ABSTRACT

This paper is the output of the first day of a two-day workshop held at the Future Everything Festival 2015. The paper was written during the workshop and adopts a collaborative and generative approach to integrating both theoretical, methodological, qualitative and quantitative data, findings and reflections. Content was authored by the investigatory team, workshop participants, qualitative data collected through smart phones attached to bikes that were ridden by participants, as well as conference delegates that chose to contribute to the paper during the day. This approach to dynamically authoring a paper was a core aspect of the workshop that was positioned as a Future Lab within the Future Everything festival held in Manchester, UK, February 2015. The intention of the Future Lab was to invite a team of academic researchers to develop a model of public engagement during the festival that would explore specific research questions. The authors response to the Future Lab was to develop a series of activities that involved participants borrowing bicycles to respond to structured and unstructured research questions about the future of cycling in the city of Manchester. Equipped with iPhones with bespoke software for collecting short textual comments, photographs and GPS data, participants supported a one day field study both as subjects and authors as data was integrated into this final paper. This paper explains the rationale for the workshop as a form of living lab, how the methods of the workshop involve the participants as authors and not merely subjects in a study, and the role of a co-authored paper as an output of a participatory research study. The paper used speakers who presented during the same day at the Future Everything conference as a resource of theoretical and practical material to inform the background for the paper. The paper was published at the end of the day and was used to inform a panel presentation involving authors (investigators and participants) and stakeholders involved in cycling cultures within the city of Manchester.

KEYWORDS

Author Keywords
Cycling, Community, Collaborative writing, Living lab, Data

ACM Classification Keywords
H.5.m. Information Interfaces and Presentation (e.g. HCI): Miscellaneous

INTRODUCTION

Negotiating space physically whilst cycling is becoming more challenging due to increasing size of cars, despite local initiatives and reconfiguring of priorities (e.g. prioritising pedestrians and cyclists over cars) [11]. Thorpe [1] advocates a personal relationship with data but acknowledges that the typical lived experiences that we endure are characterised by a lack of control and increasingly complexity (e.g. consider the handing over of control when at airport security systems). Visibility and visualisation of data he argues, should walk a balance between the ‘Ooh/Aah’ factor, drawing people in (the ‘Ooh’) whilst clearly demonstrating something that they had not been aware of before (the ‘Aah’).

Arent [6] towards the end of her life said “Each time you write something and you send it out into the world and it becomes public, obviously everybody is free to do with it what he pleases, and this is as it should be. I do not have any quarrel with this. You should not try to hold your hand now on whatever may happen to what you have been thinking for yourself. You should rather try to learn from what other people do with it”. She argues that the political philosophers have ignored a prominent condition of politics which is about the plurality of human being and when the individual acts they start something new. The result of this assemblage therefore is unpredictable. She then argues this space is a subject of agreements of many individuals and this can never lie on theoretical considerations or opinions of one person. This collaborative paper tends to bring together some of Arent’s ideas of practical politics and questioning the isolation of academic practice.

The Future Everything Festival 2015 focused on key themes of centralisation, inequality and loss of privacy and asked: is it time for recalibration? [2]. The Festival Lab that informs and embodies this paper derives from a living lab that makes use of people, bicycles and cars, seeking to develop new research in one synthesised form: PuBlíC. The PuBlíC living lab provides a platform for integration across which members of the public will be able to design strategies for sharing, playing, communicating and of course travelling. To do this the PuBlíC living lab will replicate the underlying principle that defines network applications and technologies: the ability for every device within the internet to have a UDID. UDID is short for Unique Device Identifier and when shared in a database of other UDIDs offers a platform for all forms of networking. However, the city as we know it doesn’t have a shared UDID platform that reaches across people, cars and bike. People have phone numbers, IP addresses and email addresses; cars have DVLA registered number plates; whilst bicycles have nothing. It could be said that the lack of a common UDID platform is inhibiting the ability for members of the network to ideate new forms of networked social / transport practices.

BACKGROUND AND RELATED WORK

Related work falls into three areas: security and accountability of algorithms; artistic interventions and data visualisation; and sense of self and conformation to societal ideals. How can we tell stories through the City? By comparison, Stephaner [5] considers the images of a city as a way of spotting patterns, creating new artworks and ways of seeing and reflecting on the data, ultimately creating new ways to see the city through geographic neighbourhoods as a collage.
Galdon-Clavell [3] cites the notion of a ‘data double’, a capitulation to the categorisation and pigeonholing of algorithms, however this categorisation is not a new concept, to be human is to categorise (Star & Bowker). Galdon-Clavell uses the example of completing an online dating profile, stating "I have been caged", and that data can limit your options [4]. This however has the potential to cast Data in the role of a negative technology or resource. It is clear though that these kinds of simplifications and categorisation can be profound when it comes to issues around identity and sense of self. Velocity, a crowd-sourced project in Brussels, highlights the challenges in cycling so that the map interface becomes more intelligent to enable you to avoid the cycling infrastructure problems. The crowd sourcing funds are used to take the municipality to court to address these problems [10].

METHODOLOGY

We designed the PuBliC project as a living lab, providing direct outputs and ways of challenging the ways that data is created, used and reappropriated, while also providing pause for reflection on the nature of academic publishing and collaborative authoring. We also aimed to investigate how these qualities could shape the perception of data, identity and critically, movement across the City. Specifically, we wanted to provide an opportunity for participants to actively engage in all parts of the research process, through the development of a Future Lab. The intention of the Future Lab was to invite a team of academic researchers to develop a model of public engagement during the festival that would explore specific research questions. Our methodology drew on several approaches including participatory research, action research, and live blogging. The intention of the mixed methods was to offer platforms for the capture of data from multiple stakeholders and it’s inclusion in the paper. Traditionally research studies select data that reinforce a priori assumptions made by the authors. The use of the open technology to support open authorship meant that no author knew how the final paper would use data nor what findings it might produce.

Participants, Data Collection and Analysis

We recruited 10 participants (4 male, 6 female) as part of an arts festival and conference in Manchester, UK, Future Everything, to participate in our study and as co-authors of this paper. This approach clearly has limitations; for example, it makes the results hard to distinguish and generalise to a wider population of participants and co-authors. However, this experiment in public engagement and transparency (or lack thereof) of academic authoring may provide a case study and therefore this smaller selection of participants affords a richer descriptive understanding of the space as a whole to inform what might be salient issues for future research and practice. We recruited participants through social media, and via the marketing of the Future Everything conference and festival. All participants were familiar with technology, owned digital cameras, and 100.0000% cycle at least once a week 20.0000% cycle almost every day, with only 0.0000% Out of the participants who cycled, 175.0000% cycle mainly for commuting purposes, 10.0000% cycle mainly for leisure, 0.0000% cycle for mainly sport, whilst 10.0000% cycle for short trips (e.g. shopping) purposes.

Process, Rationale and Implementation

The study used a number of processes to engage participants in the gathering of data, how it was processed and ultimately presented in the collaborative paper. These processes differed in representation, individual and group practices, and use of technologies to support engagement. Recruitment was achieved in two ways; prior to the opening of the festival an online platform allowed people to sign up for involvement in the cycling activity at specific times of the day, the second method was through a project / sign up desk located at the festival venue. The study was promoted by the conference organisers during the keynote session and across social media.

On arrival at the project desk participants were invited to complete a paper form consenting to the taking of photographs, the tracking / storage of their movements in GPS form, and an understanding that any written / textual data that they contribute may appear in written publications. A second paper form established the nature of the hire of the bikes which were provided by the local bicycle hire company Cycle Waggle and set out the conditions for hire including health and safety, security of the bikes, competence to cycle, third party indemnity and personal responsibility. A further online form was used to capture personal details to inform a demographic understanding of the participants, their preconceptions of cycling in the city, questions of data ownership and privacy and a more open ended questions about how their mood.

Participants were then given an Apple iPhone which was preinstalled with the locative media App Comob Net (https://itunes.apple.com/gb/app/comob-net/id326303438?mt=8) which pushed GPS data in realtime to a server as well as offering a message field to capture reflections of the participant when they were out in the field. Participants were also made aware that their GPS data was made public on a large LCD screen at the festival venue along with all other users of the App. One of the key
The LCD screen at the venue was able to display the location of all participants in real-time as well as recording the movements of bikes throughout the day. One pair of Google Glass was also made available to participants to capture video and also encourage reflection on the use of wearable technologies whilst cycling. Beyond more conventional forms that establish permissions and informed consent about the study, the rationale for the use of the smartphone and the online form was to provide a medium through which qualitative and quantitative data could be provided for the collaborative paper. The intention of the use of Comob Net and its map was to reveal the emerging routes of the journey’s of bikes throughout the workshop, and the coverage of the city that they made throughout the day.

![Figure 2. Still from Comob visualisation, showing day of of cycling in Manchester as part of Future Everything 2015.](image)

**FINDINGS**

The findings that emerged from the study spanned three primary areas, ranging from ways of knowing and negotiating the city, situated and technologically mediated reflections, and ways of making the visible invisible through moving across the city.

**Experiences of Moving through the City**

Participating as a bike supplier it is interesting to see how easy it can be to set up a bike hire station. Furthermore, it’s great to see how much interest bikes parked on the street create. There is someone constantly stopping and looking at the bikes trying to find out how does it work. Most of the by passers think it’s an activity carried out by the council and that the council is actually introducing public bike sharing scheme. Although, TFGM and Manchester Council doesn’t plan to implement cycle hire scheme in the near future for various reasons from this small example it is arguably obvious that public would welcome such service. Potential benefits cycle hire scheme can have on the city and its citizens are well documented without a doubt manchester will become even greater city and people will be able to enjoy it even more if level of cycling has rised. It will allow/push council into investing more in cycle infrastructure what will further support and encourage people to cycle and it will greatly help city’s traffic flow. All 15 hire bikes available for riding at the conference have been delivered on cargo bikes. It took only little bit over an hour to get all the bikes to Albert square from our unit in Ardwick M12 6JQ.

Riding a tandem is surprisingly difficult! You have to cede a good deal of control and trust your partner, sense their balance and maintain the momentum. The turning circle is huge and the tandem can become magnetically attracted to trees and other immovable objects. But pedestrians are forgiving, friendly and love to point out that the one at the back “isn’t pedaling!” In the city you cut a curious dash, attract looks and allow others a smile. The experience is therefore a happier, smilier one benefiting from the interaction with pedestrians and trust of a companion that is missing when cycling solo. What if the tandem experience could be expanded to three, four or many? Perhaps a tandem comprised of many solo-cyclists snaking through the urban landscape like a two-wheeled Conga, dynamically forming, dissolving and reforming, enhancing and sharing the experience with others on and off bikes.

This event become an opportunity for some participant to ride a bike, an activity they haven’t done for many years. They rediscovered lost sensations. They were enjoying it and they might think to use bicycle more often thanks to this workshop. Moreover, some people were stoping asking and hoping if it was a new initiative from the council to instal bike station. We can suppose from this observation that if more events around bicycle were organised or bike stations were instaled in the city, people who would not think to use a bike in a daily basic could have a ride when they need it, without having to buy one at first,rediscover the sensations and the advantages.

While shooting the photos for the participants, I saw they were very excited about what they were going to do - it was an unusual way of cycling! Participants in pairs were discussing the strategy and making fun of each other during the preparation, while the single participants shew the confidence on their face. It is an interesting event for us to experience the city, whether in collaboration or in single.

It’s been very interesting to connect with the wider Manchester community while standing out by the bikes and preparing participants. I’ve had 3 or 4 members of the public speak to me about bike hire in Manchester and how attractive it is. One individual I met spoke about setting up a similar service with his friends on the outskirts of Manchester, capitalising on the equipment they already owned between them. He also shared his reservations on the participation of the City Council, stating how hesitant they were to adopt new activities or services or allow others to run them within Council jurisdiction or space. He did, however, suggest other stories and strategies for setting such a venture up, such as getting space in the railway arches - a seemingly cheap option for temporary or nascent businesses.

These conversations didn’t perhaps relate very much to the augmentation of the city experience, yet they highlighted the rich data sources that exist in other forms within the local community.
There have also been some discussions around the use of this data and how it can contribute to new solutions and services rather than being a simple consumable visualised as graphs or statistics - x amount of people do this or y amount of services find that.

Interest in making sense of data in public.

To see Manchester on a bike and to give my data by consent I was lucky enough to cycle up the Oxford Road wearing Google Glass. Very interesting experience - switching between being a cyclist and being a film-maker. With practice one could become a cycling-film-maker... The difference between helmet cam footage and Google Glass footage would also be fascinating to see in terms of what is picked up in terms of the experience of cycling, the surrounding landscape, and the fidelity to the lived experience. Basically this could be a really cool research tool, although it would be nice to know how water proof they are from a weather point of view!

Others were also very interested in what the Google Glass would bring. One participant stated: "Interested in wearing the Google glass technology and cycling about the city", as their motivating reason for joining the city. People seem to be interested in the different experiences these technologies afford.

**Situated Reflections**

Messages from the Comob Net application began to inform us about the situated frictions that participants reported upon as they moved through the city. We use the term frictions to describe points along journeys when the flow of travel was halted or slowed.

There was a particular sensitivity to the weather on the day that was windy and cold. It had also been raining in the morning so there was some ground water on the roads.

Participants X commented how water resists resistance perhaps as though the presence of water on the road surface impedes braking, or something more about how rain affects an ability to take control of the road and resist the hegemony of the car. X stopped by the river, watched it beat waves towards the riverbanks, how it couldn’t resist the pull of downstream. Other materials on the road were highlighted by participant W who simply wrote "horse shit!" and later explained the dangers of animal excrement that is often found on road surfaces. Participant X highlighted the comment referred to the complexity of crossing the road with a bike, the images, sights and sounds that impacted upon their experience. Participant Z commented upon the incentives that motivate them within the city: "who can say no to chocolate and coffee". On return participant Z explained that biking whilst hungry might not be such a good idea.

More predictably but equally insightful were the observations about the conditions of Manchester’s roads. Participant V drew positive attention to the presence of “lots of places to lock the bike, well done manchester”. In contrast Participant U commented on “too many diversions” within the city and the “holes in road on princess street” by participant T was quite specific about damage to a particular street in the city.

Commenting in more depth about the experience, participant S stated: "Going out with another rider and then being connected through the comap app made me realise how my usual cycling experience in the city is entirely solo and individual with very little sense of community. These apps can be really powerful ways to reveal a hidden community of infrastructure users whose lives are shaped by similar elements of the city and yet who are mostly unknown to each other, or indeed anyone else. Can sharing a common experience generate more practical yet powerful forms of urban politics through infrastructural engagement?".

**Making the Visible Invisible**

A number of participants tested Google Glass while cycling about the city. This way, Future Everything delegates were able to make visible the invisible to the broader public and show how it feels cycling through the city centre. One participant commented during the ride: This is brilliant, I just realise I never cycled through Manchester in a group. I would normally do this on only when on holiday. Heading towards Oxford Road did not allow the participants to cycle next to each other. While taking much less space than a car on the street,
the environment of noisy cars, buses and vans did not allow to cycle next to each other. Google Glass recorded the movements a delegate makes while being on the bike through the heavy traffic - not only with the technologic sensors on, but with all human senses sharpened to navigate along buses that overtake, cars stuck in traffic jam and citizens waiting at the bus stop. Wearing the sensor technology empowered participants to show how they see their city. By the same time, participants reported that it felt strange that all data is being captured and made them aware from time to time that they constantly give their data away. By the end of the day though, it turned out that the Google Glass video was not accessible what was disappointing for those recorded their ride as they were anticipating this data will impact citizens and policy makers that may favour other modes of transport on Oxford Road in favour of more cultural and physical integration across the means of transport. The discussion raised the concept of flipping the very notion of surveillance, becoming a surveyor the city as a cyclist rather than being under surveillance (i.e. the increasingly prevalence of CCTV).

A piece of tech can act as both a barrier and an ice-breaker when connecting with people. Wearables such as the Narrative Clip and Google Glass can permit a stranger to enquire and strike-up a conversation. Here the tech provides a talking point and works best with people who have an awareness of what you are wearing. Other times it arouses suspicion and at times downright hostility. People are interested in the novel object but can become uncomfortable with the idea of being recorded by the gaze of that object. Where successful the tech object facilitates the human connection. We found our participants very accepting of the iPhone app, even though it tracked their location, and a good number wanted to use Google Glass; although this may have been heightened by its rarity. For us the tech objects allow us to connect with participants and then to connect them to a larger group.

Among participants some during that phase of registration and filling our consent form, they were not very concerned about the data being collected about them and also did not spend anytime for reading the consent form despite the effort of the organisers to make them aware of different usages of their data. We just wanted the experience. You said you were from a university. We trusted you to be ethical. You have power, your research could influence policy makers.

We saw another cyclist with a helmet camera, which was obviously for insurance purposes in case of a crash. It made us think about some interesting parallels around the tension between surveillance and monitoring in urban infrastructure operations and planning. As a cyclist what I’d really like to do is have a device that can hack the CCTV feed, every time I pass one my device hacks the feed, turns the camera away from filming me into what I’m looking at in a google glasses gaze type of a way.

**DISCUSSION AND IMPLICATIONS**

This paper has enabled not only a set of reflections on the nature of transport, but has offered a new mechanism for reflecting through the very authoring of this document. The complexity surrounding use and visibility of data, ownership and movement across the city is apparent through the rich feedback from the participants. There is, we argue, an opportunity for cultural innovation in a city through insights gained from using technology, e.g. Google Glass. Alternative usage and business models (e.g. subscription) are opening up new ways of travelling, e.g. city bike hire. Similar to the situation of not many drivers being able to fix or understand how a car works, not everyone now needs to be able to repair a bike. New routes and windows onto the city can open up through exploring the city with a bike and fellow cyclists [11].

The paper, both in content and form, participates in the emerging area of co-owned, permission based data sharing, as exemplified by Open Paths [8], an initiative of the The New York Times Research & Development group [9].

The closing panel and group discussion afforded an opportunity for refining and on-the-fly redrafting of the paper, this process reflects participatory research approaches. Although it appeared that the researchers were extrapolating and summarizing using the data with their research tools and jargon.

As might be expected from such an experimental manner of writing an ostensibly academic text, the self imposed constraints of generating, gathering, analysing, and writing up study data within an eight hour timespace is challenging. An attempt to constrain the scope of material around the study and text was made through basing the external references and context within the Future Everything festival, using the festival themes and speakers to frame the text. In this way the festival became a microcosm for the paper, in some ways parallel to the disciplinary boundaries and blinkers that academia and academic publications are susceptible to.

To conclude therefore, the Future Lab and paper gave authors/participants permission to reconfigure and enact academic writing, a space to reflect and play with data and consider the role that stories might have in meaning making across the City.

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**REFERENCES**


