Summary Report on CHI 2012 *invited* SIG: Participation and HCI: Why Involve People in Design?

John Vines[1], Rachel Clarke[1], Peter Wright[1], Ole Sejer Iversen[2], Tuck Wah Leong[1], John McCarthy[3], Patrick Olivier[1]

[1]Culture Lab
School of Computing Science
Newcastle University
Newcastle upon Tyne, UK
{john.vines, r.clarke, tuck.leong,
p.c.wright; p.l.olivier}
@newcastle.ac.uk

[2] Department of Information and
Media Studies
Centre for Digital Urban Living
Aarhus University
oiversen@cs.au.dk

[3] School of Applied Psychology
University College Cork
Republic of Ireland
john.mccarthy@ucc.ie

ABSTRACT

This paper reports on the 'Participation and HCI' invited Special Interest Group (SIG) meeting held at CHI 2012 in Austin, Texas. The SIG was motivated by the increasing relevance of participation in the CHI Design community. Participatory work has been performed with very different intentions: to democratize the design process; to better inform the design of new systems; to engage the public in the construction of their own futures; or simply to appease funding commitments. This *invited* SIG brought together an invited panel of experts who have explored participation to varying degrees to talk about their work in addition to an open discussion. The SIG provided an opportunity for discussion and reflection on how and why participative techniques and methods are used in HCI research and practice in different contexts. A number of themes emerged from the discussion: the timescales of participation; why people get involved in research; power relationships between researchers and participants; formalizing and generalizing participatory approaches and methods; and evaluating and documenting participatory work in HCI. The report concludes with a plan for future work at CHI 2013 and within the broader HCI and design community.

Author Keywords
Participation; HCI; SIG

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION
The CHI community has been interested in the role of user participation for three decades, although this has grown

exponentially in recent years. It is often stated that the origins of the notion of participation in HCI were in the Scandinavian co-operative design movement in the 1970s. Here workers were motivated to take a more active role in shaping the workplace of their near future, particularly in a period where computers were being introduced into workplaces and job roles were being radically altered or replaced altogether. Within broader CHI work, user and stakeholder participation in the design process has been often viewed as beneficial to designing better systems for target groups [4]. More recently, increased awareness of experience-centric approaches [19] and cross-disciplinary work between computing, the arts and the humanities [13] question the relationship between user participation and design innovation.

The growth in awareness and application of participatory methods surrounding HCI poses a challenge to the CHI community. Whilst the methods and tools researchers are aware of are growing, we lack a clear understanding of when and why using specific methods is appropriate. As cuts to funding place pressure on HCI researchers, the role and quality of participation might become questioned. New methods might be created without fully understanding those already used, or methods are drawn from other disciplines and used without acknowledging their epistemological and ethical roots.

There is a sense that we need to stop for a moment and reflect on the efficacy and ethics of the methods used in participatory research. A number of Participatory Design (PD) researchers are working on evaluating the long-term value of participatory work [2]. There are also ongoing efforts to organize the varieties of methods available [16], whilst others have argued for a return to the original values of PD [1]. Whilst this is encouraging it is clear however that a discussion of participatory methods used in HCI would benefit from, and be beneficial to, the broader CHI community.

ORGANISATION OF SIG

The main goal of the SIG was to explore why researchers involve people in design processes at all, and to discuss how appropriate participatory HCI methods, tools and approaches are being used in different contexts and domains. In total 28 CHI delegates participated in the SIG, with 21 of these participants registering for a Participation and HCI mailing list at the end of the SIG. The discussion between participants was seeded by brief provocations from four invited experts, each representing one of the following key areas of participation within the CHI community: 1) Susanne Bødker, representing participatory design in the Scandinavian tradition; 2) John Carroll, representing participation and collaboration in a community informatics setting; 3) Gary Marsden, representing participation in the context of HCI4D; 4) and Peter Wright, representing participation as it is understood in collaborative arts practices. We expected these position statements would encourage further discussion around topics such as:

- The integration and cross-pollination of participatory methods across diverse disciplines and fields.

- Review examples of projects that have compared and contrasted methods used within participatory HCI work and how such knowledge can be made applicable beyond individual projects.

- Discuss what it is the CHI design community requires in order to understand the implications of certain participatory methods and processes prior to commencing a project.

- Finally, whilst the prevailing theme is for increasing participation, are their contexts where participation is inappropriate?

PARTICIPATION AND CHI 2012

To open the SIG we provided a brief overview of the impact the notion of participation has had upon work presented at CHI 2012. There were multiple instances at the conference of presenters and authors referring to elements of participation in their work. Many of these dealt with very different notions and meanings of the term participation. For the purposes of clarity, these different approaches can be summarised as three broad categories: *participation in design processes*, *designing for participation* and *implicating upon participatory design*.

The majority of the work at CHI '12 focused upon *participation in design processes*. A number of papers explicitly discussed the role of participatory design processes and methods with groups of people who have specific needs and expertise [21, 36, 37, 53, 56]. Others explicitly discussed participatory design with a more direct focus on developing or iterating new concepts or ideas [19, 52, 54]. There were more technically focused papers, that described the development and evaluation of new systems, that referred to using techniques or methods of participatory design during the course of their design [3, 13, 24, 22, 10, 33, 26, 48]. Some of these discuss performing participatory design processes but do not explain what these comprised of [3, 10, 33, 26, 48]. Friedman and Hendry avoid using the term participatory at all—instead focusing on co-design and co-creation [21]. Others looked to the participatory design literature for insight but appropriated techniques from elsewhere [29, 1, 12].

Papers discussing *designing for participation* had a tendency to focus on how people are included and excluded from social communities and how technologies were used to help shape or disrupt these. These included examples of deploying new tools to enable participatory decision-making in small communities [30, 51] and studies of online participatory cultures forming around DIY practices [48]. Le Dantec's [32] work on facilitating community support networks for homeless mothers and the emergence of 'publics' provided an example of the blurring of *participation in design processes* and *designing for participation*.

Many papers drew conclusions that were referred to as *implicating upon participatory design* [16, 8, 45, 17, 40], in that whilst the studies or work described were not explicitly about participatory design it is suggested that the findings and future work would impact upon PD literature and practice. Borning and Muller [4] drew heavily from the participatory design literature in order to separate themselves from its heritage. Finally, a number of papers referred to their methods and general approach to research as participatory [39, 28, 24] but did not refer to particular methods or design/participative processes.

PROVOCATIONS

The introduction to the session was followed by the four brief provocations provided by Susanne Bødker (SB), John Carroll (JC), Gary Marsden (GM) and Peter Wright (PW). At the end of each provocation we asked each expert to provide a question that they felt was of crucial importance to the CHI community in terms of 'participation'.

Participation and choice

SB argued that participation in design processes should be about making participants aware that they have a voice in the decisions that inform the design of new technologies. Participants should be made aware that they do not have to buy into existing technologies, hierarchies and infrastructures—that there are meaningful alternatives that can be made available to them, or meaningful alternatives that they can help create [2]. SB suggested that in these types of processes the designs created are not necessarily understood as solutions to manifesting problems, but instead instruments to support thinking differently. Participatory design, therefore, is not about pleasing users of new technology but challenging them to question the decisions that are often made on their behalf. New types of requirements for technical systems emerge from these discussions. It was noted that these new systems might be

more challenging to technology providers to implement than those that they may ideally want to pursue. SB noted that her particular interest in recent years has shifted to exploring how PD processes can support civic life, creating broader conditions for participation via new technologies. She argues that much of the development underpinning Web 2.0 in recent years has been provided mostly by commercial actors, not citizens.

Participation and longetivity
JC introduced his argument by talking about his experiences of participatory research within geographical communities over extensive periods of time. Rather than working in timescales such as days, weeks or even months, JC's work has a tendency to work on the scale of years and decades (e.g. [9]). These projects are costly both financially and in researcher time. The focus is not on user interfaces but rather on the participatory development of infrastructures that support relationships between members of a local community. JC referred to how within communities much of the participatory work would be identifying ways for people to relate with others. This might be neighbours, or mediating between different types of actors (such as commercial and non-profit). The consequence of this type of work would typically be design research focusing on new infrastructures that enable people to connect and relate to one-another better. For example, past projects JC has worked on have implemented new networks and infrastructures within communities, and are going on to explore the issues of hyperlocality between community members and actors. JC noted that in these projects there would often be a stark contrast between work that focuses upon long lasting influence and low-level small-scale interventions that test out new ideas. These different scales have subsequent effects; the numbers of actors involved, the amount of time stakeholders engage with a project, and the frequency of researcher contact.

Participation and community
GM introduced his provocation by talking about his transition from PhD student and lecturer in the UK to doing participatory design in South Africa. He spoke about his original assumptions of how traditional techniques for user-centered and participatory design could be applied similarly in this new context. He soon had to start questioning some of the very basic principles of his background however, finding himself asking how you can involve people in the design of new computer technologies when they do not even know what a computer is. In these contexts, traditional PD methods are not immediately appropriate – and researchers tend to find themselves perceived as an expert in a context where their prior expertise is no longer entirely relevant. GM stated that in these contexts, participatory work is as much about building trust and social equality with members of the community as it is designing and deploying technology. He observed that his work in Africa has made him more sensitive to the role of the researcher as an integral member of the community. When you spend so much time building a rapport with people it is very difficult to suddenly become removed from this social context and environment. Finally, he commented on how his experiences highlight how participatory design at CHI focuses on the "stuff of design" rather than process – is this a problem the community should tackle?

Participation and artistic practice
PW explored three areas of interest surrounding participation as it is practiced within the arts, aesthetics, politics, and temporality. Discussing particular examples to illustrate these areas he asked whether there was something that the HCI community could take from the participatory arts community to reconfigure what participatory practice might become. He argued that the aesthetic experiences of taking part in large-scale collective installations motivated people to contribute to large-scale spectacles. He mentioned how participatory art projects can remind us that participation is a means and not an end in itself, something which is often forgotten in political rhetoric around participation. He also pointed to research projects that have paid attention to the temporality of participation working over extensive periods of time with people and questioned what happens beyond the end of a project. Finally, he made the point that participatory projects often make a questionable assumption: that the purpose of participation is the creation of equality, whereas the assumption of equality should be the starting point.

ANALYSIS
Following each provocation the discussion was opened up to the floor and SIG participants were asked to respond with follow-up questions. The questions and resulting discussions were documented by the workshop organisers on large sheets of paper and post-it notes during the SIG. These notes were transcribed. We performed a thematic analysis [7] on transcripts of the provocations, the resulting questions and discussions from the SIG. Data was summarized by an open coding structure. These codes were then grouped together into 4 themes that summarise the data. These themes are: *time and participation*; *why, power and expertise*; *levels of participation, formalization and generalisability*; and *reflecting on and evaluating practice*.

Time and participation
Discussions arose following all of the provocations on the issue of time and how much time researchers spend collaborating with participants on projects. JC referred to Muller's work on participatory and value centered design (e.g. [42, 43]) where participation works on the level of minutes and hours. Here, a PD session might only last two hours and focus on an intense data collection exercise to gather design and system requirements. A number of views were expressed at the SIG that these approaches have a tendency to be shallow due to their brevity. It was questionable what value participants might gain from taking

part in such a process. Muller et al. possibly would not consider this an issue, as they approach their participatory work from a different frame of reference to those exploring long-term engagement with communities.

JC and GM both advocated conceptualizing participatory work in terms of a long-term engagement within communities. In these contexts time is relevant in that short-term interventions can lead to a misgauging of what might be considered good design. SB referred to this in her provocation, how brief interventions and evaluations can lead to the implementation of the incorrect system. JC also referred to how it is necessary to engage with a community for an extensive period of time in order to understand the different expertise within and making these visible to other stakeholders within the setting.

Why participate?: Power and expertise
The issues surrounding longevity and time spent engaging with participants fed into discussions about why people might want to be involved in a participatory design process in the first instance. The questions emerging from this space were: What do people think they will get out of participatory design? How do we perform participatory design with an emphasis on gains for 'users'? What is meant by 'gains' in the first place? Does this refer to users gaining from the outcomes of the design process, or does it conceive participants as 'users' of a participatory design 'service' where they gain from being involved in a project with researchers?

There was a shared sense at the SIG that very often researchers do not make it explicit to participants the process they are going to be involved in. This raises issues related to informed consent – even more so in situations where participants cannot fully consent to participating in such a project (as with children or people with learning disabilities).

When discussing the ethics and rationale for people wanting to be involved in research – and the reasons why designers and researchers want them involved at all – questions about power relationships followed closely. The discussion suggested that participatory work (be that design, art or other) should be about sharing decisions and understandings. In PD you attempt to focus on collaboration and negotiating the needs of diverse individuals. Whether such a sharing of power is possible in all contexts was questioned at length in the SIG. In recent years there has been a corpus of work that has begun to explore the role of PD in work with children in various settings (e.g. [18, 49]). Some suggested it was very unlikely that children could have equality and share power (with researchers or otherwise). In these situations, participatory processes might focus more on providing opportunities for children to express themselves (as per Friere [20]), rather than emphasizing shared understandings and equalization of power.

Another key issue related to power and collaboration is how researchers perceive themselves as acting in situ during a project. One question raised was whether 'we' should act as facilitators or act as designers. Should participatory approaches to design be about developing prototypes and new systems? Or should it be about making people aware that design can be a way of living for them and not a specialist process that only experts have? Related to this is the issue of ownership and authorship emerging from participatory processes. SB referred to how, in most cases, participatory artists would hold the intellectual property of a participatory work despite working with members of the public or a group of people for an extended period of time. This raised the question of single authorship in an artwork when multiple contributors might also support the process and how this was different in research.

Levels of participation: Formalisation & generalisability
There was a discussion about the terms 'participation' and 'participatory', and how these are defined and interpreted in different disciplines and domains. For example, the term 'participation' means a different type of engagement with users in the Scandinavian PD context compared to how it is framed in most CHI papers. This becomes even more complex in the current context of CHI as the Arts and Humanities have a greater impact upon HCI literature, as the term 'participation' becomes even more loaded and defined in different ways. JC suggested that what was needed is some 'policing of participation'. He suggested creating a taxonomy of participation where the community explored the types and degrees of participation and how this is interpreted differently in different domains. There was a consensus that the CHI and PD community need to establish ways of critically evaluating the processes of participatory and collaborative research.

There was also a broader discussion about the generalization and formalization of participatory processes. The notion of the 'Living Labs' was highlighted as an exemplar model of working intensively with one community. Yet this model is difficult to transfer between communities and become generalizable as Living Lab processes are highly responsive to the needs of the specific groups of people taking part in it. The issues of generalizability across different contexts also become problematic when we encounter dramatic differentiations in culture. As noted by GM, how can the CHI community perform responsible research when researchers, stakeholders, residents etc are highly culturally diverse? The discussion highlighted that formalizing participatory design methods and techniques would be deeply inappropriate, as projects have to be highly responsive to the specific needs of the users, groups, communities and stakeholders involved. At the same time, there was a palpable sense that participatory designers and artists, as well as researchers and practitioners performing

participatory-esque work in HCI, would benefit from an agreed-upon best practice for documenting projects.

A question raised several times was what the relationship between participatory approaches to design and action research. Action research was particularly influential in early Scandinavian participatory design work and Hayes' [25] recent discussion of this relationship describes both PD and AR as long-term iterative cyclical approaches. RC described how this work had highlighted the potential need for initial research questions to be reformulated in the field with partners once engagement began. Such work points to design practice that benefits from openness and attending to the particularities of the people and places participating in a project, where collaboration occurs through a joint revision of the research question.

Discussions about levels of participation also introduced issues about what counts as enough engagement to be considered participation. JV referred to his experiences of working with digital artists who, following Krueger [31], conceptualize participation at the level of active spectatorship; i.e., people are always active agents and they hold their own participative stake in the aesthetic engagement of an artwork. Therefore, as the Digital Arts community becomes stronger at CHI, there is potential for the term 'participation' to become increasingly blurred in terms of its meaning. Taking these ideas further into the context of participative media, is there a point where people participate unintentionally by looking at a website, or by retweeting a tweet? In the context of social and participative media, the terms participation possibly needs to be re-evaluated.

Reflecting on and evaluating practice
Another issue raised was that very rarely are the benefits and negative consequences of participatory research articulated in the literature. OI is currently performing research into 'user gains', i.e., in what ways have participants benefitted from taking part in a design process. He noted very rarely do researchers ask what the users get out of participatory design. This raised broader questions about the varying experiences people have of taking part in participatory design: what are appropriate ways to document and capture experiences of participatory processes over time?; what are the conditions for stimulating experiences of participation?: is it possible to formulate criteria for best practice for certain contexts where people are involved in design processes?

It is also very rare for designers and researchers to articulate what they want from participation; be this from their participants (i.e., why did they use PD in the first place?) and what they personally take from the project (i.e., the designer/researcher as a co-participant in the process). Good documentation and evaluation of participatory work in HCI should consider how to get researchers and practitioners to self-reflect and make visible the effects

projects have on the researchers' lives. This might support greater discussion and provide ways to critically evaluate the outcomes of a participatory design process.

CONCLUSION AND FUTURE WORK
The SIG provided the opportunity for 28 members of the CHI community to come together and discuss some of the key issues surrounding the role of user/stakeholder/community participation in design processes and technological development. As a result of the discussion a number of key issues have been highlighted that should be addressed by the CHI community working in this domain:

- Mapping out the various definitions of the term 'participation' across the CHI community and finding ways to negotiate how the term participation changes as new discourses are absorbed by the community (Digital Art, Critical Theory, etc).

- Working as a community to identify the aspects of diverse participatory processes (be these co-design, PD, HCI4D etc) that can support 'best practice' across multiple domains and contexts.

- Providing greater emphasis in literature to participant experience and researcher self-reflection. Establishing what the barriers are to publishing such work at CHI.

- Exploring in more detail the issues surrounding authorship and ownership of intellectual property in participatory design/art and community informatics.

- Making it more transparent in papers and documentation why certain groups of people have been 'chosen' to participate in research, and subsequently understand at a deeper level why those who choose to be involved participate in the first place.

The organisers, invited experts and interested SIG participants will continue to shape the above issues via a mailing list and public website. A 'Participation and Digital Interaction' website has been set-up that will be used to document these ongoing discussions and the plans for the future (see: di.ncl.ac.uk/participation). A workshop will be held at DIS 2012 on the topic of cross-disciplinary perspectives on 'participation' and the impact these differing perspectives have on interaction design. The organisers of the SIG are currently scoping out the possibilities of extending these discussions to a larger audience at CHI 2013. We would like to involve more diverse perspectives in this discussion, including those from industry who use co-design techniques and researchers within CHI who perform short-term participatory engagement with users and stakeholders. On this basis, we will propose a workshop and/or a panel for CHI 2013 based upon some of the themes emerging from the SIG and the workshop at DIS 2012. It is clear to us that as user/stakeholder/community involvement in design processes become ever important, it is critical that the CHI

community understand why and how participatory work is performed in diverse situations and that the community as a whole improves the manner in which this research is documented.

ACKNOWLEDGMENTS

REFERENCES
1. Alexander, J., Han, T., Judd, W., Irani, P., and Subramanian, S. Putting Your Best Foot Forward: Investigating Real-World Mappings for Foot-based Gestures. In: Proc. CHI '12, ACM (2012), 1229-1238.

2. Bødker, S. A for Alternatives. *Scandinavian Journal of Information Systems*. 15, 1 (2003), 87-89.

3. Bonner, M., Wang, L., and Mynatt, E. Activity-Based Interaction: Designing with Child Life Specialists in a Children's Hospital. In: *Proc. CHI '12*, ACM (2012), 2087-2096.

4. Borning, A., and Muller, M. Next stapes for value sensitive design. In: *Proc. CHI '12*, ACM (2012), 1125-1134.

5. Bossen, C., Dindler, C., Iversen, O. User Gains and PD Aims: Assessment from a Participatory Design project. In: *Proc. PDC'10*, ACM (2010), 141-150.

6. Brandt, E., and Grunnet, C. Evoking the Future: Drama and Props in User Centred Design. In: *Proc. PDC 2000*, (2000), 11-20.

7. Braun, V. & Clarke, V. Using thematic analysis in psychology. *Qualitative Research in Psychology* 2006, 3 77-101.

8. Brynjarsdóttir, H., Håkansson, M., Pierce, J., Baumer, E., DiSalvo, C., Sengers, P. Sustainably Unpersuaded: How Persuasion Narrows Our Vision of Sustainability. In: Proc. CHI '12, ACM (2012), 947-956.

9. Caroll, J., and Rosson, M. Participatory Design in Community Informatics. *Design Studies*, 28, 2 (2007), 243-261.

10. Chuang, J., Ramage, D., Manning, C., Heer, J. Interpretation and Trust: Designing Model-Driven Visualizations for Text Analysis. In: Proc. CHI '12, ACM (2012), 443-452.

11. Davidoff, S., Lee, M, Dey, A., and Zimmerman, J. Rapidly exploring application design through speed dating. In: *Proc. UbiComp '07*, Springer (2007), 429-446.

12. Densmore, M. Claim mobile: When to fail a technology. In: Proc. CHI '12, ACM (2012), 1833-1842.

13. Draxler, S., Stevens, G., Stein, M., Boden, A., and Randall, D. Supporting the Social Context of Technology Appropriation: On a Synthesis of Sharing Tools and Tool Knowledge. In: Proc. CHI '12, ACM (2012), 2835-2844.

14. Ehn, P. Work oriented design of computer artefacts. Stockholm, Arbetslivscentrum, 1989.

15. Ehn, P., and Kyng, M. Cardboard Computers: Mocking-it-up or Hands-on the Future. In: *Design at Work*. Lawrence Erlbaum (1992), 169-196.

16. Feinberg, M. Writing the Experience of Information Retrieval: Digital Collection Design as a Form of Dialogue. In: Proc. CHI '12, ACM (2012), 357-366.

17. Foster, D., Lawson, S., Lineham, C., Wardman, J., and Blythe, M. 'Watts in it for me?' Design Implications for Implementing Effective Energy Interventions in Organisations. In: Proc. CHI '12, ACM (2012), 2357-2366.

18. Frauenberger, C., Good, J., and Keay-Bright, W. Designing Technology for Children with Special Needs: Bridging perspectives through participatory design. *CoDesign*, 7, 1 (2011), 1-28.

19. Frauenberger, C., Good, J., Keay-Bright, W, and Pain, H. Interpreting Input from Children: A Designerly Approach. In: Proc. CHI '12, ACM (2012), 2377-2386.

20. Freire, P. *Pedagogy of the Oppressed*. Penguin 1996

21. Friedman, B., and Hendry, D. The *Envisioning Cards:* A Toolkit for Catalyzing Humanistic and Technical Imaginations. In: Proc. CHI '12, ACM (2012), 1145-1148.

22. Garcia, J., Tsandilas, T., Agon, C., and Mackay, W. Interactive Paper Substrates to Support Musical Creation. In: Proc. CHI '12, ACM (2012), 1825-1828.

23. Gaver, W., Boucher, A., Bowers, J., Blythe, M., Jarvis, N., Cameron, D., Kerridge, T., Wilkie, A., Phillips, R., and Wright, P. The Photostroller: Supporting Diverse Care Home Residents in Engaging with the World. In: *Proc. CHI '11*, ACM Press (2011), 1757-1766.

24. Froelich, J., Findlater, L., Ostergren, M., Ramanathan, S., Peterson, J., Wragg, I., Larson, E., Fu, F., Bai, M., Patel, S., and Landay, J. The Design and Evaluation of Prototype Eco-Feedback Displays for Fixture-Level Water Usage Data. In: *Proc. CHI '12*, ACM (2012), 2367-2376.

25. Hayes, G. The relationship of action research to human-computer interaction. *ACM Trans. Comput.-Hum. Interact.* 18, 3, Article 15 (August 2011), 20 pages.

26. Hernandez, H., Graham, T., Fehlings, D., Switzer, L., Ye, Z., Bellay, Q., Hamza, M., Savery, C., and Stach, T. Design of an Exergaming Station for Children with Cerebral Palsy. In: Proc CHI '12, ACM (2012), 2619-2628.

27. Hoarau, R., and Conversy, S. Augmenting the Scope of Interactions with Implicit and Explicit Graphical Structures, In: Proc. CHI '12, ACM (2012), 1937-1946.

28. Johnson, R., Rogers, Y., van der Linded, J., and Bianchi-Berthouze, N. Being in the thick of in-the-wild

studies: The challenges and insights of researcher participation. In: *Proc. CHI '12*, ACM (2012), 1135-1144.

29. Khaled, R., and Ingram, G. Tales from the Front Lines of a Large-Scale Serious Game Project. In: Proc. CHI '12, ACM (Press), 69-78.

30. Kriplean, T., Toomin, M., Morgan, J., Borning, A., Ko, A. Is this what you meant? Promoting listening on the web with reflect. In: Proc. CHI '12, ACM (2012), 1559-1568.

31. Krueger, M. *Artificial Reality II*. Addison-Wesley, Boston, MA, 1991.

32. Le Dantec, C. Participation and publics: Supporting community engagement.

33. Lee, H., Lee, S., Kim, N., and Seo, J. Interpretation and Trust: Designing Model-Driven Visualizations for Text Analysis. In: Proc. CHI '12, ACM (2012), 463-472.

34. Light, A. Democratising Technology: Inspiring Transformation with Design. In: *Proc. CHI'11*, ACM (2011), 2239-2242.

35. Light, A., Wakeford, T., Egglestone, P., and Rogers, J. Research on an Equal Footing? A UK Collaborative Inquiry into Community and Academic Knowledge. In: *Proc. IKTC '11*, November 2011. Windhoek, Namibia.

36. Lindsay, S., Brittain, K., Jackson, D., Ladha, C., Ladha, K., and Olivier, P. Empathy, participatory design and people with dementia. In: *Proc. CHI '12*, ACM (2012), 521-530.

37. Lindsay, S., Jackson, D., Schofield, G., and Olivier, P. Engaging older people in participatory design. In: *Proc. CHI '12, ACM* (Press), 1199-1208.

38. Mancini, C., Rogers, Y., Bandara, A., Coe, T., Jedrzejczyk, L., Joinson, A., Price, B., Thomas, K., and Nuseibeh, B. Contravision: Exploring users' reactions to futuristic technology. In: *Proc. CHI '10*, ACM (2010), 153-162.

39. Moncur, W., Bikker, J., Kasket, E., and Troyer, J. From Death to Final Disposition: Roles of Technology in the Post-Mortem Interval. In: Proc. CHI '12, ACM (2012), 531-540.

40. Müller, C., Neufeldt, C., Randall, D., and Wulf, V. ICT-Development in Residential Care Settings: Sensitizing Design to the Life Circumstances of the Residents of a Care Home. In: Proc. CHI '12, ACM (2012), 2639-2648.

41. Muller, L., and Loke, L. Take Part: Participatory Methods in Art and Design. In: *Proc. PDC '10*, ACM Press (2010), 283-284.

42. Muller, M. PICTIVE – An exploration in participatory design. In: *Proc. CHI '91*, ACM (1991), 225-231.

43. Muller, M. Layered participatory analysis: New developments in the CARD technique. In*: Proc. CHI '01*. ACM (2001), 90-97.

44. Newell, A., Carmichael, A., Morgan, M., and Dickinson, A. Methodologies for the use of theatre in requirements gathering and usability studies. *Interacting with Computers*, 18, 996-1011.

45. Park, S. Y., Chen, Y. Adaption as design: Learning from an EMR deployment study. In: Proc. CHI '12, ACM (2012), 2097-2108.

46. EPSRC Grants on the Web. http://gow.epsrc.ac.uk/NGBODefault.aspx

47. Sanders, E., Brandt, E., and Binder, T. A Framework for Organizing the Tools and Techniques of Participatory Design. In: *Proc. PDC '10*, ACM Press (2010), 195-198.

48. Schneider, B., Strait, M., Muller, L., Elfenbein. S., Shaer, O., and Shen, C. Phylo-Genie: Engaging Students in Collaborative 'Tree-Thinking' through Tabletop Techniques. In: Proc. CHI '12, ACM (2012), 3071-3080.

49. Smith, R., and Iversen, O. When the museum goes native. *Interactions*, 18 (5), ACM (2011), 15-19.

50. Tanenbaum, J., Tanenbaum, K., and Wakkary, R. Steampunk as design fiction. In: Proc. CHI '12, ACM (2012), 1583-1592.

51. Taylor, N., Marshall, J., Blum-Ross, A., Mills, J., Rogers, J., Egglestone, P., Frohlich, D., Wright, P., and Olivier, P. Viewpoint: Empowering Communities with Situated Voting Devices. In: Proc. CHI'12, ACM (2012), 1361-1370.

52. Uzor, S., Baillie, L., and Skelton, D. Senior designers: Empowering seniors to design enjoyable falls rehabilitation tools. In: *Proc. CHI '12*, ACM (2012), 1179-1188.

53. Vines, J., Blythe, M., Dunphy, P., Vlachokyriakos, V., Teece, I., Monk, A., and Olivier, P. Cheque Mates: Participatory design of digital payments with eighty somethings. In: Proc. CHI '12, ACM (2012), 1189-1198.

54. Vines, J., Blythe, M., Lindsay, S., Dunphy, P., Monk, A., and Olivier, P. Questionable concepts: Critique as a resource for designing with eighty somethings. In: *Proc. CHI '12*, ACM (2012).

55. Visser, F., Stappers, P J, van der Lugt, R., andSanders, E. Contextmapping: Experiences from practice. *Co-Design*, 1, 2 (2005), 119-149.

56. Waern, A., Balan, E., and Nevelsteen, K. Athletes and street acrobats: Designing for play as a community value in parkour. In: *Proc. CHI '12*. ACM (2012), 879-888.

57. Wright, P., and McCarthy, J. *Experience-centered Design*. Morgan & Claypool, California, 2010.