Keep, lose, change: Prompts for the re-design of product concepts in a focus group setting

David M. Frohlich & Chris S. Lim

Digital World Research Centre

University of Surrey

Guildford GU7 1XH

d.frohlich@surrey.ac.uk

Amr Ahmed

School of Computer Science

University of Lincoln

Lincoln LN6 7TS

aahmed@lincoln.ac.uk

Abstract

Focus groups have traditionally been used in market and design research to obtain group reactions to product concepts. In this paper we outline a simple methodological extension to this format, involving a further stage of *concept re-design* in smaller sub-groups facilitated by a professional designer. The method was developed in the context of working with groups of older people on concepts addressing memory, identity and social communication. It is illustrated with reference to the re-design of two seeded concepts and feedback from participants themselves on the experience of taking part.

Author Keywords

Concept; design; re-design; co-design; focus group; older people; ambiguity; keep; lose; change

1. Introduction

Design seems to be a process of expansion and contraction of possibilities for interacting differently with the world. Designed artifacts lie not at the end of this process but somewhere in the middle, where ideas are realized in sketches or models and subject to critical reaction before being re-designed and re-built in greater detail for actual use. Conceptual design proposals of this kind can be subject to multiple interpretations and mediate heated discussion of design ideas before they are ever fully realized in products (Gaver & Martin 2000). Eventually however, decisions and choices have to be made about what aspect of an idea to take forward, and what interactional possibilities to include or exclude in the development of working prototypes (Martin & Gaver 2000).

More often than not, these decisions are taken by designers themselves, with critical input from target users and others. In this paper, we consider an alternative approach in which target users are treated as partners in design and invited to move beyond criticism to design itself. We will show how the kind of design proposals described by Gaver & Martin can provide a springboard for both feedback and design with lay partners, and a format for expressing *conceptual re-designs* occupying alternative points in a design space. Borrowing from the structure of Gaver & Martin's previous papers (op cit) we let the designs and re-designs speak for themselves, through a sequence of product concept figures. The prose is used to explain the connections between designs and how variations were arrived at in various re-design sessions. We situate this in the context of a project to explore Information and Communication Technologies (ICTs) for older

people, and related work on focus groups and participatory design workshops. The article concludes with feedback from participants themselves, and reflections on the strengths and weaknesses of the method to be addressed by future research.

2. Context and related work

The context for this work was the Sus-IT project, which examined ways of helping older people to engage and stay engaged with new ICTs as they age. A philosophy of the project, and the New Dynamics of Ageing program which funded it, was to work closely with a range of older people's groups, and involve them not only in the research but also in aspects of the design of associated technologies and products. The feasibility of product co-design was tested in a series of creative workshops with older people's groups, held between September 2009 and September 2011. These gave us the opportunity to explore and develop a number of novel product ideas with both digitally engaged and digitally unengaged older people, and to develop the re-design method presented here. A catalogue of resulting concepts can be seen in full on the project website: <http://sus-it.lboro.ac.uk/publications.html>

The above practice of involving older people as partners in research places it squarely in the participatory design field, which has a long history in Scandinavia and the US. A key characteristic is the treatment of participants as 'partners' rather than 'subjects' in the process of technology development (Sanders & Stappers 2008). However, as a recent academic workshop found, there are many levels of participation in design, not all of which involve potential users in the conceptualization of design ideas (Vines et al 2012b). Again Sanders & Stappers (2008) are helpful in distinguishing between co-design taking place across the lifespan of the design process, and co-creation taking place within a single design session. The latter can be seen as 'an act of collective creativity' (Lindley et al 2009, p6), such as we explored in the workshops. A whole variety of creative workshop techniques are available in the industry, cited in the literature and have been tried to different degrees with lay partners present (e.g. Suri & Marsh 2000, Wulz 1990). Characteristic outputs of participatory design workshops are the development of new concepts, engagement of interested parties, the combination of different people's ideas, and the production of design artifacts such as sketches or models (Muller 2008). However, inputs are many and varied, and don't usually involve well-formed product concepts such as those used in focus groups.

One reason for using such well-formed starting points for co-creation with older people, relates to the special challenges of working on ICT concepts with this population. Well known effects of ageing such as hearing, sight, cognitive and motor impairments appear to combine with lack of experience with new technology. This results in overly positive reactions toward new product concepts and various psychosocial effects in a workshop or focus group setting. The latter include tiredness, lack of stamina, concentration, attention and motivation, slow responses and a tendency to get side-tracked in conversation (Barrett & Kirk 2000, Newell et al 2007). Several authors address these challenges by working with older partners in multiple stages over time (Demirbilek & Dermirkan 2004, Lindsay et al 2012, Vines et al 2012a). Although some of these stages involve refining earlier design ideas in various ways, none do so in a traditional focus group setting. Focus groups are a potentially fruitful context, not only because they are so widespread, but also because some of their own limitations could be addressed by a creative extension. Issues such as diverse views, lack of consensus and unequal participation (Kitzinger 1994, Merton 1987, Morgan 1996) could be addressed by asking the group to reach consensus over a new design, to which all parties are able to contribute in different ways.

3. Methods

A series of themed workshops were run to enable older people to encounter digital product concepts through drama or demonstration and reflect on their value through discussion and re-design. The first three themes were based on debates in the literature about the need for simple computers for the elderly, the importance of memory and identity in later life, and the increase of social isolation with age. The fourth theme was suggested by findings from the first workshop which pointed to the iPad (and tablet devices in general) as a promising new platform for older people to customise themselves.

For each theme we worked with at least eight digitally engaged and eight digitally unengaged people over 60 years of age on separate days. Engagement focused narrowly on computer ownership and use, but was found to colour broader attitudes to digital technology in general and the understanding of internet technologies and services. Hence, digitally engaged participants in our study were defined as regular users of their own home PC (at least three times a week or more) while digitally unengaged participants did not own or use a PC. Participants were recruited from two distinct networks located in Dundee and Guildford. The first pair of workshops (1) were conducted at the University of Dundee and participants were recruited from an ICT drop-in centre hosted on campus by the Applied Computing Department of the university. All other pairs of workshop (2-4) were conducted at ICT drop-in centres in Guildford, run by Age UK and Guildford Borough Council. These centres typically host other social activities, and provide computer equipment, help and mentoring for those wishing to increase their computing skills. They therefore attract a wide cross section of older people of different socioeconomic background and computer engagement, and we recruited both visitors and mentors from these centres, sometimes snowballing to their friends to fill quotas for the PC-owning group.

In each workshop, every effort was made to make the day sociable and enjoyable for the participants as well as informative for us. We wanted the workshops to be a place of shared experiences and collaboration where older people can have a voice and role in specifying what they want from new and emerging ICTs. Lasting from 10 am to 3 pm with refreshments and lunch provided, the day was split into morning and afternoon sessions.

In the morning session, we held a classic focus group beginning with an introduction, ice-breaker and discussion of participants' current practice in the area of the workshop theme. We then showed them three open and ambiguous conceptual prototypes that were our design responses to the theme. After each demonstration, participants were invited to give feedback and critique the concepts they had just seen. At the end of all three demonstrations, they were asked for their preferences and the price they were prepared to pay for each of the concepts on a ranking form.

After lunch, we held a co-creation session based on the re-design of three concepts shown in the morning. The participants were split into three smaller groups of about three. Each group was facilitated by a designer/researcher who asked them what they wanted to keep, lose or change about a single concept. We found this question to be productive in workshop 1, for the diversity of people in our groups. Everyone knows what they like (to keep) and dislike (to lose) about an idea, and this is a good basis for creative consideration of changes. At the end of the session, the groups reconvened and each team presented their concepts back to the group for further discussion, in the form of a design 'crit'.

The inputs and outputs of this process were limited when viewed in terms of a complete product lifecycle. Our starting concepts for each workshop were not informed by ethnographic requirements work and a deep understanding of user needs. Furthermore the re-designed concepts

were not immediately viable alternatives to the starting concepts, nor prototyped and tested in a field trial. In practice, the methodology reported here needs to be situated in a broader context, and supplemented with this kind of preparatory and follow-up design work. However, we concentrate here on the conceptual design and evaluation aspect of the process, to show how this might be democratized beyond the feedback solicited in focus group sessions.

4. Concept re-design in practice

In the rest of the paper we take two example concepts seeded by us in workshops 2 and 3 and trace their re-design in the afternoon sessions by ‘PC’ and ‘Non-PC’ owning older people. The concepts have been chosen to represent two ends of a spectrum of reactions to any concept. **Story Lamp** was a concept from workshop 2 that met with broadly favourable reaction, but was re-implemented differently across the PC and Non-PC groups (see also Lim et al 2011). **Twitter Well** was a concept from workshop 3 that met with negative reactions, and was re-purposed in different ways across the two re-design groups. We review the way in which these reactions played out in the corresponding re-design sessions with four different groups, before considering in more detail how participants collaborated with each other and with us during these sessions. The issue of collaboration is important to understand how design decisions were distributed in each discussion, and what role we came to play as designer/facilitators both within and outside the sessions.

4.1 Acceptance and revision of Storylamp

A description of the **Story Lamp** concept is shown in Figure 1. This was designed by us to support memory and identity processes in later life, and is therefore referred to as ‘Our concept’ in the figure. It was envisioned as a semi-functional 3D model whose operation was demonstrated as we read aloud the description shown. Essentially the lamp is an appliance version of an ‘audiophoto desk’ designed by the first author, with additional capture and projection capabilities (Frohlich et al 2004). It can capture and record spoken stories associated with physical or digital photographs and objects, and play them back automatically from their original referents.

Figure 1. Story Lamp

The **Story Lamp** concept was demonstrated and discussed in two morning focus groups by PC-owning and Non-PC owning older people. Initial reactions to the concept by both groups were very positive. They saw it both as a way of capturing old photos and memorabilia for future

reference and sharing, and as a method of explaining their meaning and stories to future generations. Playback was seen to be better from original physical materials rather than digital images because of the low contrast trapezoidal quality of image projection (right hand image in Figure 1).

In afternoon sessions, a smaller number of participants in both groups were asked to re-design the **Story Lamp** concept. This was initially difficult with reference to the keep/lose/change question because participants generally wanted to keep most features and change very little. However, the exercise was helped by encouraging everyone to tell a short story about a precious photo or object. Thinking about how their own story could be captured and represented on the device threw up problems and issues for re-design.

For example, in the Non-PC group, MP told the story of being an usher at the Queen Mother's 100th birthday service in Westminster Abbey. A guest fainted two rows behind the royal family and MP helped to carry them out unnoticed. He imagined telling this story over a copy of the Order of Service book, but realized that other media might be captured to go with the story – including photographs, TV coverage of the event, music, and even the smell of incense and candles in the cathedral. This resulted in a group discussion of capturing content from portable devices and broadcast sources and linking them together in layers. Another story of a wedding day led to the idea of multi-stage stories and slide presentations through the projector or an integral display at the base of the lamp: *“Yeah because of the different stages of the wedding, it's a bit like gossiping because of the way everything leads up to it, getting ready, brides maids, best man, yeah”*, (PK). Hence the main changes in the new design were extensions to the functionality incorporating inter-related materials and stories. This resulted in the **Multimodal Lamp** concept (see Figure 2).

Figure 2. Multimodal Lamp

Re-design activity in the PC group started with general agreement to keep the capture aspects of the concept. However, this led to a protracted discussion of how to do that when one participant suggested porting the entire functionality to his laptop: *“What I hope, if I design something, I would be to use the laptop with a camera and turn, you put the object there, focus your camera on there and then you have the software (to capture it)”*, (JT). After general agreement with this suggestion, the group then designed a swiveling camera and microphone mechanism at the top of a laptop screen that allowed objects and photographs to be captured from behind. We refer to this re-design as the **Laptop Media Scanner** (see Figure 3).

Figure 3. Laptop Media Scanner

Having accomplished this transition, the group went on to consider integration with other related software packages, interface features and networked services they were familiar with on the PC. These included family history programs, image zooming, photo-websites and photo print services. They even discussed alternative metaphors for the interface and operation of the system, borrowing a timeline graphic from another concept shown in the morning called the **Reminiscing Radio** (Lim et al 2011): *“I like the radio one, I like the timeline on all of this multimedia because when they sell you the family history program they are selling it for you to store information about your ancestors, they are not plugging it to store your own memory”, (AW)*. This led to the design of an extended calendar interface in which users could record verbal diary entries illustrated with images and other content. The sophistication of this design thinking was hard for us to note and draw at the time, and is not reflected fully in the **Laptop Media Scanner** description of Figure 3. However it underscores the effectiveness of the re-design method, and the capability of many older people to engaged in detailed design discussions about future technology.

4.2. *Rejection and re-purposing of Twitter well*

Our **Twitter Well** concept is described in Figure 4. It was part of a workshop addressing social isolation issues for older people and attempted to give a simple embodiment to Twitter. A single line display was envisaged within a glass test tube and said to correspond to the twitter messages of a grandchild or close relative. Responses could be authored on a dedicated internet keyboard and sent to the mobile phones or computers of individuals or private groups.

Explaining this concept was a challenge in the morning sessions. Few members of both groups had any experience of Twitter or Facebook, and those that had felt them to be trivial. As in previous research, there was a general reaction from our older participants against the shallow and impersonal nature of on-line social networking compared to face-to-face contact (Lehtinen et al 2009, Lindley et al 2009). Many participants were uncomfortable with the open nature of communication and concerned with privacy and account safety issues. They also objected to the medical aesthetic of test tubes, which reminded them of specimen jars and urinals, and also to the dangers of dropping and smashing them. This led to a pretty unanimous rejection of the entire concept as a focus group outcome.

Figure 4. Twitter Well

Our Non-PC and PC groups were therefore effectively forced to re-design a concept they didn't like. This was an interesting challenge in its own right as the initial reaction to our keep/lose/change question was to lose everything. As this was impractical as a strategy for re-design, both groups returned in different ways to what they hated most about the concept, what they hated least, and what they could see it becoming with a little more imagination.

The Non-PC group retained the text communication function and concentrated on replacing the glass test tubes with something more robust and portable. The immediate inclination was to design flat ruler-like displays that could be taken out or stored together in the home. One participant's mention of a hospital visit set up a train of thoughts about its use for emergency messages to and from hospitals, where mobile phones are forbidden. This idea was thought to work well for an extended family where important messages could be circulated quickly: *"Why not have something where you can have some close group of people like family? In some way it is an alarm thing for one person you want to hear about"*, (JW). Discussion of how to hold the displays together and respond to individual messages, led to consideration of pen holders, wine racks and finally game boards as metaphors for the new concept. Some final interpretation by the designer/facilitator led to the **Connect Blocs** keyboard as shown in Figure 5.

Figure 5. Connect Blocs

The PC group returned to the original aim of **Twitter Well** which was to allow the older generation to keep up to date with what the younger generation are doing. One participant turned this on its head and promoted the opposite dynamic: *“The sort of use I could see is for younger people to keep in touch with their parents to make sure they are still alive and kicking”*, (RX). This set the tone for subsequent discussion of housebound people and those in sheltered accommodation needing visits by professional carers as well as family. Eventually a new device was designed to allow wardens, carers and family to check on the status of housebound older people. Text messages were integrated into a single display, and sound was used to indicate arrival of an incoming message or allow a speech response. Stock responses were also suggested, by analogy to recorded answerphone greetings. The resulting **Network Care** concept is shown in Figure 6, and can be seen as a complement to the kind of personal emergency response devices worn by the elderly to send a signal to an emergency service in the event of a fall or injury. **Network Care** forestalls this situation with more continuous and social monitoring, as in a brief phone call or home visit.

Figure 6. Networked Care

4.3 Design collaboration

Although the group reasoning behind the re-design of **Story Lamp** and **Twitter Well** is summarized above, the way in which ideas were generated and distributed in the sessions is not. To shed light on this process of design collaboration we analyzed the talk within the four example re-design sessions for these starting concepts. A conversation analytic (CA) approach was adopted to identify some of the sequential properties of the re-design talk, in terms of the conversational moves and roles of participants (e.g. Atkinson & Heritage 1984). Full CA transcripts and notation are not used, but rather short descriptions or extracts of the talk are quoted direct from the audio recordings to illustrate what appear to be systematic phenomena. A more detailed analysis is not possible within the scope of this paper but would be a good topic for future research (see Section 6.4 below).

The role of the ‘keep, lose and change’ prompts by the facilitator varied according to the individual words. When thinking about what to keep about the original concept, participants remarked on what they saw as its distinguishing attribute or, in marketing terms, the unique selling point (USP). For example, one participant (VR) in the PC group said they appreciated the fact that **Twitter Well** appeared to be given to an older person by a younger relative to keep in touch, while another (AS) in the PC group for **Story Lamp** wanted to “*keep the capturing*” of

images and sounds, because that was considered to be its essence. Beyond the USP, all features of a concept were assumed to be kept by default, unless specifically criticized and changed. While these positive reactions were important for the group to retain key features of each concept, they did not help directly with re-design. In contrast, the comments on what to lose or change provided springboards for new design directions that other participants could then follow. For example, one person in the Non-PC group for **Twitter Well** said *“I want to lie it down”*. This referred to the difficulty of reading a single line display standing vertically in Figure 4, and became a trigger for their horizontal arrangement in the **Connect Blocs** concept of Figure 5. In fact, many comments like this really addressed the ‘lose’ and ‘change’ questions together, in both critiquing a feature and suggesting an alternative in the same utterance. This was often done verbally through questions rather than direct suggestions.

A large number of questions were asked by both participants and facilitators in the re-design sessions. Ostensibly many of these were requests for clarification on the concept being discussed, or gentle probes of possible functionalities that might be added. Pragmatically, they were often treated as critiques or re-design suggestions for changes in functionality, market or form. For example, in considering the **Twitter Well** concept, one member of the Non-PC group asked on separate occasions *“Does it need a chip and pin for security?”* and *“Do you have to have glass?”* (MP). Each utterance served to trigger a discussion of the privacy of messages and form of the device leading to modifications in message content and the material used to encase the displays. Facilitators often used the same technique to clarify a possible change to the design that had just been discussed previously. Hence CL asked *“Do you think it will be for younger relatives?”* following the suggestion in the Non-PC group that **Twitter Well** might be used in a hospital context for checking on older relatives. Sometimes more open-ended questions were used by facilitators to deepen or consolidate a re-design suggestion, like moving the **Story Lamp** functionality to a laptop in the PC Group: *“OK, how shall we do that?”* (DF).

This latter example illustrates one of three reactions to critiques and suggestions in the sessions. Either the group embraced the new design direction and worked together on how it would be implemented, as with the laptop media scanner, or they rejected it, usually through a contradictory suggestion or critique. For example, after a suggestion in the PC group from RX that Twitter Well messages could be voice-based and lead to a live conversation, AW stepped in to counter this with the following response: *“I think that is slightly going out of the concept. I mean the people at the other end who are sending these twitters... have not got one of these”*. This resulted in the concept remaining message-based. A third kind of reaction to a re-design suggestions fell between these two extremes and involved ignoring the suggestion with a pause, a new question or an additional unrelated suggestion. For the most part, groups self-regulated themselves in this way to find a consensus for re-design that they could all agree on, without the need for explicit conflict resolution by the facilitator.

The role of the facilitator however, was key to the stimulation of new design ideas and their envisionment and completion within the time allowed. Left to their own devices, participants would have endlessly critiqued the starting concepts and generated new design features, without consolidating or documenting them in a coherent new design. This could be seen in the variety of questions used by facilitators at the beginning of the session to stimulate new ideas (e.g. above *“Do you think it will be for younger relatives?”*), those used in the middle of sessions to clarify or extend them (e.g. above *“OK how shall we do that?”*), and various sketching activities used to document and consolidate the designs. An example sketch is shown in Figure 7 and was done by DF as the PC group tried to re-design the **Story Lamp** as a laptop application. The main

innovation was suggested by JT with reference to a swiveling webcam on the top of his laptop, which DF then drew and explained for the group to visualize. It was said to be for scanning objects behind the laptop screen: *“Ok so you are looking at it like a window, looking through the screen”* (DF). The group then went on to discuss how to capture parts of a photo album, whether to use an integral or handheld microphone for voice annotation, and where to store the stories; all of which DF documented in a second sketch on the right of Figure 7. The same sketches were used as prompts with which to explain the new concept in the subsequent feedback session and also became the basis of the final documented concept shown in Figure 3. As in most design discussions, these sketches became a focus for elaborating the details of design ideas and recording them for later reference. Significantly for these sessions, participants were reticent to draw themselves so this became a key role and contribution of the facilitator/designers in each group.

Figure 7. Early sketches of laptop media scanner in re-design session

5. Participant feedback

After the main series of workshops, we invited all our participants back for a feedback session to update them on the project findings and evaluate the workshops with them. We were interested in what the participants thought about participating in the workshops, and how the re-design sessions in particular might be improved. We were also interested in whether the sessions changed their attitudes and perceptions towards ICTs. Nine participants attended the feedback session held in June 2012. Three participants were ‘Non-PC’ and six were ‘PC’. Participants were given a concept catalogue resulting from the work and an update presentation from us on the project outcomes. An evaluation questionnaire was then distributed for completion prior to a group discussion.

In general, the participants were very enthusiastic about the workshop sessions. They felt the sessions stimulated their creativity and helped them learn about technology. Their experience of the redesign session was especially positive since most were surprised that they were able to engage with the design of ICT at this level of detail. As one participant remarked: *“that was the thrill, I went away buzzing at the end of the session”*, (AW). In addition to the social benefits of taking part, participants felt that they were valued and empowered to be involved in impacting the future development of ICT. For some people, the re-design sessions were educational and changed their attitudes to new technology: *“I think it's an eye opener for me because I always considered the computer to be for high powered mathematical operations, because I grew up*

with a computer when it was machine code which I programmed myself. This helped me to think of computers as an everyday tool in a home environment”, (JT).

Participants felt that the use of conceptual prototypes as a primer or inspiration for new designs was useful for getting started. One participant likened this to starting a painting by having a scene and context to inspire you. Another remarked on the willingness of the facilitators to challenge their own designs, and the way this encouraged her to change them: *“One of the good things about the fact that we were presented with some really wonderful ideas, and I thought how did these guys think these up. Then they said, well, is that a good idea, or is that a bad idea, what shall we do with it?”, (VD).* Most participants appreciated the initial designs as a starting point but were impressed with how far they managed to take them in the re-design sessions: *“ In a funny way you do come up with new ideas...you are actually coming up with fresh ideas, but it's based around the core topic, (RX).”* The keep, lose, change question was liked as a straightforward way of starting the re-design, and other people's input on that was important in questioning the current design for oneself: *“Well it's quite good though isn't it, because it means that the mind is actually doing two things at once, it's listening to other people, and then thinking but why don't we do that”, (JW).*

More critical comments concerned the difficulty of understanding software demonstrations compared to hardware ones, and the speed with which re-designs had to be generated. In the first case, participants found it easier to understand and re-design information appliances than the kind of iPad apps shown in the final workshop. This may have been related to the number of screen transitions being shown in the latter case, and the difficulty of applying the keep, lose, change question at different functional levels. In the second case, participants asked for more time. Re-design sessions were typically an hour long and this felt too rushed in many cases. A better method might allow for more time and the chance to reflect and return to the task another day (Lindsay et al 2012, Vines et al 2012a).

6. Discussion

Although there have been many forms of product co-design and co-creation explored in the past, our study has explored a particular form of conceptual re-design with older adults. In this section we reflect on the lessons of this exploration for participatory design and its operation with older people who have traditionally been considered a challenging group to work with. We also consider the benefits of using re-design in focus groups themselves, and some of the contrasts and relationships between critical and creative talk.

6.1 Doing co-creation through re-design

On the face of it, re-designing an existing concept might sound less creative than designing something from scratch. However, our examples show considerably creativity in the re-design process that results in quite significant departures from the starting concepts. Those differences can be in the form and implementation of the product, as in the **Laptop Media Scanner** version of the **Story Lamp**, or more fundamentally in the functionality of the product, as in the two variants of **Twitter Well** used for quite different communication purposes. It might also be argued that no concept can be created completely from scratch. A design context or brief is always required to set off a line of design thinking, to which designers will bring their own past experience of similar contexts, responses and solutions. The difference here is that all members of the design team are being prompted with the same context and brief, through the initial conceptual design envisionment. The starting design is in effect acting an implicit design brief with its own illustrated example response. Ambiguity in design may be even more important than

usual in this case, to allow multiple interpretations of the concept but also of the assumed need or context it appears to have been created for (Sengers & Gaver 2006).

The advantage of starting co-creation with a design proposal was in making design more accessible to our lay partners. We did not detect significant quality differences between the re-designs produced by tech-savvy PC owners and tech-averse Non PC owners, nor difficulty experienced by either group in engaging with design. Indeed, in some ways the behaviour of the Non PC groups was more attuned to the objectives of the exercise in coming up with designs that were more appropriate to their needs and experience. This is because they were less likely to query how a technology worked and could be integrated with other technologies than the PC groups, and consequently focused more exclusively on core functionalities, forms and values. As we heard from participants themselves, the starting concepts gave them a handle on the technology being discussed and a point of departure from it. This often involved analogical reasoning from other technologies or situations they were more familiar with, such as family history, diary and calendar apps known to the PC group discussing **Story Lamp**, and pen holders, wine racks and game boards for Non PC group when discussing **Twitter Well** re-designs. This resulted in surprisingly sophisticated design reasoning across the groups that both shocked and delighted the participants in equal measure.

The role of the professional facilitator/designer in this process was of critical importance to this outcome. That person acted to stimulate new design trajectories in the discussion, to shape them into technologically realizable form, to illustrate them through sketching and verbal summaries, and to bring them to a suitable closure for later documentation. In this respect we found ourselves refining the ideas generated in the re-design sessions further, in order to render them in the forms shown in our Figures. The natural tendency of the groups was to expand the design space rather than move across it to a new point. This was helped by the keep/lose/change question itself, which clarified the rules for expansion and contraction, and the facilitator's skill in resolving conflicting suggestions into new designs, both within the sessions and afterwards through documentation. The fact that the result of this process and documentation is a portfolio of related concepts, is interesting in relation to a recent proposal for capturing design knowledge in 'annotated portfolios' (Bowers 2012, Gaver & Bowers 2012). Our catalogue of concepts from the workshop series would lend itself well to annotation with family resemblances between designs and the rationale behind them. This might bring additional benefits to companies as well as academics in reflecting on current or future features of design that are integral to their brand.

6.2 Co-Creating with older people

Despite the apparent difficulties of holding focus groups or design sessions with older people mentioned in the literature (Kitzinger 1994, Merton 1987, Morgan 1996), we found both to be a productive and rewarding experience. In part this was perhaps because we attended to a number of recommendations in that literature to build in numerous breaks, speak loudly and clearly without too much use of jargon, envision ideas in an understandable and compelling form, and make the whole experience sociable and enjoyable in its own right.

However, another reason for success was in working with a diversity of older users and recognizing this diversity in our attitudes, discussion and re-design work. By working with both digital engaged and unengaged people we were able to develop sympathies with quite different ways of thinking about technology in these extreme user groups, to attend to a range of different concerns and interests and most importantly not to patronize participants in either category who brought a wealth of experience with either modern digital technology, older analog technology,

or both. The fact that digitally un-engaged participants made equally good partners for re-design challenges Von Hippel's recommendation to work with lead users to democratize innovation (2006). We believe that both leading and lagging consumer groups should be included more effectively in the design process, to ensure the accessibility of designed artifacts to a wider population (c.f. Clarkson et al 2003). Within both groups we found individuals who were particularly creative and good at design, suggesting the need for more sophisticated ways of identifying and recruiting such people for participatory design activities.

We found a good way of counteracting prejudice in our own attitudes was to look at the profile of past professions held by our participants before they retired. These included nurse, teacher, midwife, medical lawyer, electronics lecturer, radar engineer, artist, and systems analyst amongst others. The failure to engage with digital technology by half this group did not indicate incompetence or sickness or inability. It resulted from a variety of reasons not least of which were business and lack of motivation to learn, as they saw it, yet another new skill to add to their impressive set. While this often led to *feelings* of incompetence among some of our Non PC participants, our belief in their ability to re-design quite complex technological concepts in a group setting was rewarded by the outcomes reported above. This turned out to be a powerful corrective to those feelings and a strong sense of empowerment for all participants in achieving patently better designs than we started with for their needs.

6.3 *The role of re-design in focus groups*

Our re-design sessions also address some of the known problems with focus groups, and may therefore be of benefit as a social research method to understand attitudes towards product or service concepts at a deeper level. Of particular relevance is the case of concepts which are unanimously accepted or rejected by a focus group, as with **Story Lamp** and **Twitter Well** respectively. A conventional analysis of the associated discussions would have resulted in a broadly positive recommendation for **Story Lamp** and against Twitter well as concepts, subject to the various approvals and criticisms voiced. However, forcing the groups to go beyond this praise and criticism to improve the given design resulted in new and better concepts for the participants involved.

Participants found re-design of these concepts difficult at first by definition, wanting naturally to keep or lose most attributes presented. But with real example scenarios of use or the liberty to explore other forms and functions, participants were able to improve and re-implement **Story Lamp** and generate alternative uses for **Twitter Well**. Furthermore the inherently constructive nature of design discussions led sub-groups to resolve conflicting views and incompatible comments raised in the morning sessions. These groups were also a third of the size, giving more time and respect to minority voices and people, not able to share their opinions in a bigger group. The interplay between critical and constructive talk in design sessions is under-researched but appears to generate complementary insights into attitudes and values that would be difficult to elicit by one method alone. We therefore recommend with Luck (2007) more attention to the dynamics of talk in participatory design sessions, and their integration with focus groups and design crit settings.

6.4 *Limitations and future work*

As mentioned above, the re-design process we have discussed needs to be situated in the broader context of a product lifecycle. Associated requirements work should feed the design of initial product concepts and subsequent design, prototyping and testing should follow their re-design. A

number of other considerations may also limit the generalizability of our findings and form the basis of future research.

The constituency of re-design groups was limited to a small number of target users and a designer/facilitator. It may also be productive to involve marketing and/or R&D staff from a host company, as we have found in a follow-up project (<http://www.nominettrust.org.uk/what-we-support/projects/tailoring-technology>). Typically such staff tend to sit behind a one-way mirror in focus groups, so as not to influence the critique of product concepts they were responsible for. However, in a re-design exercise it may be useful for them to apply their technical and business knowledge to improve the feasibility and quality of re-designed concepts. This would increase the group size and introduce an imbalance of knowledge and status into the setting, and might be the topic of future studies.

The status of re-designed concepts is unclear in our work, which was conducted in an academic context without consequence for commercial decision-making. We suspect that these outputs should not be treated at face value as new product proposals but interpreted with the re-design conversations as revealing something more of the aspirations, attitudes and ideas of target users. At least a third cycle of design would be needed in a commercial context to revise the re-designed concepts for prototyping, based on company concerns including partnerships, competitors, patents, suppliers, channels and so on. Hence the use of re-designed concepts and conversation should be investigated further.

Participants in our sessions complained of feeling rushed and were keen to know what would be made of their ideas. This suggests the need to consider the duration of design sessions, and their integration in a broader process. Re-design might be done over a series of sessions in which new designs are revised by a company and revisited by participants in an iterative re-design process.

Finally, we found that good design facilitation was key to the success of the method. More work needs to be done on how to enable this, through recruitment and training, as well as through the use of novel facilitation techniques. Designers are increasingly being asked to play a facilitative role in design conversations, and this is particularly true in re-design sessions. The personality and skills needed are akin to those typical of focus group facilitators, so it would be interesting to compare designer-facilitators from both design and market research backgrounds. Greater understanding is also needed of re-design talk itself, which appears to involve an interesting combination of criticism and creativity. Full conversation analytic methods might uncover the dynamics of this talk and thereby shed light on the nature of design creativity itself.

7. Conclusion

A method of co-creating novel ICT product concepts with older people was developed and tested in a series of creative workshops. The method involved a focus group phase in which starting concepts were shown to the group for critical feedback and a re-design phase in which smaller sub-groups considered what to keep, lose or change about one concept. This resulted in further more appropriate concepts for each sub-group and constructive discussion giving further insight into core assumptions and values relating to new technology. The findings suggest an inclusive methodological extension to focus groups that is particularly suitable for older people, but designed for all.

Acknowledgements

The original research for this paper was carried out on the *Sus-IT project: Sustaining IT use by older people to promote autonomy and independence*, lead by Leela Damodaran and Wendy

Olphert. It was funded by the New Dynamics of Ageing programme (RES-353-25-008). Subsequent analysis, refinement and write-up of the method, now named *Focusgroup+*, was carried out on the Tailoring Technology project, funded by the Nominet Trust. The second author, Chis Lim, was originally at the University of Surrey but is now based at the University of Dundee: s.w.lim@dundee.ac.uk We would like to thank our colleagues on the Sus-IT project, Peter Lancaster, Diogo Casa Nova and Kristina Langhein at Digital World Research Centre, and all the groups who took part in the design sessions for their help and insights in this work.

References

- Atkinson J.M. & Heritage J. (1984) (Eds) *Structures of social action: Studies in conversation analysis*. Cambridge University Press.
- Barrett, J., and Kirk, S., Running focus groups with elderly and disabled elderly participants. *Applied Ergonomics*, 31 (2000), 621-629.
- Bowers J. (2012) The logic of annotated portfolios: Communicating the value of ‘research through design’. *Proceedings of Designing Interactive Systems (DIS) 2012*: 68-77. New York: ACM Press.
- Demirbilek, O., and Demirkan, H. Universal product design involving elderly users: A participatory design model. *Applied Ergonomics*, 35, 4 (2004), 361-370.
- Clarkson J., Coleman R., Keates S. & Lebbon C. (Eds) (2003) *Inclusive design: Design for the whole population*. Springer.
- Frohlich, D.M., T. Clancy, J. Robinson, and E. Costanzo. 2004. “TheAudiophoto Desk.” In *Proceedings of 2AD: Second International Conference on Appliance Design*, 139. Bristol: HP.
- Gaver B. & Bowers J. (2012) Annotated portfolios. *Interactions Magazine* 19 (4): 40-49. New York: ACM Press.
- Gaver, B., and Martin, H. Alternatives: exploring information appliances through conceptual design proposals. In *Proc. SIGCHI 2000*. ACM Press (2000), 209-216.
- Kitzinger, J. The methodology of Focus Groups: the importance of interaction between research participants. *Sociology of Health & Illness*, 16 (1994), 103-121.
- Lehtinen V, Näsänen J, Sarvas R. 2009. “ ‘A little bit foolish and light-headed’ – Older adults’ understandings of social networking sites.” In *Proceedings of the 23rd BCS conference on human computer interaction*, 45–54. British Computer Society: Cambridge.
- Lim, C.S.C., D.M. Frohlich, and A. Ahmed. 2011. “Supporting Memory and Identity in Older People: Findings from a ‘Sandpit’ Process.” In *Proceedings of Include 2011*, 1–10. Royal College of Art: London.
- Lindley, S.E., Harper, R., and Sellen, A. Desiring to be in touch in a changing communications landscape: Attitudes of older adults. In *Proc. CHI 2009*, ACM Press (2009), 1693-1702.
- Lindsay, S., Jackson, D., Schofield, G., and Olivier, P. Engaging Older People using Participatory Design. In *Proc. CHI 2012*, ACM Press (2012), 1119-1208.
- Luck, R. Learning to talk to users in participatory design situations. *Design Studies*, 28, 3 (2007), 217-242.

- Martin, H., and Gaver, B. Beyond the snapshot from speculation to prototypes in audiophotography. In *Proc. DIS 2000*, ACM Press (2000), 55-65.
- Merton, R.K. The Focussed Interview and Focus Groups: Continuities and Discontinuities. *The Public Opinion Quarterly*, 51, 4 (1987), 550-566.
- Morgan, D.L. Focus Groups. *Annual Review of Sociology*, 22 (1996), 129-152.
- Muller, M.J. 2008. "Participatory Design: The Third Space in HCI (revised)." In *Human-Computer Interaction: Development Process*, edited by J.Jacko, and A.Sears. Mahway, 1061-1081. NJ: Erlbaum.
- Newell, A. Arnott, J., Carmichael, A., and Morgan, M. Methodologies for Involving Older Adults in the Design Process. In *Proc. HCI 2007*, 5, Springer, Heidelberg (2007), 982-989.
- Sanders, E., and Stappers, P. J. Co-creation and the new landscapes of design. *CoDesign*, 4,1 (2008), 5-18.
- Sengers, P., and Gaver, B. Staying open to interpretation: engaging multiple meanings in design and evaluation. In *Proc DIS 2006*. ACM Press (2006), 99-108
- Suri, J.F., and Marsh, M. Scenario building as an ergonomics method in consumer product design, *Applied Ergonomics*, 31, 2 (2000), 151-157.
- 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 2012*, ACM Press (2012a), 1189-1198.
- Vines. J., Clarke, R., Leong, T., McCarthy, J., Iversen, O.S., Wright, P., and Olivier, P. Invited SIG - participation and HCI: why involve people in design? In *Proc CHI EA 2012*. ACM Press (2012b), 1217-1220.
- Von Hippel E. (2006). *Democratizing innovation*. MIT Press.
- Wulz F. 1986. "The concept of Participation." *Design Studies* 7 (3): 153-162.