

Participatory Design and Action Research: Identical Twins or Synergetic Pair?

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ABSTRACT

In this paper we explore the similarities and differences of participatory design and action research in a cross-disciplinary fashion. We briefly outline two distinct studies: (1) a design study that examines mobile interactions of backpackers, and (2) an urban sociology study to better understand social networks of apartment residents. The first study follows a participatory design approach. The second study is guided by action research principles. We reflect on the research practice of these two studies in order to discuss the key methodological features of each. We would like to invite the larger participatory design community to continue the comparison and exploration we have begun here. By outlining the tools and techniques, and the application thereof we hope to promote the usefulness of action research for participatory design projects and vice versa.

Author Keywords

action research; new media; urban neighbourhoods; mobile information sharing; social networks; mobile ethnography.

ACM Classification Keywords

H5.1. Multimedia Information Systems: Methodology.
D2.1. Requirements / Specifications: Methodologies.

INTRODUCTION

Researchers face an ongoing challenge to maintain academic rigour in their studies whilst at the same time ensuring that their work and the results derived thereof are relevant to the real world. Relevance is sometimes measured by the quantity or quality of academic publications, by the level of success in the commercialisation of new products or services, or by the acquired reputation and prestige of the researcher. However, the infinite number of tangential variables that

impact on these measurements may blur the results. Research may be published in conference proceedings or academic journals, but if it is not translated into improving existing or developing new products or services, its relevance is undermined.

A simple but far reaching idea to aid researchers in ensuring their work remains relevant is participation. Social research usually involves humans; technical research involves the design, development and evaluation of technical artefacts which are used in one way or another by or for humans. Participatory (or participative) research encourages these people to take part and share in the research activity to ensure it is authentic, useful, fair, ethical, and relevant. The core idea of participation is to shorten the communicative distance between research activity and real world activity, between researcher and researched.

A number of research methodologies have been created or adapted to encourage participation. In this paper, we focus on two participatory research methodologies. We explore the similarities and differences of participatory design and action research. These are sometimes also referred to as meta-methodologies or research frameworks, because they can involve usage of both quantitative and qualitative methods and tools. After briefly outlining the background of each, we introduce the research design of two studies: one which follows a participatory design approach, and one which is guided by action research principles. Both of these studies are targeted towards understanding and assisting communities – other than that, they are quite distinct, both in methodology and aims. They help us illustrate the key methodological features of participatory design and action research and inform a preliminary comparative analysis. The paper concludes with a discussion of the applicability of these two methodologies. We find that both action research and participatory design entail similar conceptualisations of participatory principles, but are quite different in their intent and purpose. Despite an overlapping set of core values, the traditional domain each framework originates from contributes a unique range of methodological experiences which can benefit research projects in a synergetic way depending on context and requirements.

BACKGROUND

One of the key intentions of participatory research is to find ways for people to get involved in research and design activities that may impact on them. This allows them to define goals, contribute on their own terms in an emancipated manner, and take ownership of decision-making processes. There are various dimensions to participation. Greenbaum [9] distinguishes between the pragmatic, theoretical and political dimensions of participatory design, whereas Reason [11] outlines political, epistemological, ecological and spiritual motivations for participatory action research.

The many ethical and practical advantages of following a participatory approach have led to a whole range of new or adapted research methods which are becoming increasingly accepted outside their organisational, cultural and disciplinary boundaries (e.g., self-reporting ethnography [12], cultural probes [8], digital story telling [7]). Although participatory methods are spreading in popularity, the process of participation itself is in most cases complex. Establishing mutual trust and rapport between researchers and participants is one of the most challenging tasks. It usually requires a creative approach and an individual strategy for each research setting [3].

In the following section, we briefly sketch the background and origins of participatory design and action research.

Participatory Design

Participatory design (PD) originates from Scandinavian software development traditions. A culture of social democracy and powerful unions encouraged the participation of effected workers in technology development processes [5]. PD guides development processes and methodological strategies. Specific goals of PD include participation of stakeholders with different areas of expertise, iterative prototyping of ideas, and co-determination of technologies and work practices. It focuses on preserving existing social systems and attempts to manage technology development and rollout in a humanistic fashion. PD advocates the collaboration of researchers, developers, workers and management to produce workable designs which help to improve the lives of those that use it. PD uses informal processes with a strong emphasis on ethnographic and in-situ methods with frequent user involvement [13].

Some PD research projects concern design of specific technologies for certain work environments [2, 4]. These studies have included staff from the relevant workplaces in the development process, and used methods such as prototyping to co-develop suitable technologies. Technologies produced by PD tend to augment human abilities in existing job functions and are often requested by the users themselves.

Action Research

Simply speaking, action research (AR) is a combination of action and research. The imperative of an AR project is not only to understand and report on a given problem, but also to provoke change through action. Action researchers immerse themselves with the subjects under investigation in order to connect with them and encourage them to directly participate in the project as co-investigators.

AR is defined by a constant cycle of taking and giving in the form of planning, acting, observing and reflecting. The theory building driven by the researcher is combined with practice and informed action which benefits the participants by allowing them to take control of their situation and circumstances. It is a process that “engages all project stakeholders in constantly oscillating between knowledge generation and critical-informed reflection, in a helix directed at reaching a stage of improvement from which the process can start all over again – but this time towards an even higher level of understanding and achievement” [10].

AR is not defined by the use of qualitative or participatory methods, it is actually not restricted to any distinct method at all. However, it usually benefits from ‘soft’ methods that tend to pay particular attention to the fuzziness of research involving humans.

RESEARCH DESIGN

In order to explore participatory design and action research further we present one of each type of study.

Mobile Information Sharing

A study was run investigating mobile information sharing and social network formation amongst backpackers engaged in a typical tourist activity. The study is named ‘Mobile Information Sharing’ (MIS) with iterations 1 and 2. A group of six or seven backpackers was recruited from a hostel for each iteration. They participated in a day-long ‘field trip’ which included walking through the city, a boat cruise, and an animal park visit in Brisbane, Australia. In MIS-1 two observers accompanied the group, with one taking notes and the other using video. Three observers were used in MIS-2, with all observers taking notes and digital photographs. Digital audio-recorders were worn by participants who volunteered for the duration of the trip.

In MIS-2 foam mobile prototypes were carried and ‘used’ by backpackers during the trip. Before the field trip began, participants chose one prototype from twelve available; each had a different form factor and fictional function. For example, one function read “I can tell you what other backpackers thought about something.” The functions were a response to problems observed in MIS-1 and used to explore specific location-aware and community collaboration possibilities. Participants were given a marker and it was demonstrated for them how to play-act with the ‘device’ and draw interface additions on it. Throughout the field trip observers periodically asked the participants if

they had found situations where they wanted to use the prototypes. Workshops following the field trip debriefed the participants in both studies, and participants using prototypes had the opportunity to discuss modifications to them.

Participants enjoyed the prototypes at the beginning of the MIS-2 study, joking with each other and play-acting usage of the devices. Participants primarily placed the devices in pockets or backpacks, but sometimes carried them in a hand for extended periods. The prototypes entered into an ecology of other technologies such as clothing, jewellery, food and digital cameras. Five of the seven prototypes chosen were marked upon. Some participants added detailed interfaces resembling mobile phones, while others simply wrote feature lists on them. Several participants indicated they had not found a situation where the device would be useful. Several female backpackers expressed concerns about the poor aesthetics of the wearable prototypes. Others indicated the need for it to slide smoothly in and out of a pocket, or fit next to a mobile phone. One backpacker requested that a head mounted display be added to a tablet prototype, which he acted out using a pair of sun glasses. In group discussions backpackers introduced scenarios where device usage was feasible or not, based on their experiences during the day and recent travel experiences. Eleven design requirements for mobile travel devices were generated from observations and discussions with backpackers in MIS-2. Additional analysis produced 23 proposed product features. More on the study is available in another paper [1].

Social Networks of Urban Residents

This study conducted between 2002 and 2005 set out to better understand the potential of internet-based systems to support and facilitate social networks of urban residents and the role of those networks to foster neighbourhood identity and social capital. The study departed from the notion that a mere re-appropriation of systems used to support dispersed virtual communities of interest is adequate to meet the place and proximity-based design requirements that social networks in urban neighbourhoods pose.

Within a framework of action research, the study followed a case study approach of three different inner-city residential apartment complexes in urban Australia. Research methods were mostly qualitative and ethnographic and included surveys, focus groups, participant observation and interviews. The agenda of the action research approach was guided by specific objectives to analyse and understand the social fabric of residents in urban neighbourhoods and how information and communication technology, especially internet based tools and applications, can be used to facilitate meaningful neighbourhood connections and social networks between residents.

The research looked at each social network found. Initially through an online survey and follow-up interviews, it involved participants in a critical reflection of how their current activities can be improved and possibly contribute to making the apartment complex a better place to live for everyone. Barbecue nights were organised by residents to welcome new residents and to provide an informal opportunity for all residents to meet each other. The goal was to raise awareness for what different residents contribute to the community and how this implicit pool of interests, skills and cultural backgrounds can be harnessed by the community. This process also involved reflecting upon the variety of existing social networks present in the building and their activities, and promoting openness and social permeability to join other networks.

The study found that younger (or more recently arrived) residents are more interested to make new friends and to establish or compliment their social network, whereas older (or more established) residents seem to be satisfied with their existing social network (including members outside the building) and due to their longer term residency focus on issues relating to the maintenance and running of the building. However, the results are not exclusive, that is, some younger residents acknowledge benefits from a collective interaction approach and older residents acknowledge benefits from a networked interaction approach. Hence, the study shows that a dual approach towards neighbourhood animation seems to be ideal to take the hybrid qualities of networked individualism into account. Further details of this study can be found in [6].

COMPARATIVE ANALYSIS

Both studies are similar in their strong emphasis on the value of participation. Backpackers and residents respectively influence key aspects of the research themselves. However, each study is at a different stage in the research lifecycle. We can broadly classify the MIS study as *targeted* research towards a set goal, that is, to understand the needs of a mobile community and involve backpackers in a collaborative process of design of mobile tourism products. Research conducted before the MIS study used ethnographic methods to understand existing behaviour, user requirements and determine design goals. The MIS study itself focused on the design of a specific product for a specific setting. It involved users in the design process and attempted to create new technologies which satisfied multiple stakeholders affected by the product. The backpackers were only available for a short period before they moved on and we wanted to understand what requirements they had and see how prototypes were realistically used by them.

The urban residents study on the other hand can be broadly classified as *immersive* research insofar as it asked participants to critically reflect on their own behaviour and seek to collaboratively improve it in multiple iterations. The

study started without pre-defined tangible development outcomes and thus it entered with few pre-conceived technology goals. In fact, the study's purpose was to understand how a group of collocated residents communicate and interact socially and explore the lives and circumstances of the study participants in order to draw a rich picture. These results can now be used to inform a phase of targeted research to identify and translate requirements into technical specifications, and participatory design methods would be ideal for this next stage.

From reflecting on our study experiences, we think PD and AR frameworks have a similar interest in participation, but different strategies for doing so and with different intent. If an action research framework was added to the MIS study, the scope would increase significantly and the intent and direction would change. This hypothetical study might also aspire to bring about informed change to collective issues faced by the backpacker community. There are many open issues surrounding impact of travellers on the locations they visit, and concerns about how technology will affect future travel. Backpackers could be enlisted as fellow researchers who reflect on these issues and report problems as they travel. However, the structure of the backpacker community, the nature of social interaction and the individuality of issues faced by them are factors which make it difficult to add an AR framework to this PD study.

The urban studies project on the other hand has concluded by identifying a set of specific communication and interaction needs. In a future continuation of the study, a dual approach that combines AR and a PD frameworks could be envisioned. The PD aspect of the study would follow the goal of understanding communication and interaction needs to help form requirements and iterative design prototypes. The AR aspect of the study would complement the PD work. AR ensures that any potential shifts in communication habits, interaction patterns and power relationships associated with the rollout and uptake of new design solutions is adequately captured by further critical reflection, evaluation and informed action if necessary.

CONCLUSION

Our experience indicates that combining or comparing PD and AR strategies may be a useful exercise for those conducting participatory studies. An action research driven study that faces design tasks in the 'action' phase will keep within the participatory spirit if the selection of design methods is guided by PD theory. At the same time, a participatory design study may be able to encourage its participants to determine and critically evaluate a range of open (and perhaps non-design specific) issues if action research principles are used. Furthermore, PD and AR have similar participatory traits, but have different strategies and goals for doing so. A study following a dual approach could

benefit from the strengths of each framework depending on the nature of the study.

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REFERENCES

1. Axup, J. and Viller, S., Formative Research Methods For The Extremely Mobile: Supporting Community Interaction Amongst Backpackers. in *"Appropriate Methods for Design in Complex and Sensitive Settings" Workshop at OzCHI 2005*, (Canberra, ACT, 2005).
2. Brandt, E., How Tangible Mock-ups Support Design Collaboration. in *Nordic Design Research Conference*, (Copenhagen, Denmark, 2005).
3. Büscher, M., Shapiro, D., Hartswood, M., Procter, R., Slack, R., Voß, A. and Mogensen, P., Promises, Premises and Risks: Sharing Responsibilities, Working Up Trust and Sustaining Commitment in Participatory Design Projects. in *Participatory Design Conference*, (Malmö, Sweden, 2002).
4. Ehn, P. and Kyng, M. Cardboard Computers: Mocking-it-up or Hands-on the Future. in Greenbaum, J.M. and Kyng, M. eds. *Design at Work: Cooperative Design of Computer Systems*, Lawrence Erlbaum Associates, Hillsdale, NJ, 1991, 169-196.
5. Floyd, C., Mehl, W.-M., Resin, F.-M., Schmidt, G. and Wolf, G. Out of Scandinavia: Alternative Approaches to Software Design and System Development. *Human-Computer Interaction*, 4 (4). 253-350.
6. Foth, M. Network Action Research. *Action Research*, 4 (2).
7. Freidus, N. and Hlubinka, M. Digital storytelling for reflective practice in communities of learners. *ACM SIGGROUP Bulletin*, 23 (2). 24-26.
8. Gaver, B., Dunne, T. and Pacenti, E. Cultural Probes. *ACM SIGCHI interactions*, 6 (1). 21-29.
9. Greenbaum, J.M. PD: A Personal Statement. *Communications of the ACM*, 36 (6). 47.
10. Hearn, G. and Foth, M. Action Research in the Design of New Media and ICT Systems. in Kwansah-Aidoo, K. ed. *Topical Issues in Communications and Media Research*, Nova Science, New York, NY, 2005, 79-94.
11. Reason, P. Political, Epistemological, Ecological and Spiritual Dimensions of Participation. *Studies in Cultures, Organizations and Societies*, 4 (2). 147-167.
12. Tacchi, J., Slater, D. and Hearn, G. *Ethnographic Action Research Handbook*. UNESCO, New Delhi, India, 2003.
13. Wolcott, H.F. *The Art of Fieldwork*. AltaMira Press, Walnut Creek, CA, 1995.