An experimental methodology to promote and evaluate the use of community networks for civic engagement

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Abstract

CitizenSqKm is a project currently based in the Barcelona neighborhood of Poblenou, which aims to explore and extend the potentials of a community owned and managed telecommunications network. The project explores how community networks can increase civic engagement and benefit the citizens of the European Union more broadly.

In order to privilege the use of the community network, the project is devising a methodology to engage participants using educational and journalistic techniques. The project is developing a comprehensive evaluation and applied methodology of civic engagement using participatory media. Guided by the philosophy of community networks—principles emerging from the commons of open, free and a non-commodified network—this paper presents the design and development of a specific communication ecology and it's impact on the community.

After reflecting on the existing literature concerning differing research methodologies, this paper will then present the considerations and choices we made in order to design a methodology specific to the context and which exceeds mere diagnosis, to enable actual social interventions. The methodology combines conventional digital methods with more recent participatory and qualitative evaluation methods, such as Ethnographic Action Research (EAR), and its variation, the Network Action Research (NAR), and the Most Significant Change (MSC)—methods currently being used to document the impact of information and communication technologies for transforming communities.

This project—despite being at the beginning stage— has already moved to identify and correct flaws in its methodology. And despite the fact that the emerging systematology appears solid, it is still premature to confirm solid results at this stage.

Keywords
Participatory design; ICT for development; community networks; geolocation.

Introduction

Contemporary forms of participatory media are requiring us to rethink the role of civic engagement and notions of the public (Bennett 2008). The ways in which new media is imbricated within everyday life, and what this means for rethinking literacy and engagement has been explored elsewhere by Mimi Ito at Digital Media and Learning (DML) (Mizuko et al. 2013). As Ito notes in her study on "connected learning" we need to change how we perceive and understand media operating within, and outside of pedagogical contexts (Mizuko et al. 2013). Now with the 'ludic turn' (play) impacting upon media practice and its relationship to everyday life, we require a more nuanced and rigorous approach to longitudinal case studies of new media projects, as they are designed, implemented and adopted.

This project seeks to contribute to new understandings as mentioned above, through the design, implementation and adoption of the CitizenSqKm communicative ecology, and through a comprehensive qualitative and quantitative assessment of its development. The result will be subject to further analysis and can be re-packaged and adopted elsewhere, particularly in resource-limited communities, in developing countries or elsewhere.

'CitizenSqKm' is a communicative ecology for geo-located data wherein digitised information is created, collected, stored, processed and disseminated via a community network, made up of antennas, nodes and computers, but above all of students, teachers, citizens, local entities and public administrations. This community network it is both a material social community network and an online community network; it is designed to function as a decentralized entity, self-owned and self-managed by the community members; and its governance, knowledge and ownership of the network are required to be open access (Braem et al. 2013).

The main questions this paper intends to answer are:
How do we design a communication ecology and methodology that can effectively measure the transformative impact that CitizenSqKm may have on its community, commencing first with its application to a local development project active in Poblenou (Barcelona)?
What are the qualities and the limitations of that communicative ecology when we apply geo-media tools to the context?
Guided by our principal research objectives, we wish to reflect upon the following questions: Is it possible to design an open access platform where the user creates, stores and consumes data? By using this platform, within a specific communicative ecology, will this result in the user becoming a more solidly engaged citizen? To do so we will need to first define possible measurable indicators of authentic civic engagement.

In summary, the main contributions of this work are:
1) The design and development of 'CitizenSqKm' communication ecology
2) The design of a methodology to engage participants through educational and journalistic techniques
3) The planning and development of a comprehensive evaluation and applied

methodology of civic engagement through participatory media.

This paper carefully scrutinises the various methods used by ICT researchers and explores why and how these methods can evolve together with technology to reduce the structures of mediation and allow for substantial and direct social innovation and change.

The remainder of this work is structured as follows: Firstly we provide an overview of the different methodologies that are being used to analyze the effects of the Internet on civic society and other less conventional participatory methodologies designed to help monitor and evaluate social change characterised by frequent unexpected outcomes. This section presents the development of the experimental participatory communicative ecology and methodology that we will be implementing. Finally, concluding remarks will reflect on the emerging issues we may need to overcome.

Beyond what we achieve with this paper, **the goal for this experimentation** is to discover if **"it is possible to design a platform that utilises geo-media for a contemporary networked notion of civic engagement?"** We want to examine how CitizenSqKm contributes to increasing public awareness about the potential uses and applications for collecting data, producing local content and knowledge sharing. Finally, we expect this experiment will contribute to building and strengthening the social community network of the selected neighbourhood where a commons based computer network infrastructure (guifi.net) has already been deployed.

A truly participatory platform needs a truly participatory mindset, inside and out

There are a growing number of initiatives and projects using online platforms to empower communities and help citizens be better informed. There is also a growing body of knowledge about digital and social technologies: new media, social media, digital arts, big data, or smart cities. Within this space of new media, media and communications studies have defended the use of ICTs for development and to empower citizens. The role of emerging forms of literacy, politics and civic engagement enabled by ICTs has also been explored. Yet, citizens aren't empowered to transform their immediate reality, and we believe a media ecosystem using geomedia (geolocated information) might be able to generate such likelihood.

For the information process to be complete it is not enough to conduct a simple description and transmission of facts to audiences. The process also needs to engage them, instigate a 'democratic debate' and be able to influence and enable citizens to exchange ideas (Bagdikian 1969). This process could take place in Habermas' 'public sphere', that "space that mediates between civil society and the State, in which the public organizes itself, and in which 'public opinion' is formed" (Habermas 1991). The discussion of how participatory democracy can be achieved is still current today, Habermas' 'public sphere' is understood as "a space for debate based on conversational equality", whereas as Barker highlights, equality doesn't exist in practice (Barker 1999).

(Chadwick & May 2003) "participatory model" of interaction between governments and their citizens might now be possible; the 'real' cyber-society that "will be participatory in its logic and practice, despite the resistance that may be encountered initially" (Chadwick & May 2003) might now exist. A model that overcomes the shortcomings of the "managerial" model of interaction, in which the Internet is used to disseminate information; and that overcomes the shortcomings of the "consultative" model, where the government uses the Internet to ask citizens their immediate opinion (Chadwick & May 2003).

If it is true that, as defended by Benkler (Benkler 2006), we are seeing the emergence of a new stage in the information economy, which he calls the "networked information economy" and which transforms "how we make and exchange information, knowledge, and culture", how can we create a platform where citizens can effectively participate of such "networked information economy"? How can we transform research methodologies accordingly?. If "the new social settings come with their own social dynamics, but without long-standing structures of mediation and constructive ordering", there must be research methodologies that eliminate such structures of mediation as well, and allow for the community to reappropriate of its data and participate in this transformation process.

This paper focuses on such research methodologies and seeks to envision how to apply them in a real life experiment to generate civic engagement and change.

More-conventional research methodologies resist change
There are numerous reviews and analysis of more conventional methodologies that research a plethora of relatively new concepts such as social media, the ICTs, 'the Net', the Internet, the 'new technologies of communication' or the use of computers. These methodologies merely provide an analysis, take the Internet as an ethnographic site (Postill & Pink 2012); fail to challenge structures of mediation and do not enable real social change.

Researchers distinguish between 'virtual methods' and 'digital methods'. 'Virtual methods' (Hine 2000; Salcedo & Fuster 2014) are those methods where traditional methods, such as interviews, are adapted to the empirical research of 'the Net' by transforming them into e-interviews or statistical analysis of a website. 'Digital methods', (Marres & Rogers 2008; Rogers 2009; Salcedo & Fuster 2014) are those methods where the researcher does not adapt the methods from a different context to the medium (the Internet) but extracts the methods from the medium.

Since the distinction between quantitative and qualitative approaches in research has become an anachronism (Boyd & Crawford 2012), triangulation using several methods at a time, becomes a key concept (Salcedo & Fuster 2014). Using Digital Methods continues to be relevant; like Net Analysis, where observing the characteristics of the network, its density, the number of interactions, the degrees of separation, interconnections among nodes (Watts 2004) and how those interactions are distributed among participants; its evolution along time. Content Analysis is also relevant to reinforce Net Analysis, for instance 'using indicators to determine the most common terms used, what are the most common subjects, and even to conduct a sentiment analysis by measuring positive or negative words.' (Salcedo & Fuster 2014)

When a story is told or an event is experienced across multiple platforms and formats (Jenkins 2004) resulting in a transmedia experience, research modelled on a transmedia methodology is therefore required. (Salcedo & Fuster 2014). Transmedia research explores six dimensions: the number of transmitters and the size of the population; the interaction phase; the size of the content; the format of the content; the type of link or connection; and the property and rights of use over the content.

These six dimensions are not sufficient if we want to develop research methodologies that challenge structures of mediation, and allow for the community to reappropriate its data and instigate transformation. 'Online interactions and the way in which they mediate communication have forced a shift in this theoretical discussion: they make the analysis of networks less dependent on surveys and questionnaires and more on observational data'. (Gonzalez-Bailon 2013).

Therefore, this paper suggests that if researchers want to apply these research methodologies to a real life experiment to generate civic engagement and change, they will have to stop analysing 'the Net' (the internet) as an ethnographic site (Postill & Pink 2012). The research will have to go further than the so-called 'transmedia research' and it will have to use more participatory tools, to focus on analysing the real life experiment as a whole. The data researchers will need to observe are the views and the needs of the participants in the experiment, and they will need to embrace and understand them for these views and needs to be able to have an impact to transform the experiment accordingly.

Less-conventional and participatory tools for change

We have looked for participatory and qualitative evaluation tools to help monitor and evaluate social change and unexpected outcomes. And we have identified Ethnographic Action Research (EAR) methods, its variation Network Action Research (NAR), and the Most Significant Change (MSC) techniques. They are widely used to document the impact of ICT in transforming communities through media and through education, especially in development programs.

The EAR approach combines research with the development of a project and it looks at creating a research culture among citizens to trigger change, "a research culture through which knowledge and reflection are made integral to ongoing development" (Hearn et al. 2009). It combines three research approaches: ethnography, participatory techniques and action research. "It is designed to build the capacity of media initiatives themselves to monitor and evaluate and consequently to alter practices as part of their ongoing development, with the EAR researcher being a member of the media initiative team, most usually with other roles and responsibilities within the initiative itself." (Hearn et al. 2009)

The EAR approach is integrated in the local media initiatives, and is an ongoing methodology, conducted by the same participants, where "the researcher should be an integral part of a team, not an outsider only there to judge how well they are doing"; in this space, the roles between journalist, researcher, participant and audience, blurs. (Hearn et al..2009).

The Network Action Research methodology considers the network qualities of community

and the implications it has on action research; it maps existing informal social networks and it seeks to integrate them into the communication mix. The role of the researcher is very wide, as the researcher also 'networks the networks in an effort to develop the infrastructure necessary for sustainability and ongoing learning networks'.(Foth 2006)

The Most Significant Change approach is a set of tools to collect stories from the collective to measure the possible impact of a project or experience. Similarly to the EAR, it is based on qualitative and participatory techniques, but these techniques are conducted by the participants, who are involved in all aspects of the evaluation. The Most Significant Change approach keeps away from more conventional techniques conducted by experts. Instead of the expert or the researcher collecting the views of the participants, participants share stories to identify what is the most significant change they notice as the project or experience develops, and in what areas they identify such change. It focuses on the human impact of interventions. (Davies & Dart 2005)

Aiming for an ubiquitous and non-mediated platform with cyclical evaluation

We are researching the human impact of interventions; at the intersection of people, place and technology; where any piece of information—data—can be stored, copied and shared massively, geolocatedly and in real time. It is a place in which the personal and the public realms become merged and the boundaries between the roles of the participants (public servers, journalists, students, teachers or researchers) blur. 'Ethnographic places' that traverse online/offline contexts and are collaborative, participatory, open and public." (Pink 2009). In this space, CitizenSqKm is born as an adaptable experiment, developed around a complex communicative ecology and an also complex research methodology, based on iterative planning and on cyclical evaluation.

Communicative Ecologies

Drawing from Foth's NAR we will "first focus on strategies that acknowledge the human-to-human ties and social networks that are formed and sustained in the community through existing means of communication and then look at how tools may be employed to support those strategies." (Foth 2006). The tools employed are determined and designed taking into account ICT penetration levels in each community.

The first step in our analysis is to build an understanding of the existing communicative ecologies in the community, so existing information and communication flows and channels can be understood, and changes will be able to be monitored later.

This initial communicative ecology of Poblenou, in Barcelona, is expected to change overtime. Action researchers engage public officers, entrepreneurs, volunteers, researchers, journalists, students, and other citizens (also artists, intellectuals, political activists, cultural workers) to collaborate in the process of mapping data. And data is mapped to create a rough inventory of the social networks within the community; providing "additional meta-networking nodes that act as an interface between different stakeholders to allow the free flow of information and experience exchange" (Foth 2006).

CitizenSqKm will go further, mapping not only the social networks within the community

but also encouraging participants to conduct a census of the land, its inhabitants, its infrastructures, its services, and its nature; to collect and classify data related to that area. It will be an opportunity for open data, research data, sensors data, base maps, to come together in a methodological and technological environment, where participants will create narratives related to place. This census will be conducted in agreement and collaboration with several departments of the City Council, SME's, civic institutions, schools, and local media outlets in Poblenou, a strategy will be planned and guided by service learning methods (Furco 1996).

The architecture of CitizenSqKm's communicative ecology will be based on Itinerarium's Eduloc (http://eduloc.net/), a school based learning project and a tool for young students to learn through service learning methods, located narratives and gaming. It is an active platform that uses mobile devices for teachers, students and families to create itineraries, scenarios and experiences based on location.

The CitizenSqKm communicative ecology will also contribute to the development of the Poblenou community helping develop the local commons based computer network (guifi.net). CitizenSqKm will deploy the first node of a commons based computer network inside the building of its headquarters and will connect it to guifi.net, which will also provide the hardware components and the know-how for new nodes to be deployed around specific areas (not necessarily 100% wifi coverage). Local entities and citizens in the selected quarter will be encouraged to use it, also from the street, and understand the wireless commons philosophy and to expand the commons based computer network using the already deployed nodes. It will be a common infrastructure where users share not only technological network but also knowledge.
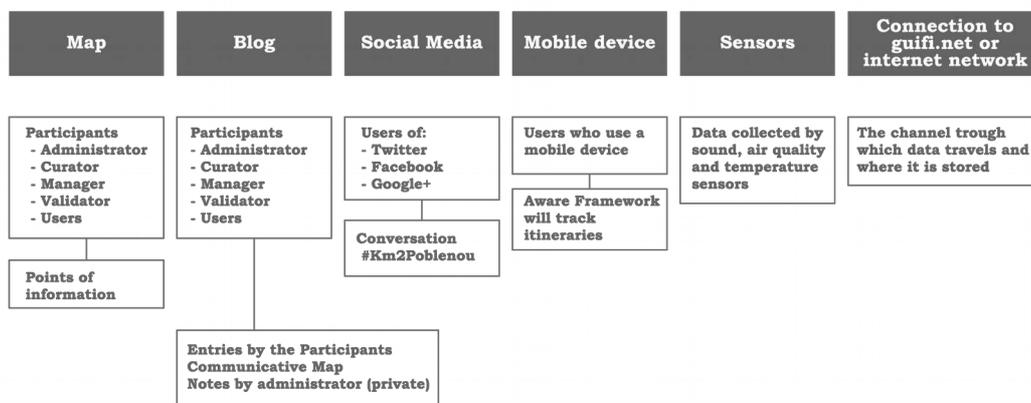

Figure 1. Communicative ecology

The main element of CitizenSqKm's communicative ecology will be a world map, divided in square kilometres following the Military Grids Reference System (MGRS). Data or content will be geolocated and classified in layers, categories and tags and by author and source.

Participants will have to register, and different roles will be given:
• Administrator (Itinerarium)
• Curator (organisation, association or school) who approves registrations and may create participation paths. Manager (organisation, association or school) who approves registrations and

may create participation paths.
• Validator (an expert who creates participation paths)
• Users (students, business owners, public servants, volunteers, other citizens)

All participating organisations will register and fill in a form with their data: full name of the person in charge, email of the person in charge, name of the organisation, address, activity, tags. And all users will also register and fill in a form with their data: full name, email, curriculum, and practice or interests.

Organisations will be able to create projects or paths for participation, and each project will also have its own form with name, description, tags, source and classification of types of data: sensors data, open data or crowdsourced data. In each project, participants will be able to geolocate objects on the map and classify them in layers and categories such as biodiversity, IoT equipments (antennas, nodes, sensors), heritage and trade, among others.

A blog/forum in CitizenSqKm website (http://www.citizensqkm.net/), created with Drupal, is a tool for both methodologies, MSC and EAR, so it will collect entries regularly written by participants to describe MSC stories and regular field notes. Each participant or researcher may have their own tag for their blogposts as our ecology gives more importance to the narrative given by participants, than to the collecting of personal reflections. But we acknowledge that some participants may not feel confident to share their experiences publicly, therefore the flow of communication will also be based on email, phone calls and offline face-to-face interaction.

We expect that storing and discussing research data in a centralised location will give us the opportunity to compare and contrast research, and develop significant insights into the potential role of ICTs in creating change, as it did with research for poverty alleviation via ICTs (Foth 2006).

Not all journals and field notes will be public, therefore a hidden blog will be created and shared among core researchers, a Teamwork account will also be used as an online project management tool.

As we acknowledge "the fluid, dynamic, swarming, chaotic qualities of social networks that are present in communities" (Foth 2006) we intend to identify as many networks as possible within each community, and we'll identify, as well, the existing communicative structures already in place (Foth 2006). As a consequence, the CitizenSqKm blog will include a directory of 'Related Blogs', our social media accounts (Twitter, Facebook and Google+) will promote engagement and communication exchange, and will search, follow and converse with social media accounts of other local networks. Other direct private online channels, such as email, will also be used, as well as online meetings, face-to-face one-on-one meetings, face-to-face meetings, online meetings, and any other means. Some of them will allow for an almost real time and synchronous communication and others will be asynchronous. Content will be uploaded to the platform in different formats, text, video, still images and links to other URLs.

Finally, drawing from W. Lance Bennett & Alexandra Segerberg (Bennett & Segerberg 2011), and replacing their "protest' for our "communicative ecology', like the producers of fictional transmedia narratives (Jenkins 2006) we will chose to offer various points of entry into our space and we expect participants in our communicative ecology to choose to do so as well, so in this collective effort CitizenSqKm will reach many different audiences; and as such it will be obvious that the concept of 'dissemination' has become outdated, senseless and useless.

As already stated above, EAR researchers are encouraged to involve participants, all participants, as informants and as fellow researchers. For school students, or the elder, or any citizen to be able to participate as researchers, both collecting and sharing local knowledge and informing to improve the CitizenSqKm platform, they will need to be trained.

Itinerarium tested educational methodology and ethnographic and participatory techniques will be used not only to guide the research process and action research but also to link the research back into the CitizenSqKm communicative ecology. Activities will be planned and developed to bring the project closer to being a ubiquitous and non-mediated platform with cyclical evaluation.

A participatory mindset with new methods

We start CitizenSqKm project by searching offline, talking with friends and colleagues, and searching online (Google) for organisations and individuals who may want to take part in the project. We then e-mail or telephone them, meet them face-to-face, talk with them to convey them our interest in conducting the project and enquire them about their interests if they were to participate. We then often have new exchanges via email, keep track of meetings on the online project management software (Teamwork), and transfer this content onto CitizenSqKm hidden blog, to then conduct a second round of meetings, face-to-face.

As we conducted the first round of interviews we identified a common will among interviewees: most organisations in the neighbourhood want to strengthen the engagement and the communication with other organisations and among individuals who inhabit, work or visit the neighbourhood. They share their sensitivity for environmental issues, community participation issues, inclusion, housing and urban development, among others.

These types of observations and experiences will be collected in short reports that are going to populate the CitizenSqKm blog/forum. Subsequently, the blog/forum becomes "a gallery to showcase the wealth of knowledge, skills and experience and the progress made by the community" conducting the project (Foth, 2006). The map platform becomes a gallery to organise and systematize the knowledge that belongs to the community. The computer community network (guifi.net) becomes the channel through which some of the data travels and is stored. The social media accounts become a gallery to conduct the necessary conversation among the community. These galleries and channels where data travels and is stored, and where interactions happen, will produce an endless amount of information to measure.

The core of the research will be the Content Analysis of the interviews, reports, and field notes collected offline and online, following MSC and EAR research, which will be gathered on the CitizenSqKm blog/forum, some will be public and some will be hidden. Blog content will be classified in categories, tags and keywords within the CitizenSqKm blog, where we will regularly ask participants to write about their feelings and motivations. Once this data is systematised it will be analysed meta monitoring positive and negative, gender, type of beneficiary, and other criteria, to identify patterns of change.

Net Analysis techniques will also be implemented to observe the characteristics of the various elements of the social community network. We are going to collect social interactions and information usage from the exchanges within the CitizenSqKm blog/forum, within the computer community network (guifi.net), the CitizenSqKm map, and also from Twitter, Facebook and Google+ via API (the three social media platforms which will initially be included in CitizenSqKm communicative ecology). On each of the elements we will be able to measure the density, the number of interactions, the degrees of separation, interconnections among nodes, how those interactions are distributed among participants; its evolution along time.

Additionally, contextual information could be collected by smart phones' applications, for instance Aware Framework (Aware). The application runs in the background and collects traces for multiple features, which can be further classified by the temporality of acquisition into static or dynamic, or by the semantic interpretation into availability or mobility features.

We will probably identify hierarchies within the platforms, hierarchies "which will indeed be determined by connectivity and the structure of the communication network" (Gonzalez-Bailon 2013; Salcedo & Fuster 2014). As participants will play different roles, it will probably be possible to observe the level of "betweenness", the importance of an intermediary among groups (Wasserman & Faust 1994; Salcedo & Fuster 2014).

We will also be measuring historical data about growth of the network, or identifying patterns in social community networks; creating visualisations of both, temporal and geographical data; or measuring interactions among students and between students and other participants, even the level of involvement by local organizations.

And finally we will consider homogeneity and homophily (the tendency of individuals to associate and bond with similar others) in the community, as it relates to multiplex tie strength. It is based on the theory of media multiplexity (Haythornthwaite 2005), which states that strongly tied pairs make use of a greater number of available online media, and a similar relationship exists in communication measured through mobile phones, for instance collocation data. But homophily often creates localization of resources and information, leading to a decrease in potential social capital. Social capital is the value embedded in social networks in the form of contacts that can potentially offer support (strong ties) and opportunities (weak ties) (Burke & Kraut 2013). As such, we will measure whether citizens are exposed to greater variety of opinions and information in their online or offline circles and we will therefore look at Postill and Pink's concept of 'socialities', the qualities of social relationships and how they change.(Postill & Pink 2012)

The results obtained with these methods of measurement will benefit a growing understanding and rich descriptions of local contexts and issues that will go back into the project's continuous cycle of planning and acting, turning research in a means of social intervention.

Discussion and Lessons Learnt

If conducting research really should turn into a form of social intervention, we must then produce technologies that allow participants to create that change and to have an impact in their surroundings. To produce those technologies we need appropriate methodologies; therefore we need to find a methodology that overcomes the big divide between the observational role and the participant role, where the researcher (observer) is on a different level to that of the participant (observed). The researcher ceases to be the intermediator between the participant and reality.

The researcher might be seen, here, as a 'constructor of reality' (Postill & Pink 2012; Hine 2000) Hine rejects the idea that an Internet researcher might be able to study bounded units: 'Ethnography of the Internet can, then, usually be about mobility between contexts of production and use, and between online and offline, and it can creatively deploy forms of engagement to look at how these sites are socially constructed and, at the same time, are social conduits', identifying 'online traces' such as hyperlinks as a way to move around a field site (Hine 2000). But, in fact, what we are researching is not 'the Net, as we wonder how the Internet can be characterised as a research 'site' (Postill & Pink 2012), and we are not researching solely a community or a social network either.

"The term 'community' is often used as a convenient container by researchers and external stakeholders to collectively refer to a more or less well defined group of people." (Foth 2006) without properly stating what defines that community. Like guiding principle of Network Action Research 'we would like to move away from a pure homogenous model of community and acknowledge the fluid, dynamic, swarming, chaotic qualities of social networks that are present in communities.' (Foth 2006). We want to observe a section of the culture and the society of Poblenou, with an ethnographic approach. We want to observe and measure the interactions among individuals, but also identify their interests, those of the individuals and those of the organisations and see if we can identify some change.

Asking participants about their feelings and motivations is the only way to provide depth and detail (Dalton & Thatcher 2014). We can collect such feelings and motivation online or offline, but regardless of how we collect them we need to hear them or read them directly from the participants, always keeping in mind that the purpose of the project is to help citizens transform their environment, not for us to merely gauge their opinion or their feelings. Besides, consumers are already learning the tricks of social media use and the meanders to avoid being tracked online, to avoid being controlled by big data, "using pseudonyms, private web browsing, ad/script blocking, location spoofing, web proxies or VPN services, and turning off location services on their mobile devices" (Dalton & Thatcher 2014).

Dalton and Thatcher suggest using 'big data' and older 'small data' approaches together, from a critical data studies approach, and following the ideas of 'counter-mapping' where maps are critically-informed and created from the bottom-up, challenging power structures and power relations (Harris & Hazen 2006; Dalton & Thatcher 2014) to create 'counter-data' experiences.

A 'counter-data' experience, where data would be created and collected from the bottom-up, is #meetcommons, a prototype experiment with a new methodology, where participants play several roles as speakers, financiers, audience, and where open documents are used to working collaboratively and transparently. Participants report collaboratively, and they end up doing research without being aware of it (Rey & Sánchez 2014). The #meetcommons experience is only one example of spaces created by citizens for experimentations, say Rey and Sánchez Uzábal who stress the importance of using a blog where to reflect, learn and share, collectively. They conclude that the only way to learn how to do research is by performing research and by exploring the limits of the tools we have; and sometimes, they say, one even needs to invent their own tools. Only then, states Subirats *et* al, researching on 'the Net' means going beyond simply making a diagnosis and it turns into a form of social intervention. (Subirats et al. 2014)

Devising our own tools

It is important to keep in mind that CitizenSqKm is an experiment and the core researchers will be strongly encouraging participation and actively promoting the use of the different elements of the communicative ecology by participants. We have already started to promote the use of CitizenSqKm and we have done a first round of meetings to map the existing (formal and informal) networks that operate within the community and initiate small participative action research projects within each of them. (Foth 2006)

In this first round of meetings and interviews, and as a result of our conversations with the interviewees (representatives of schools and high schools, agencies, organizations, institutions and individuals who live and/or work in the neighbourhood), we have started to defining five projects for participants to engage, to start populating the map and at the same time solve an issue, improve a situation or share knowledge related to their surroundings. These projects will determine, in turn, the subjects, categories, tags, followers and friends, which will populate CitizenSqKm social media sites.
• **Biodiversity** census to identify and geolocate biological and botanical species in the area, and a fenology or live cycle of some specific allergenic plants.
• **Heritage** to creating pathways to geolocate elements of the neighbourhood's heritage. Starting work on the Historical Archive of the Poblenou, students and the elderly.
• **Smart** to extend the computer community network (guifi.net) place sensors in various parts of the neighbourhood and collect data on air pollution, noise pollution, air humidity and temperature, and use the City Council open data, as well.
• **#happeningnow** a journalistic project to gather and geotag current affairs, a space for the improvement of the neighbourhood and for collective causes. Participants will work individually or in teams between school students, journalism students and the local Journal of Poblenou.
• **The way to school and small business** to promote the autonomy of children to go to school alone and encourage new forms of community relations between shopkeepers and families in the neighbourhood.

Our purpose is that in a second stage, participants initiate action research projects or sub-projects, themselves.

Conclusions

If this experiment is successful, participants will take command of CitizenSqKm, effectively transforming it into a robust geomedia platform for civic engagement. We anticipate the platform will help citizens become more aware of the potential uses for data collection, local content development and knowledge sharing; it will empower them to develop and strengthen the neighbourhood's infrastructure through their commons based computer network.

Four months have passed since we first commenced this 12-month experiment on the 15th of May 2014. In that time we have developed the technological platform; the foundations of the communicative ecology; and five projects to encourage the citizens of the Poblenou neighbourhood of Barcelona to conduct a census of the land and its inhabitants, infrastructures, services, and natural environment.

Schools have an important role in initiating projects of this nature; at the time of writing this submission (mid September), the school year in Barcelona is about to commence and the census will shortly be conducted.

Despite being in the early stages of the research, we have already identified some limitations to the experiment. Some we have already overcome, and others we expect to overcome in the near future. We have actively sought out specific organisations and institutions, which in turn have suggested other specific organisations and institutions to contact, and thus community engagement, in this first stage, will not be representative of the community at large. (Foth 2006) We have identified networks and sub-networks, which now require the researcher to harness the links from each of these networks of inquiry and plug into a larger networked community of practice. We want to encourage participants, now in the role of the researcher, to do so.

Applying the less conventional EAR and MSC methodologies to this experiment, in triangulation with more conventional techniques, is intended to enable participation and to promote a bottom-up flow of information. Despite this, many of the participants we approached preferred 'top-down' forms of participation, such as direction from the the core researchers of how they wanted participants to contribute to the project, and what actions the participants are expected to undertake, when and for what duration. As a result, in this first stage we have taken a more active approach than we initially wanted in structuring avenues for participation. We have also modified the schedule of the project; in the paths proposed we suggest participation be confined to the first term of the school year—September to December 2014—and we have decided not to create any more paths, hoping to encourage participants to create their own ways of participation after the initial stage, so content is of more local significance.

The EAR approach requires a high level of commitment by organisations, and is easier to apply in developing communities, where there is a prevalence of high needs communities that require assistance. Therefore it might be difficult to apply these methodologies to

Poblenou, a middle class neighbourhood in Barcelona, which doesn't appear affected by more obvious social problems that could be considered serious or significant, but can be considered as suffering from the growing common fear of loss of status where "many individuals feel trapped by a series of structural changes that they cannot control, but which affect them directly" (Busquet 2011).

Furthermore, the EAR methodology uses "media itself as a tool for action research: for exploring issues in a community as well as archiving, managing and collecting data and facilitating online networks of EAR researchers." (Hearn et al. 2009). The results of this experiment will not be used to build the capacity of a media initiative, but will contribute to a multidisciplinary initiative that involves stakeholders from education and public administration. Finally, although the headquarters of the project are located within the neighbourhood, the core researchers themselves are clearly outsiders, and are not members of any local organisation from the area.

We expect to overcome these flaws by assigning a more prominent researcher role to the participants, and creating a new methodology that goes beyond merely making a diagnosis, but moves to enact a social intervention.

We have applied a mix of approaches from more conventional methodologies with techniques taken from more recent approaches of Network and Ethnographic Action Research and Most Significant Change (MSC). This results in a blended educative and journalistic experiment, combining elements of scientific research, project management and local community development.

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