

Critical reflection on data publics: a multi-methodology perspective

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Introduction

A problem with making “big data” public is its interpretation. Raw data is generally incomprehensible, and requires some form of analysis to make sense. Previous attempts involve citizens in this analysis have often taken the form of competitive hackathons, where volunteer programmers work on the data and create interpretations of it over a short time period (Briscoe and Mulligan, 2014). However, these interpretations rarely go beyond dealing with technical problems, and it seems difficult to get other citizens involved due to this technical nature (Hellberg and Hedström, 2015). When dealing with complex systems (Mulgan and Leadbeater, 2013), such as global weather patterns or human societies (and the effects of one on the other), we need to deal with underlying non-obvious factors.

This paper describes a small scale engagement with a specific community. This engagement sought to provide the freedom for researchers and community members to explore a specific local issue through a method of their choosing. We propose that this loosely structured open parallel methodology has the potential to be adapted to other communities and contexts. We argue that this has the potential to reveal perspectives, needs and uses for data that may not emerge through more established methods of interpretation.

The research project in Tiree

The experience of a group of 10 PhD researchers on the Hebridean island of Tiree offers a pointer to a parallel multi-participant approach that could help deal with big data and uncover underlying factors. In October 2016, 10 PhD candidates from the EPSRC funded Centres for Doctoral Training at Lancaster, Nottingham, Newcastle and Southampton took part in a 5 day research trip to Tiree. The overall theme was digital technology, human values and remote rural communities, in a location where Internet access couldn't be taken for granted. Their work focused on re-purposing 11 phone boxes on the island that had been recently been decommissioned and given to the community. We weren't necessarily trying to force technological fixes on what might be social issues, or wider issues relating to infrastructure. The phone boxes can be viewed as a public, in that they are a group of similar objects that are all made for the same purpose, which was to provide a public service to the island community.

Methodology and findings

There were two main stages in our work on the island over two days, which could be framed in terms of research *for / through / into* design (Frayling 1993) . The first day was a Data Walk in groups of 5 to elicit thoughts and reflections from both researchers and islanders on what constituted data, where walking has been shown to help with gathering data about a sense of place (Evans and Jones, 2011). These perspectives on what was data and where it could come from and be used were thus research *for* design. On the second day, the researchers undertook a Phone Box Freefall exercise, where each participant spent an hour with one of the phone boxes, reflecting on

the box itself, its surroundings and its possibilities. Free-writing (Badger and White, 2000) was encouraged to overcome blocks to creativity. This parallel process allowed each participant to express their creativity and wishes, leading to a diverse range of responses. These included practical technical solutions, propositional objects, values-led design, poetry and art. We found that spending time with each box, and being in that particular place, enabled participants to think in terms of micro-contexts. These micro-contexts included being able to consider the place itself, and to think about each phone box differently and apply approaches that weren't technology focussed.

After this individual engagement, one researcher gathered together all their responses in a group exercise. Each person then presented their ideas, both verbally and in the form of drawings, poetry, artworks and mock-ups. As each person gave their response, they brought with them their own background, worldview and methodology, resulting in a set of very different visions from the ten participants. These visions included:

- Propositional objects (one participant placed a Pi-Top computer in the phone box, another an Arduino and some cables).
- Art works (one participant created a re-visualised phone box expressing values in stained glass panes).
- Technical solutions (these included Wi-Fi access which could extend beyond the phone box itself).
- Expressing the values of safety and benevolence, including an SOS button, provision to make contact with emergency services and information screens).
- Community hub (one participant proposed that the phone boxes could be locations for selling local produce and crafts).
- Poetry (one participant created a poem in response to finding a bird's nest in their phone box).
- Phone box as wildlife sanctuary (from another participant in response to the bird's nest).

The discussion developed to consider design possibilities that were not obvious, that challenged the taken-for-granted assumptions about what a telephone box represented, starting to uncover its deeper meaning to the local community. The value of openness became important in both implementing technical solutions and in creating a renewed sense of community around the re-purposed phone boxes. The phone box was visualised as offering fast internet access, a power supply and provision for open source technology to be connected to it. People in the local community could then use the phone box as a basis to develop services which could both contribute to the local and wider community but also be run as a business.

This creative process was contingent on the participants deeply experiencing the environment of Tiree. Trying to create solutions away from Tiree, as often happens with hackathons would not promote this appreciation of the design situation, that one phone box was used for nesting birds, not all of the boxes worked, that each box is in a completely different place, some near houses other in rural isolation. By being on the island, participants also appreciated that there is a public on Tiree that are united by location and remoteness, but that they all experience technology in a different way. Visitors, for example, might enjoy not having internet access and see it as a chance to get away from everyday demands, whereas residents see the lack of access as an issue that affects their ability to undertake remote working, accessing services on the mainland or contacting loved ones who don't live on the island.

This bringing together of perspectives corresponds to research *through* design, where the different interpretations and ideas could be brought together to create an overall design for re-purposing phone boxes in an isolated rural location. The process thus became one of critical reflection, which 'involves a critique of the presuppositions on which our beliefs have been built' (Mezirow, 1990, p.

1). Considered as a design process, each individual response to their telephone box can be considered as a design. The collection of responses can be seen as a portfolio of designs, with the telephone boxes being the unifying element. Annotated portfolios were offered by Bowers (2012 p. 76) as a means of linking together several designs through annotations that highlighted their common features, 'reaching out beyond the particular without losing attachment'. Gaver and Bowers (2012) develop the concept of annotated portfolios further as a technique that can articulate not only the aesthetic, functional and practical aspects of a design, but also the cultural implications, motivations, values and sociopolitical concerns that go into it.

What has emerged from the Phone Box Freefall is a parallel multi-participant approach that can make sense of quantities of data from personal engagement with the situation and its context. Reflection on this approach is research *into* design, where the range of ideas that came out of the Phone Box Freefall indicates that such a parallel process could be a powerful design method. This design approach was developed in a particular situation, engaging with a remote island community. In the next section, we consider how this approach could be abstracted and applied in other contexts.

Developing a parallel multi-participant approach

Drawing on our experience with the Phone Box Freefall, a parallel multi-participant approach to design can take the following steps:

1. Identify a specific social problem, community and place (in Tiree it was how redundant technology could be re-purposed to benefit a remote island community).
2. Highlight the importance of creating methods relative to a particular place and community, being there rather than dislocated (participants engaged both with the local community and with the phone boxes on Tiree).
3. Participants engage individually with the design situation using a method of their choosing (on Tiree each participant engaged with a different phone box but sharing the characteristics of similar form and location).
4. Participants then share their responses, which could be a design, a technological solution, a fiction or an artwork.
5. These responses are annotated to create a portfolio of designs.
6. The common elements in these designs revealed by annotation can then help prompt critical reflection on the problem, going beyond obvious potential solutions to a deeper understanding of the problem.
7. The outcomes of the critical reflection can then offer indicators of a potential non-obvious solution to the identified problem.

This is part of an emerging approach that places focus on place and community particularly in the selection and use of data.

Implications for practice in data publics

In this paper, we describe an approach to design that was emergent from a group of PhD students, situated on the island of Tiree and contingent on a situation of the island's telephone boxes being re-purposed. This exploratory approach places focus on place and community particularly in the collection and use of data. The methods we used on Tiree to explore data (Data Walk) and a local issue (Phone Box Freefall) could be applied to other contexts to reveal non-obvious factors, which could offer pointers to potential solutions. This parallel multi-participant approach may help communities engage and interpret data for their interests deriving from their (bottom up) concerns rather than the technical (top down) approach taken by methods such as hackathons. This approach

also shines a light on remote data publics, those who live in remote and rural communities. Our experience on Tiree highlights the importance of creating methods that are situated a particular place and community, of being there rather than being dislocated and using abstract data.

We propose this parallel multi-participant approach as one that could be particularly relevant to data publics, where stakeholders could reflect on the potential for a particular dataset to inform and enhance their lives. Bringing their individual reflections and approaches together in a facilitated session can then promote critical reflection, a transformation of the meaning of the dataset. Such a transformed meaning can then inform how the data could be used to create sustainable solutions to wicked problems in society (Rittel and Webber, 1973).

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