaging augmentation of the city than exogenous projects due to their grounding within the local population, responding to specific needs and desires. These grassroots activists may be able to utilise networked technologies to enhance physical spaces and create hybrid ‘great good places’ of the future, offering local residents the opportunity to define their own agendas and rules of engagement with new technologies and new ways of envisaging the urban environment. We would expect this to increase in the future as technologies become more commonplace, affordable and mobile; while the case studies we have presented have been mainly focussed on personal computer based artefacts, increasingly citizens’ engagement with technologies is more pervasive and ambient: through mobile phones, entertainment devices and other artefacts increasingly embedded to the point at which they are not perceived as technology per se.

As predominantly volunteer run collectives, the grassroots digital activists in these pioneer, subculture and cooperative groups may not have the broader impact of high budget city or even national level projects, however through their rapid appropriation and innovation of new technologies they may provide exciting and unexpected outcomes and are likely to contribute to and influence the wider discourse.

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