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The potential of user-generated cartography: a case study of the OpenStreetMap project and Mapchester mapping party

Chris Perkins and Martin Dodge

Geography, School of Environment and Development,
The University of Manchester

Email: c.perkins@manchester.ac.uk
Email: m.dodge@manchester.ac.uk

Abstract

Collaborative approaches based upon volunteered input into shared Internet-based resources are beginning to offer a radical and new alterative to more traditional mapping. This paper explores the potential of one of the most developed of these 'open' maps, in a case study of the OpenStreetMap project and of the practices deployed during a 'mapping party' in Manchester. The successes and weaknesses of the Mapchester weekend are discussed and it is concluded that the democratising and social potential of the new medium is already being realised.

Keywords

Open mapping. Manchester. OpenStreetMap. Mapping parties. User-generated cartography.

Introduction

Understanding the changing practices through which digital information is produced, distributed and used is an important debate in many areas of the information society. The impact of the Internet and a range of online social networking technologies has meant that, for first time in history, it is possible to bring together very large distributed groups of people, at very low cost, to co-operatively author information in direct competition with established organisations. The implications of mobilising this kind of volunteer effort in widespread user-generated production has excited much interest in business circles, in government and policy think tanks and in academia (Tapscott and Williams, 2006). An open-source ethos is significant economically, politically and intellectually because it challenges important sources of social power in labour relations, in governments' ability to regulate authorship and in corporate sources of profit (Benkler, 2007). The most well known example of 'open-source' user-generated production is the free encyclopaedia *Wikipedia*, which has recently attracted attention because of debate over its quality in comparison with existing proprietary sources such as *Encyclopaedia Britannica* (Giles, 2005), and because of fear over possible competitive impacts of 'amateur-isation' on more conventionally produced information sources (Carr, 2005).

This article charts one response to these changed times. It reflects upon the significance of OpenStreetmap as one of the more important examples of DIY, user-generated mapping, with a case study of the 'Mapchester' mapping party held in May 2006, as an example of how people can get involved in sharing a citizen-led open mapping process. It also comments on the possible implications of such a peoples' mapping.

The tensions of official mapping

Throughout most of the history of cartography maps have been used by elite groups, to control and administer people and places (Pickles, 2004). Maps have reinforced property rights, underpinned military operations, and spatialised power: small wonder that mapping has been theorised as a form of power-knowledge (Harley, 1989). Government mapping institutions were established to carry out mapping tasks that the state deemed necessary, such as topographic mapping for the military, cadastral surveys to document legal property titles, and land-use maps to calculate national agricultural capacity (Kain and Baigant, 1992). The maps produced by these institutions are invested with a particular authority; their power is legitimised through devices such as legal copyright, pricing policies, and educational systems which train citizens to use and value these maps.

In the UK official mapping data are subject to careful protection of intellectual property rights (Barr, 2001). The business of official mapping in the UK amounted to £79–£136 billion worth of gross value added to the UK economy in 1996, underpinning in excess of £200 billion of GDP by 2004 (OXERA, 1999; Lawrence, 2007), in the main through the use of Ordnance Survey (OS) products and services by key sectors in the economy, notably utilities, local government and the transport sector. This value is protected by data licensing, and those who employ official map sources in their own mapping are regulated by OS who carefully police royalty payments.[1]

There are tensions between what people want, and how state institutions attempt to regulate access to this information (cf. Mayo and Steinberg, 2007). Individuals in modern societies have until recently only rarely created maps; they have been dependent on maps created by professional cartographers. Larger scale official mapping and databases have also tended to be used by specialist elites. The market mechanism dictates that rural areas are much less up-to-date than fast changing urban areas, a disparity likely to be exacerbated with the end of the National Interest Mapping Services Agreement (DCLG, 2006); official mapping may also be very dated in certain areas.[2]

Moreover, until recently people have had very little direct say in what appeared on a map, and the state used the market to recoup what it could. Voluntary organisations in the UK often complained that they could not afford official mapping (Mayo and Steinberg, 2007). Community groups in the UK were disadvantaged if they wanted to map their own area. Very few of the community maps discussed by Perkins (2007) based their work on Ordnance Survey mapping and many groups in society still lack the resource to be able to access these data. The lack of community-led and owned GIS in the UK reflects these cost-recovery policies and the status of Ordnance Survey exploiting its monopoly and market position to maximise revenue (Office of Fair Trading, 2006), a significant contrast to the situation in the USA, where moves towards participatory mapping have benefited strongly from the availability, at minimal cost to the consumer, of officially-produced public-domain federal spatial data and where a substantial private sector industry has developed adding value to data, increasingly available over the web.

Meanwhile citizens employ mapping as part of their everyday lives, to navigate from 'a to b', to locate places, to establish relationships between different things in different places, to inform, persuade, or protest (Perkins, 2006). Despite the bureaucratisation of mapmaking and cartography all human beings *can* map: people have natural mapping abilities (Blaut *et al*, 2003) and in response to technological and social change in the last twenty-five years it is widely recognised that cartography has increasingly been democratized (Rood *et al*, 2001). This democratisation has been strongly boasted since 2005 by a revolution, in which the social networking potential of Web 2.0[3] is encouraging the development of what might be termed 'neogeography' (Turner, 2006). Volunteers are making their own maps using internet-based mapping tools and new collaborative methodologies, which enable new voices to be mapped out (Goodchild, 2007; Sui, 2008).

There is also a growing pressure in the UK to free-up government data, with active campaign groups highlighting the implications of aggressive cost recovery policies amongst monopoly suppliers (Free Our Data, 2007). They argue that a government owned monopoly should not have to charge citizens market rates to access data that have been collected in the past using public money. The market mechanism at present encourages groups to re-map, so as to avoid paying for OS data: it may be more cost effective to free up data and avoid unnecessary duplication of effort (Mayo and Steinberg, 2007).

People in theory now have the tools to create their own maps, and express their own mapping skills. We no longer have to rely upon the state. Democratized mapping offers new possibilities for articulating different social, economic, political or aesthetic claims. Formerly marginalized groups can gain a voice. Data are increasingly available, accessible and flexible: sources apart from official Ordnance Survey data become usable. Affordable computing power, mass-market satnav and GPS, and broadband internet all access facilitate the collection and sharing of geospatial information. Software tools allow people to make their own maps, using GIS and desktop mapping systems. The web

1. The most prominent and publicised example of this policing is the legal action brought by the OS against the Automobile Association for seeking to evade royalty payments due for using its mapping. In 2001 Centrica agreed to an out-of-court settlement of £20 million payable to the Ordnance Survey over two years to cover backdated royalty fees unpaid by the AA.
2. OS itself recognised this issue in 2007 when it proposed changes to the cyclical revision policy in rural areas (see http://www.ordnancesurvey.co.uk/oswebsite/business/sectors/government/local/news/2007/09/rural-mapping.html).
3. Web 2.0 encompases web technologies that facilitate user-created and shared web content and greater interactivity, including wikis, tagging, blogs, podcasts, RSS feeds, and social networking sites.

encourages collaborative participation and cost-effective dissemination. And the social context has shifted. The old binary of deference towards authority, or its outright rejection, has been replaced by more local struggles around particular issues; it has been argued that identity politics has increasingly replaced class politics (Hardt and Negri, 2000). So multiple views of the ways forward now compete for public view; the single authoritative state-mediated map has been replaced by competing possibilities.

The OpenStreetMap (OSM) project

> 'So many things we do are so fleeting and ephemeral; often the challenge is to find something of durable persistence; something that can be an anchor for other projects…. [Openstreetmap] is clearly the first oscillation of the seismograph .... In some ways this project is more vital than Wikipedia because it connects to our physicality in a much more intimate way. It is not about the abstract space but about connecting the web back to real space.'
>
> *Anselm Hook, 13 April, 2006 posting to the Geowanking mailing list*

Technological advances in the last five years have led to initiatives that aim to build collaborative, community-led alternatives to commodified map data. Many of these initiatives have exploited high resolution satellite data and mapping from portals such as Google Maps or Google Earth (see Geller, 2007; Goodchild, 2008; Erle and Gibson, 2006). These hacks and mash-ups employ Application Programming Interface (API) code in order to overlay a variety of data to Google, Yahoo, or Microsoft-served map or image backgrounds. 'Slippy map' interfaces are now standard, with dynamic panning and zooming on to data. Late in 2007 Ordnance Survey itself released its API code for non-commercial use, allowing markers, lines and polygons to be placed on top of a range of OS raster products,[4] but the continuing culture of British official secrecy and cost recovery somewhat limits the utility of this new initiative. Also all of these mash-ups depend upon the *commercial* provision of base map and image data. Google or Ordnance Survey can remove their service at any time and control image content (see also Harvey, 2007).

More completely Open Source alternatives, are however being created to offer fully sharable data. Here the model is to make and share our own mapping rather than simply adding our data to a map that someone else owns. OpenStreetMap (OSM), founded in July 2004 by Steve Coast is probably the most developed initiative in this context. It is currently transforming itself into 'an international non-profit organisation dedicated to encouraging the growth, development and distribution of free geospatial data and to providing geospatial data for anybody to use and share' (www.openstreetmap.org).

OpenStreetMap explicitly seeks to create a 'free' alternative map, subject to use under Creative Commons Attribution Share Alike licensing. This allows users to share, copy, transmit, or adapt their work, subject to the conditions that they must attribute the material, and must in turn distribute any product based on OSM under the same terms as the original licence. The mapping is served in a 'wiki' environment, where any user is able to input new material and modify the data of others. The enterprise is decentralized and strongly collaborative. Any user can amend any part of the map and the process of map creation explicitly relies upon sharing and participation.

Making a map in OpenStreetMap comprises five stages (see Figure 1). Users have to register to participate in this process. Data are collected from diverse public domain sources. Probably the most important are GPS tracklogs, collected by volunteers with standard GPS receivers. Local knowledge is important for recording street and feature names, but public domain sources are also used, such as out of copyright OS mapping, free and donated satellite imagery and U.S. TIGER data. The ethic is strongly to oppose any non-public-domain sourcing of material that ends up in the database.

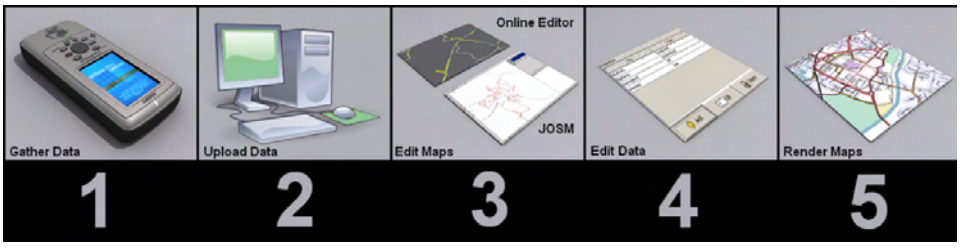

Figure 1: The five steps towards making a map in OSM.
(Source http://wiki.openstreetmap.org/index.php/Beginners%27_Guide)

4. See http://openspace.ordnancesurvey.co.uk/openspace/index.html

The second stage is for data to be imported as a .gpx file to the OSM database. Editing tools then allow GPS tracks to be converted into ways, using either online editors, or by downloading and running a stand-alone editor.[5] Features associated with line-work may then be to be tagged in the database and points-of-interest and areas added to the map. The final stage is the creation of properly rendered mapping from SVG formatted data. By 2008 two public rendering engines were operating, generating different graphic display styles: Osmarender and Mapnik. All of these tasks are well supported by help web-pages and active user discussion on mailing lists.

The OpenStreetMap wiki facilitates access to collaboratively collected map data. The mapping community has constantly improved the interface since the project started. It is currently structured around the interface shown in Figure 2, with eight main navigation categories at the top level: these support access to the main page, to the map itself, mapping projects, map features, to help facilities, a blog, shop and donation pages. Four wiki tabs to allow access to articles, discussion, editing, or documenting the history of how a page has changed. Pages are increasingly being written in languages other than English: in February 2008 23 language versions appeared in the Wiki describing the project. The main page also includes an event calendar, a focused image of the week, and key information about getting involved, including guides for beginners, more experienced map makers and developers, an FAQ page, background information for the media and a toolbox of practical links.

Users are strongly encouraged to access the Map window, which displays either viewing, editing or GPS traces. The wider public web audience can zoom and pan around the viewed map, without registering for the service, employing a 'slippy' map developed from November 2006 (see Figure 3). A key may be turned on or off, maps may be displayed with the default Mapnik style, or a Osmarender button may be selected to turn on a different style.

OpenStreetMap is growing at an exponential rate; Table 1 shows statistics relating to users, uploaded points, nodes, ways and relations at the end of January 2008. Registered users are doubling every 5 months. On the 2nd February 2008 around 160 different public GPS traces were uploaded, with coverage ranging from residential roads in Bangalore to Exeter; global coverage is the long-term aim. Early development of the project had a largely British focus, but European hot spots are developing fast as well.[6] Ambitious wiki project goals have been set, at different spatial scales, and reflecting different geometries. The UK Community portal on the site for example details urban and linear progress targets; the motorway network is complete, there is good coverage of London, and every road has been captured on the Isle of Wight. Other exemplary early coverage focused on Cambridge and Sutton Coldfield, due is large part to dedicated effort of single individuals. It is likely that UK coverage of the main road network will approach completion in 2008. On the other hand many rural areas were still largely empty at the start of the year. It is the editing of ways, insuring topology of links and attributing of data that lags furthest behind.

Table 1: The State of OSM in February 2008.

Number of users	23,439
Number of uploaded GPS points	203,419,417
Number of nodes	221,879,369
Number of ways	18,150,108
Number of relations	4,241

(Source http://www.openstreetmap.org/stats/data_stats.html)

Functionality of the system is evolving all the time. Data can now be exported as SVG graphics for rendering into properly designed maps, or output back to a Garmin GPS, and displayed on mobile devices. Real commercial users are employing OpenStreetMap data, for example the property search website Nestoria.co.uk uses OSM data for the Isle of Wight and maintains a mirror OSM-based site with complete national OSM coverage. The commercial GIS vendor Cadcorp can now import OSM formatted mapping into its software. The inclusion of Yahoo-sourced imagery in the OSM toolbox is facilitating the capture of more exotic coverage.[7] Multimap also supports the development of the project. These commercial tie-ins suggest an ongoing and healthy project.

5. In February 2008 the JOSM editor allowed offline map making and Potlatch supported online editing.
6. An animation at http://wiki.openstreetmap.org/index.php/Image:Historical_Coverage_Europe.gif charts the development of OSM coverage of Europe
7. A post on the OSM blog in February 2007 describes capturing Baghdad streets on OSM from this source. OpenStreetMap now offers the most comprehensive coverage of the city in any of the web mapping services, albeit so far without street names (http://www.opengeodata.org/?p=167)

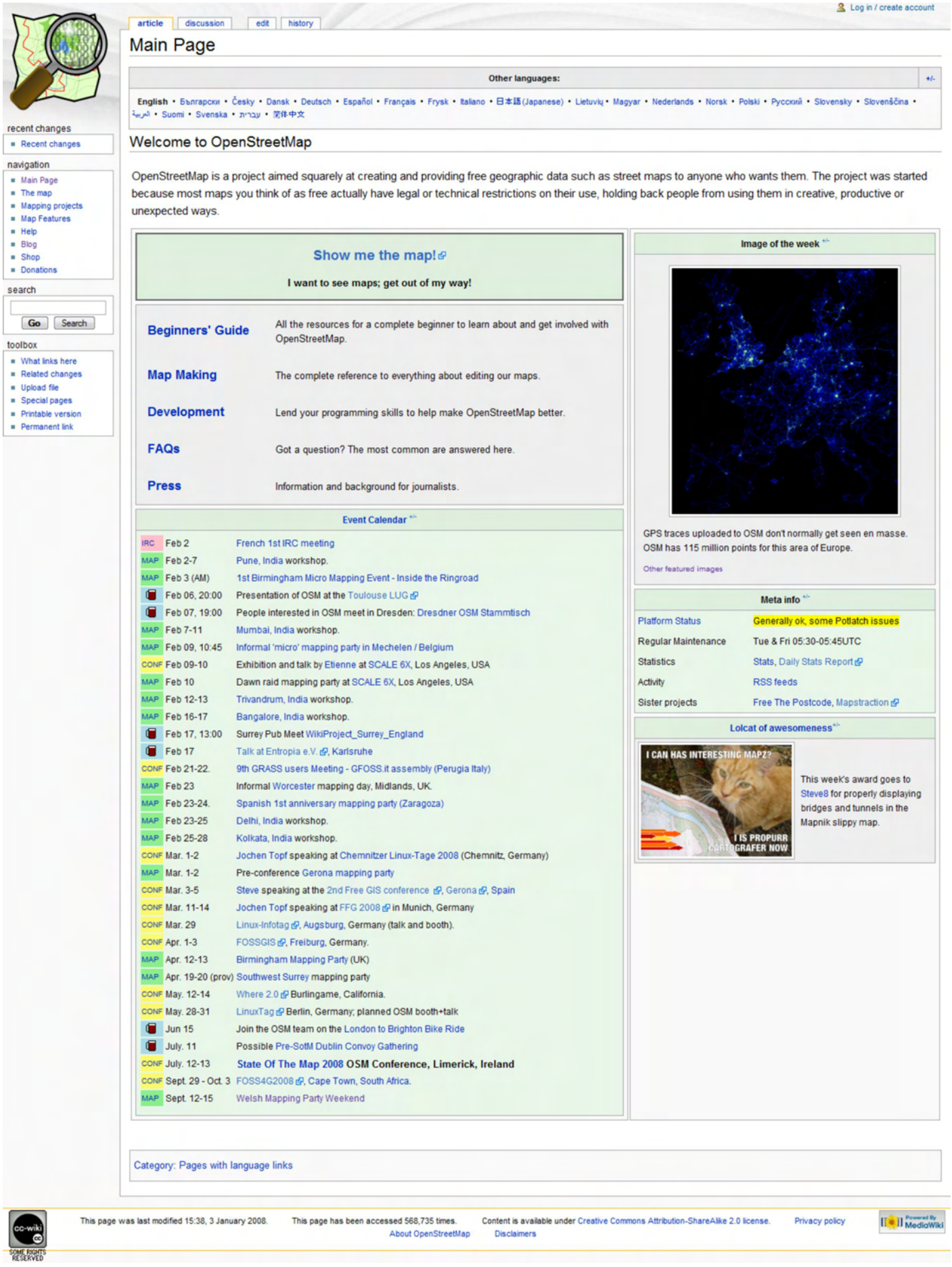

Figure 2: OpenStreetmap homepage, February 2008. (Source: author screenshot, http://wiki.openstreetmap.org.)

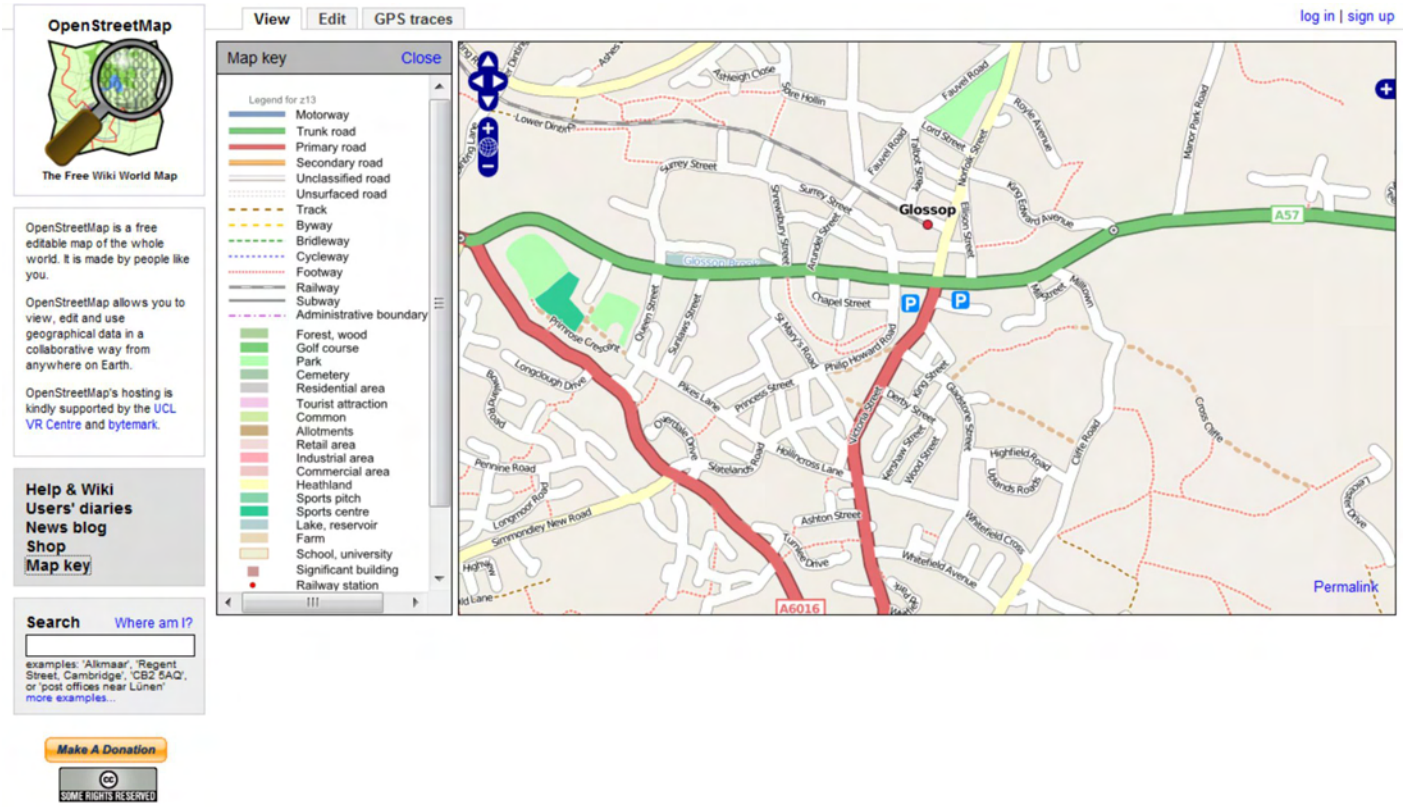

Figure 3: Display of OSM map data for the centre of the town of Glossop, Derbyshire, February 2008. The data are rendered with Mapnik. (Source: author screenshot, http://www.openstreetmap.org.)

Activists lead on different parts of OpenStreetMap. The Osmarender and Mapnik rendering codes have been written by different users. Another user has devised a legend generator for the rendered maps. Sub-projects have been developed to test applications in different thematic areas: for example ski piste maps, canal mapping, bike network maps (see Figure 4), railway maps, and motorway maps.

Feature coding is evolving as users get to grips with the complexity of extending the map database beyond its initial focus upon the street network: iconic symbol designs are debated. Activists are taking control of different parts of the map, and encouraging a growing body of local mappers to become engaged with specific parts of the project. A shared identity is reinforced through mailing lists and online tools such as a blog.[8] A real community of interest is fostered through regular social events, notably 'map parties', which aim to fill in gaps in coverage. Building upon this successful model of participation, the 'Mapchester' event in May 2006 is described below and its significance assessed.

The Mapchester mapping weekend

A successful mapping party in the Isle of Wight suggested that a social model of data collection might be an effective way of improving the coverage of OpenStreetMap. The authors were involved as co-organisers of a follow-up participatory mapping event in Manchester – 'Mapchester'[9] – held over the weekend of 13-14th May 2006. Our primary goals in organising Mapchester were:

(i) to support the OSM project directly by generating a large amount of new data for Britain's third city, which had previously been very sparsely covered (see Figure 5);

(ii) to test the viability of detailed urban street mapping using volunteer 'citizen cartographers' and get a sense of the spatial coverage that could be realistically achieved through collective action in a short space of time (i.e., test the rather bold claim to 'map the city in a weekend') and;

(iii) (potentially) to galvanise a mapping community in the Manchester by bringing them together in a shared (social) activity.

8. See http://www.opengeodata.org
9. The concept of Mapchester was initially formulated by Steve Coast and Martin Dodge in November 2005. Coast coined the neologism, drawing on the idea of 'Madchester' used in the 1980s to highlight particular Manchester music culture of the time.

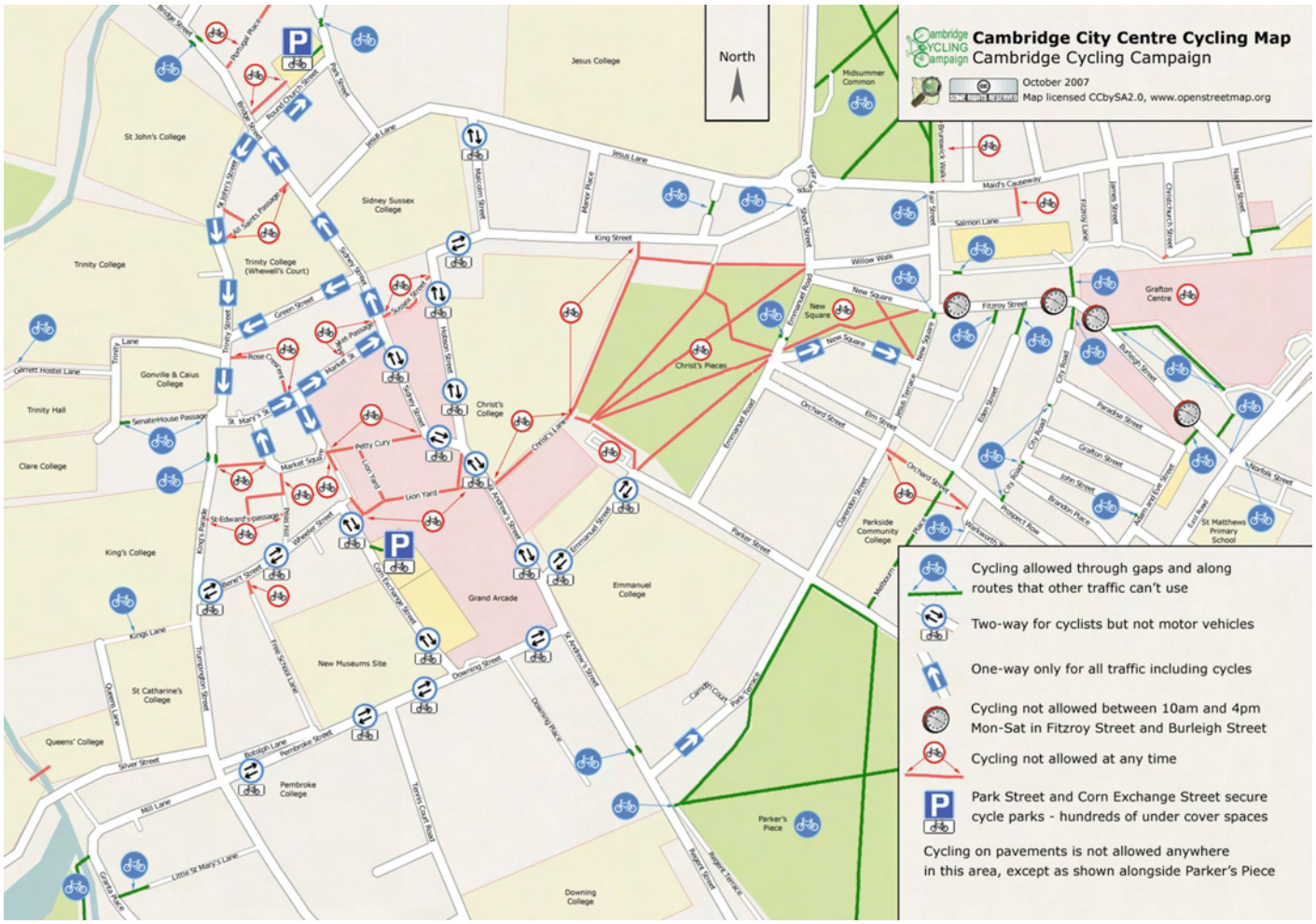

Figure 4: Cambridge City Centre Cycling Map.
(Source: http://www.camcycle.org.uk/resources/citycentre/CityCentreMap.pdf)

We were also interested in the degree to which this 'experiment' in user-generated mapping really represented a different ethos of cartographic knowledge production: how far could the latent power within the map could really be 'opened up' by involving participants in the 'process' of creating basic data and asserting common ownership.

Participants and process

To attract a large group of volunteers to participate in Mapchester we used a combination of social networks of the organisers, the OSM mailing list and broader online publicity through a range of relevant outlets. Messages were posted to the Carto-Soc, Geowanking, and Crit-Geog lists. The 'call for participation' was also forwarded onto a wide range of online discussion forums and blogs (e.g., Howard Rheingold's Smart Mobs blog[10]). The event attracted some media interest, being featured on the BBC Manchester website, under the headline, 'Mapchester needs you',[11] and also in a Guardian newspaper article (Mathieson, 2006).

The text of the 'call for participation'[12] set out Mapchester's political objective, 'to generate a new kind of map of Manchester produced by collective, community effort that will be completely copyright-free.' To be inclusive and action-orientated, the invitation set out the methodology to 'bring together as wide an array of different people who are interested in mapping and get them to walk/cycle/drive/bus/train/skate along city streets recording GPS tracks and noting down road names.' The agenda highlighted the ambition that: '[w]e hope that collectively people will work to completely map whole quarters of the city over the weekend.'

10. <www.smartmobs.com/archive/2006/05/14/mapchester_an_e.html>
11. <www.bbc.co.uk/manchester/content/articles/2006/05/12/130506_mapchester_event_feature.shtml>
12. A copy is available, <www.sed.manchester.ac.uk/news/mapchester.htm>.

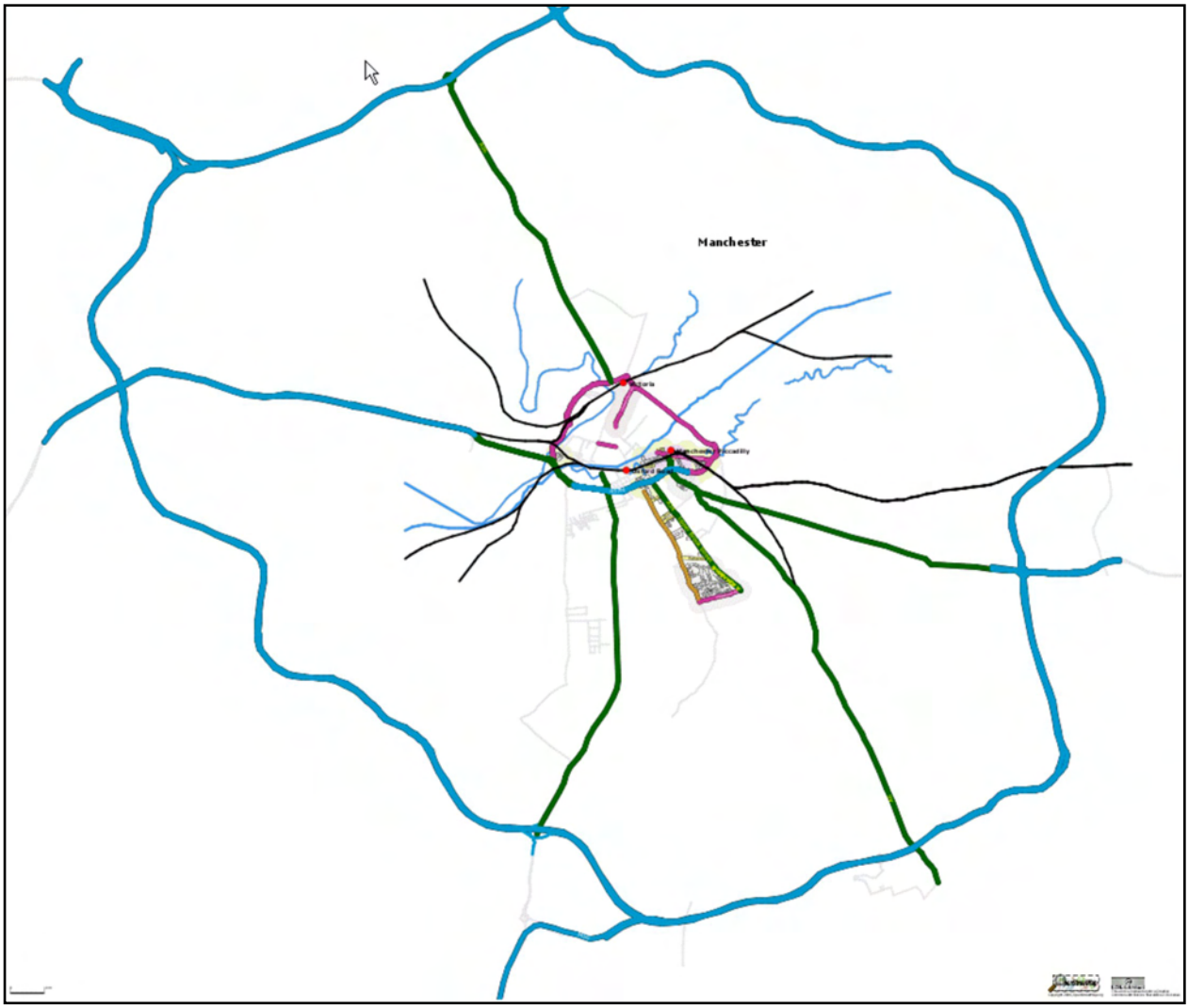

Figure 5. The extent of Manchester coverage in the OSM database (6th April 2006), prior to the Mapchester weekend. (Source: http://wiki.openstreetmap.org/images/a/ac/Manchester.png.)

Publicity proved successful and more than forty people participated in the mapping weekend; some mapped across a whole day; several attended both Saturday and Sunday. We had expected that most attendees would have some prior experience in mapmaking or with GPS technology, but nearly all were 'first timers'. Most knew something about what a GPS was, but had never used one. Few had any idea of the OSM project's agenda and none had contributed map data to it previously. Rather than attracting a core of 'map geeks', it appears that the Mapchester weekend appealed to different type of person, motivated more by the exploration and shared experience of their city. There was a good gender balance with significant level of female participation. While the majority were in their twenties (largely students), there were also older volunteers. Some participated with friends, as couples and even a father and daughter. There was genuine enthusiasm in contributing to the project (despite the typically rainy Manchester weather).

Equipment and organisation

Mapchester benefited from a fixed base of operations in the city centre utilising the meeting space of Manchester Digital Development Agency on Portland Street. The base provided a good place to brief attendees, distribute equipment and download data from the GPSs. It offered shelter from the weather, a secure place to store equipment and personal effects and a convivial social space to discuss issues over lunch. Availability of wifi Internet access facilitated data processing. The only disadvantage was that the basement location meant that technical set-up and briefing on the use of GPS equipment could not be completed because of lack of signal.

Fifteen GPS units were available for loan to attendees, provided by the Universities of Manchester and Huddersfield. At busy times we were somewhat short of GPS units and participants had to work in pairs: a side effect was to encourage greater discussion around the mapping process.

For some people the complexity of the GPS operation and the unfamiliar interface was intimidating; with hindsight a more structured, in-depth introductory briefing would have helped, along with 'on-street' training in what contextual data to record.

The major equipment issue was the lack of GPS signal in some parts of the city centre (the well known urban canyons effect; cf. Kaplan and Hegarty, 2006); older Garmin eTrek units performed particularly poorly. While this was anticipated to some degree, it was not communicated well to all participants. Some participants were disappointed to find out they had wasted time in the streets because the GPS track had not been recording, a problem exacerbated when units were carried in bags or pockets.

One of the most problematic aspects in running Mapchester was how to allocate areas of the city to participants to ensure widespread coverage, avoid gaps and duplication. We were unclear how large an area novices could reasonably cover in two or three hours. Most people were on foot, limiting them to central areas of the city; several attendees did cycle more widely, and one person drove round Manchester's inner ring road and outer M60 motorway. Furthermore, given the voluntary nature of the work, it was not clear how directly people could be 'tasked' by the organisers to cover specific areas (especially if it was an area that they were not familiar with); signing people up to map parts of the city was a negotiation.

The process of allocation was complicated because we could not use existing, copyrighted street maps to guide coverage planning and tasking during Mapchester weekend.[13] The lack of base maps was partially overcome by scans of out-of-copyright one-inch scale maps from 1930s (Figure 6), but the urban fabric of Manchester has changed substantially in the years since these maps. A useful *ad-hoc* surveying template was deployed which divided Manchester inside the M60 motorway into three rings, with each ring subdivided into segments (Figure 7). We encouraged people to take a segment each and try to map it as far as possible. However, the schematic nature of this template meant it was hard to relate to the experience on the ground: segments varied in size and in the density of roads they contained.

Figure 6: Out of copyright base map and survey template used to manage coverage during Mapchester weekend
(Source: Author photograph.)

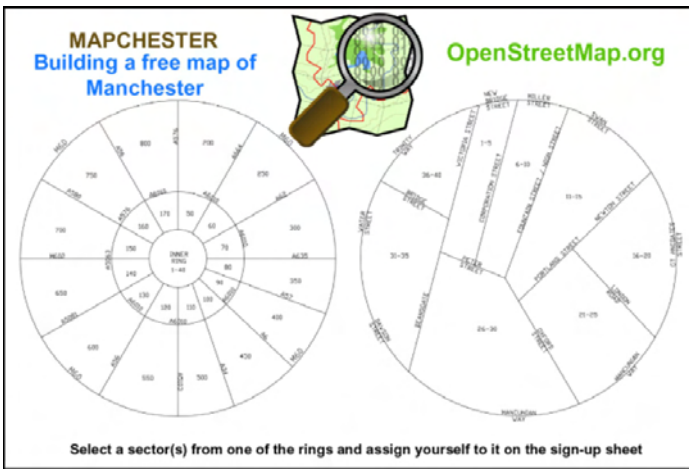

Figure 7: Survey template dividing Manchester into segments bounded by arterial roads.
(Source: Andy Robinson.)

In addition to the GPS tracklog it was necessary to record other contextual data, such as street names and road type, which could be used to 'tag' tracklogs and make a useful map. A template was provided to record this data, but recording quality varied greatly. Furthermore, these data were mostly recorded as paper notes, or a sequence of digital photographs, that were harder to transfer than the electronic GPS tracklogs.

13. As noted above, OSM is seeking, as far as possible, to generate comprehensive spatial data that are not derived from existing copyrighted maps. Any derived work, for example using A-Z maps, could potentially 'contaminate' the OSM database and compromise its 'free' license.

Data collected

After each session of surveying tracklogs were downloaded from the GPS units, and field notes and photos were gathered in from participants. Unsurprisingly, many participants wanted feedback 'there and then' on what how much they had done. However, due to limits on uploading and visually displaying tracklogs this was hard to do. In a key sense then, we failed because we could not show them their map.

A significant amount of effort was expended over the two days and many thousand GPS data points were collected. This data provided fairly good coverage of the centre of the city, but with only tendrils along a few roads out to the M60 ring road. Filling in the gaps in the rest of the city centre was done over the early summer prior to the Futuresonic festival by the organisers.

While the Mapchester weekend was successful in gathering a large number of raw tracklogs, very little editing and tagging of the data was undertaken to make cartographically meaningful data by creating named ways. To do this during the weekend would have required a number of computers running OSM software, along with much more training. The current software is not easy to use for those unfamiliar with spatial data. If equipment had been available it would have been interesting to see if attendees would have been interested in doing this editing. The widespread feeling is that editing GPS data is tedious and time-consuming and it is not clear how to encourage volunteers to undertake this mundane but vital task.

After the Mapchester weekend, all the tracklog data generated for Mapchester were uploaded for use in the OpenStreetMap database. Furthermore, a simple 'finished' map was created from this data and used as a test-case festival guide for the Futuresonic International Festival (Figure 9).[14]

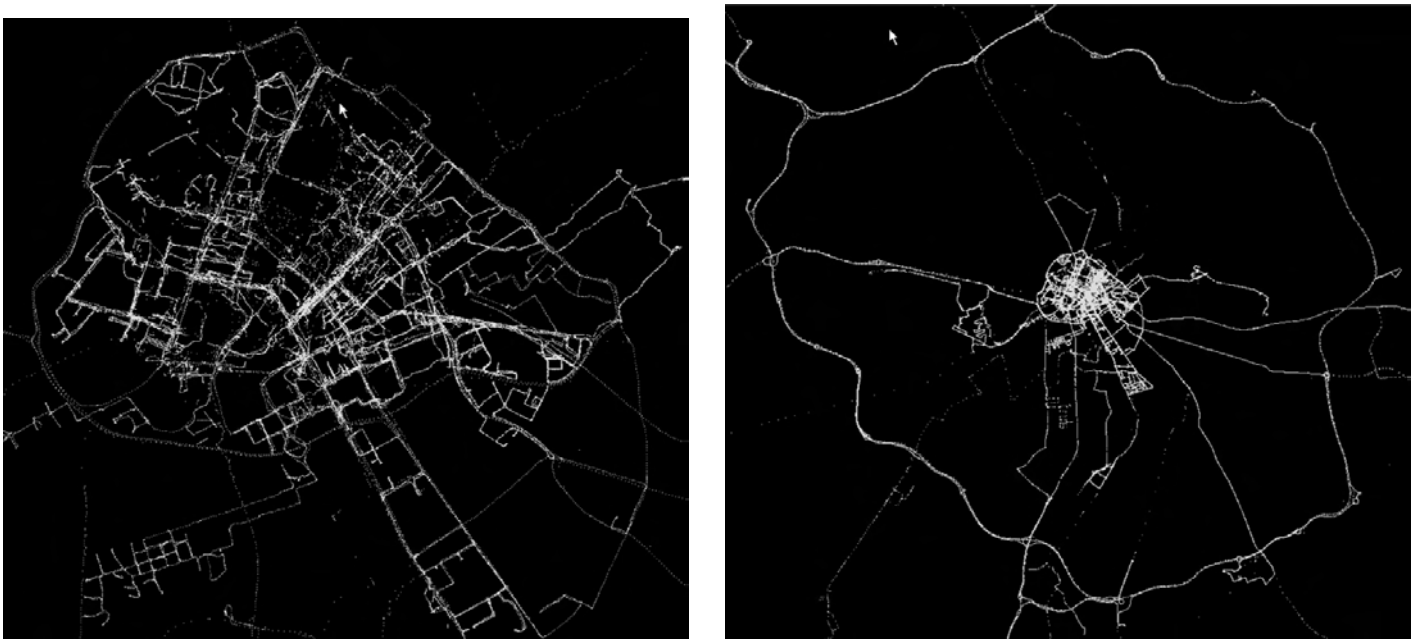

Figure 8: The geographical coverage of raw GPS tracklogs collected during the Mapchester weekend.
Source: http://wiki.openstreetmap.org/index.php/Mapchester)

14. Futuresonic is an annual Manchester-based festival taking place in multiple venues across the city. (see www.futuresonic.com/mapchester/)

Figure 9: Data from the Mapchester mapping weekend was used in this simple festival location map. (Source: http://www.futuresonic.com/mapchester/)

Conclusions

The practice of Open mapping as experienced during the Mapchester weekend is contested and social, and in that sense is no different from official and commodified mapping. Mapchester, however, shows some of the potential of these new ways of mapping, but also reveals many of the problems in community-led collaborative projects. A different set of tensions is apparent in 'free' mapping to those revealed in our introduction. These are highlighted in the successes and failures of the weekend.

In terms of the initial goals in organising the event, Mapchester should be seen as a partial success. It worked well in terms of galvanising support for larger, on-going OSM project and showed the feasibility of mapping events to draw in new volunteers. As such it contributed significantly to a growing momentum through 2006 and beyond, with growing number of mapping 'parties' held through the UK, and subsequently around Europe and globally.[15] In terms of getting Manchester itself mapped, the Mapchester weekend was less successful; while a good portion of the city was done in May 2006 little was achieved in the immediate aftermath of the day. The current state of the OSM map coverage is still far from complete (Figure 10). Coverage of the street network of inner areas of the city is nearly complete – there has also been a more recent surge in mapping of the southern suburbs, but gaps in coverage remain in northern and eastern districts. The database needs to be developed by an ongoing local involvement.

15. Further details of mapping parties are at http://wiki.openstreetmap.org/index.php/Past_Events

Table 2: Strengths and weaknesses of the Mapchester mapping weekend.

	Theme	Positives	Negatives
1	Logistics	Base station	Insufficient GPS training
2	Participation and working practices	A high level of attendance	Survey allocation, little coverage beyond city centre, some gaps and duplication
3	Outcomes	Successful 'training' of many new mappers	Poor GPS performance in dense city
4	Communication	Positive and enthusiastic social experience on the day	Lack of feedback to participants after the event on what they had achieved
5	Data	Capturing a large part of the inner area of Manchester streets	Editing the raw data into cartographically meaningful information

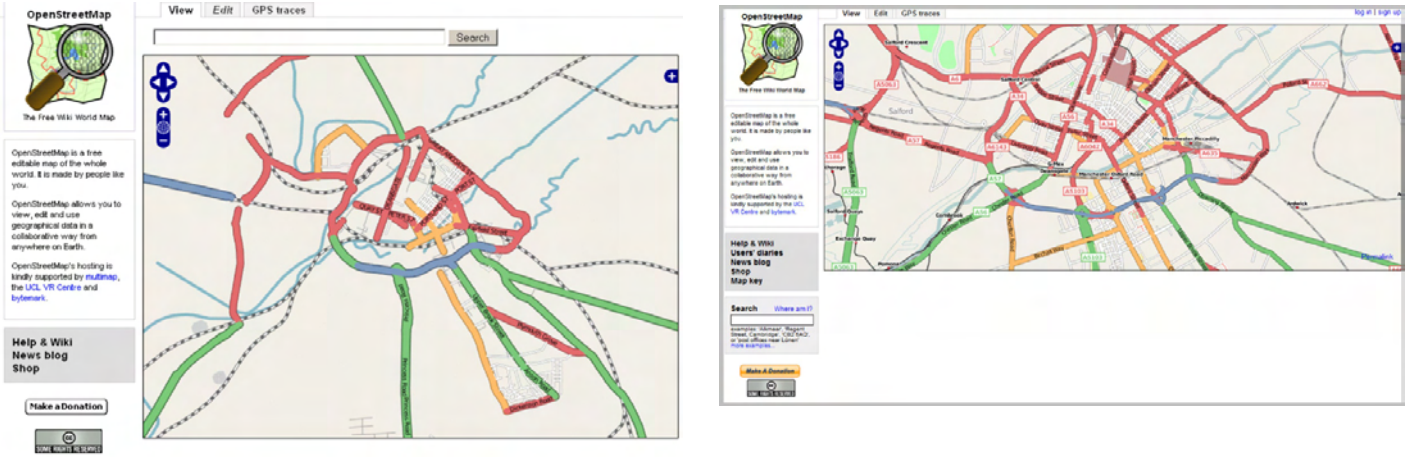

Figure 10: The extent of OSM mapping in the city centre February 2007 and February 2008
(Source: author screenshot, http://www.openstreetmap.org.)

On the second goal, Mapchester showed that it is viable to use volunteer labour for basic spatial data collection. Tracks were collected that subsequently have been incorporated and tagged in the OSM database. In terms of the overall mapping process, the amount of effort needed for editing the GPS tracklog data is potentially as great as that of street surveying work, if not more so. The street network is relatively easy to acquire: coding it is problematic, time consuming and less exciting, place-names like street centre-lines are 'owned' and copyrighted and must be recorded in the field. There are few short cuts here. Adding layers of data to the GPS tracks, labelling the ways and adding value to the street data are harder to organise and formalise.

In terms of the third objective, it was hoped that an intensive social effort to build up a map of the centre of Manchester will galvanise an open-source mapping 'community' in the wider city region. There was no direct social 'follow-up' to the mapping party; nor any easy way for mappers to participate in the shared online community. In Manchester despite the 40 people on the ground during the weekend, a self-sustaining and ongoing local mapping project has not really emerged. Volunteered and shared geographic information may well be characterised by a piecemeal development, because of the lack of a central mechanism for ensuring that coverage develops in a systematic way; volunteers cannot be told what to do (Sui, 2008).

Mapchester also reveals the rather different practices involved in sharing and making a people's map. The key tension is between the amateur DIY ethos of user-generated mapping projects and their longer-term success, which encourages an increasing professionalization and bureaucratization of the process. At present OSM is still run on a shoestring and relies strongly upon a small key group of activists who are essentially interested in developing the open source code and the functionality of the system. They remain strongly committed to the Open ethos and the hacker ethic. Participants in mapping parties may be insiders in the project, or as in the case of Manchester predominantly neophytes. But the robustness of the interface, the continuing exponential growth of the system and the increasingly rich data encourage commercial interest which may in the longer-term compromise the ethos that inspired initial development of the project. There will

certainly be increasing pressure to employ OSM data in ways that do not conform to the initial collaborative remit of the system and it remains to be seen whether these pressures lead to volunteers becoming less willing to devote their time to future mapping.

A second tension lies with the data. The quality of OpenStreetMap data may not be adequate for many applications. Mapchester shows how GPS signals are often inadequate in urban canyons and the plus or minus five metre accuracy compares very unfavourably with large-scale topographic mapping. Also in comparison to the complex feature coding of OS coverage OSM at present offers a very skeletal map indeed. But flaws in the OSM database may be highlighted on screen, so they may be cleaned up by the wider mapping community, unlike conventional mapping that pretends to be completely valid, but may include deliberate mistakes.[16] Of course OSM does not yet offer complete coverage and until it does applications will be limited, but there is every sign that growth is continuing and that completion of street networks, for the UK at least, will be reached in the near future. On a more local scale the first ever 'free' mapping of the city centre emerged from the weekend and has been successfully used. It may not supplant the commercial map, but it was not designed to do so.

A third observation concerns the people active in OSM and mapping parties. The majority of the 20,000 OSM users simply collect street data: few edit and tag. Fewer still are actively involved in changing the system. Yet the development work and the coding are critical for future success. Involvement in the wider OSM project is strongly gendered: almost all of the OSM activists are male. Their behaviour sometimes seems to conform to particular male stereotypes, with a strongly competitive ethos revealed in league tables of the numbers of streets uploaded or tagged and a desire to control their part of the map. This kind of participation seems to have been missing from Mapchester, which seems to have attracted a wider, and perhaps less obsessive, cross-section of the community.

The key question though lies in the future of this very different model of mapping. In the last three and a half years OpenStreetMap has grown at a phenomenal rate. Its qualities and weaknesses are well known. We will soon be at the point where it comes to challenge commodified mapping, and where a 'crowd-sourced' and free cartography offers serious competition for many of the uses of privately owned or official state maps. Just as Wikipaedia compares favourably to Britannica (Giles, 2005), so OpenStreetMap will inexorably compare well with Tele Atlas, or even with many Ordnance Survey products. And the construction of this map relies strongly on collaboration such as that documented in the Mapchester weekend!

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16. Mistakes may be 'Easter Eggs' included by a publisher to trap those who might wish to evade copyright.

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