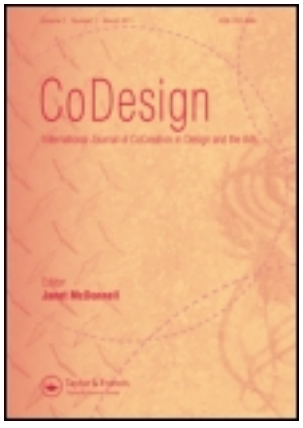

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Ageing together: Steps towards evolutionary co-design in everyday practices

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In this article we outline a temporally extended co-design process of media technologies developed in collaboration with elderly people. In the course of doing this, we identify a set of design strategies that helped to sustain the collaboration. Based on our experiences, we recognise the need for developing design strategies for extended and evolutionary design collaborations with ordinary communities that have special needs, and do not possess significant resourcing, design experience or skills in the technology in question. Such communities of practice pose challenges to shorter term project-centred forms of co-design and also require updates to the existing extended design approaches, which rest on relatively high user skill and resourcing. The 'ageing together' design strategies outlined in this article hence take necessary steps in adjusting co-designers' repertoires of engagement in this type of everyday context.

Keywords: co-design; design for communities; design-in-use; elderly; long-term engagement; participatory design

1. Introduction

Back in the old days, the designer created an elegant solution and left the public to admire the fruit of his or her genius. Since then, several hundred methods and techniques have been created to help designers, as well as their public, to place design on a more collaborative grounding (for overviews of co-design techniques see Muller and Kuhn 1993; Bødker, Kensing, and Simonsen 2004). Some argue that this has dramatically increased designers' ability to reach the right definition of the design task, and the uptake of co-design approaches has marked a shift in how the engagement of the design profession with its public takes place.

Yet, the part where the public is left to enjoy and admire the fruits of design has remained curiously intact. Co-design activities take place predominantly during the concept design, and even when spread throughout the design cycle (as in many venerable participatory design approaches) most design activities end when the product is taken into use (for a review and critique, see Hartswood *et al.* 2002; Voss *et al.* 2009). This state of affairs is well and honestly depicted in Sanders and Stappers' (2008) model for co-designing (Figure 1).

In light of research on how designs shape society, however, this view appears 'so 80s'. Since the mid-1990s, consumption, workplace, technology and design studies alike have consistently found that ordinary citizens, consumers and workers are not just docile

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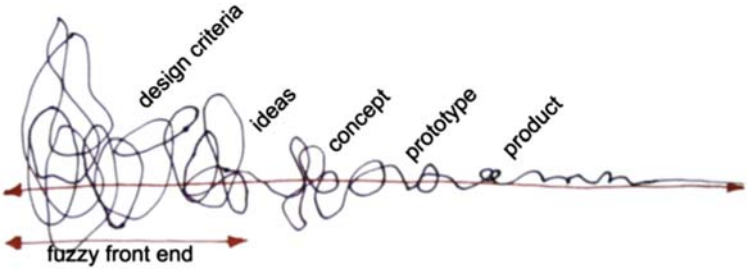

Figure 1. Sanders and Stappers' (2008), model for co-designing.

adopters but active in reinterpreting, adding onto and repurposing technologies (Silverstone and Hirsch 1992; McLaughlin *et al.* 1999; Henderson and Kyng 1991). There is often a long process of mutual adaptation of technology and organisation (Leonard 1998). Today, with the spread of social media services, peer-to-peer co-creation, user innovation platforms and open source development, the evolutionary nature and longer temporal reach entailed in many co-design initiatives are evident. Given these developments, the project view of co-design that Sanders and Stappers articulate seems to take for granted the production process of industrial physical goods, where design is organised into a project that ends at a product launch, even though this no longer matches the realities of many co-design engagements. There is an urgent need to elaborate approaches that help to navigate co-design engagements that may extend after the market launch, as this means entering a terrain less familiar than the traditional project structure typical of research and development (R&D) (Figure 2).

This concern is also timely because the extended time-frame of co-design remains only half realised. Most extended co-design takes place with social media services, lead users, geek communities, and other technically savvy and design-disposed people. Such people are quite happy taking over work that professional designers used to do, and this may call for serious reflection on the possible future of the design profession and its core skills (Sanders and Stappers 2008). But many other publics are not, and will not be, so design savvy. It is those publics that truly need the designer, and often it is exactly they who suffer the most from technology that is ill-fitting to their practices and poorly adaptable to changes and new possibilities that may emerge after the initial appropriation of the design.

We are not alone in noticing this. Evolutionary approaches for co-designing in settings where collaboration with designers is needed are being developed in multiple forms (see next section). In this article we contribute to this emerging area of design research by elaborating on ageing together strategies for designing media, with and for ordinary people in their everyday life practices. The strategies have emerged and been iterated in a long-

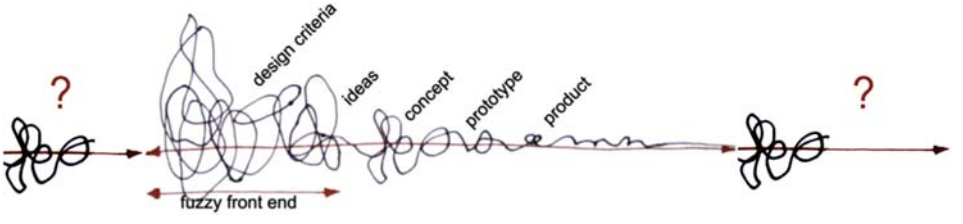

Figure 2. Co-design before and after a design project?

term collaboration with a co-housing project by elderly people. We use this project here to illuminate their rationale and challenges as they appear to us after the experience, in light of several iterations of the same approach in different settings (Botero and Saad-Sulonen 2010).

2. Continuing co-design in use

2.1 Designing for the evolving workplace

The turn of the millennium saw the birth of several approaches for extending co-design activities to include concerns for what has often been referred to as design-in-use (Henderson and Kyng 1991). In what follows we recount four of these approaches, as they articulate well some of our starting points.

The co-realisation approach was developed as a principled synthesis of ethnomethodology and participatory design (Hartswood *et al.* 2002), to address what Dourish and Button (1998) called the 'paradox of ethnomethodologically informed design'. This means that the implications of a new system for work practices do not become evident by studying the work as it is now, but will only be graspable during the system's subsequent use. Co-realisation thus explores a more radical and shared practice between users and information technology (IT) professionals, grounded in the lived experience of users *in situ*, and beyond the deployment of the working product. Designers continue to be present at the workplace for extended periods, allowing the workers and designers to realise jointly where the system and work practice could be taken and then iteratively realise these development directions as they emerge (Hartswood *et al.* 2002), opening possibilities for further development (Voss *et al.* 2009). Co-realisation has been successfully deployed in research projects in various medical IT applications and in manufacturing information systems.

Along parallel lines, Metadesign has been proposed as an alternative system design practice that bridges participatory activities towards those of evolving working life contexts (Fischer and Giaccardi 2004). A central tenet of the approach is to develop, during 'design time', underdesigned, yet complete, systems. These are then made available to 'owners of problems' in concrete domains. The approach includes developing sufficient flexible functionality to allow users to make redesigns during 'use time' without or with minimum involvement from the developers.

A similar trend towards continuous co-design has been proposed in co-configuration, an approach informed by Activity Theory, where the product continues to be adapted after its initial customisation to the changing needs of the user organisation (Engeström 2007). Co-configuration rests on a tailorable product or service offering as well as on a continued relationship between the producer organisation and users. Examples of such extended collaborations range from the design of paper machines, through private banking, to medical practices.

Many of the principles from these extended co-design approaches hold beyond the workplace and apply beyond technology development. However, these approaches to extended information and communications technology (ICT) design have been used exclusively in the workplace, mostly in technology-intensive settings, with well-educated practitioners, producing outcomes that have high societal or economic value (e.g. medical cancer screening or optimising a paper machine). Such settings make it plausible for designers to be paid to work full time in the setting for long periods, carry out ethnographic work to initiate the project, use sophisticated and extensive software tools should the need arise, and rely heavily on users' redesign competences. These are conditions that are not

necessarily present in many everyday settings, let alone in communities that may have special design needs and less privileged resource bases. In short, these approaches to ICT design have not been applicable to working with everyday communities without significant reworking – and nobody we know of has pretended otherwise. This reworking is a mission we seek to advance in the present article.

2.2 Extended media co-design with everyday communities

Our aim in this article is to elaborate on some design strategies suited to extended collaborative design with communities of ordinary people. We refer to them as 'ageing together' strategies, as they seek to gradually uncover and make jointly visible the design space available for a community of practice (Wenger 1998) and realise an evolving line of well-suited technologies, media and practices within a community. In so doing, we draw from and contribute to the ideas for 'designing for practices' (e.g. Shove *et al.* 2007; Björgvinsson 2008), which depart from the observation that it is change in the everyday practices that is the targeted outcome of design, and that those practices by their nature intertwine systems that are simultaneously affected by developments outside design. By the same token, the available space for design is not limited to designed objects, but includes immaterial designs that affect how social arrangements, norms, and the timing and the pacing of everyday routines are carried out.[1]

We shall now proceed to recount a nine-year design engagement with the Active Seniors Association in Helsinki, Finland, where we explored new media technologies to support their goals of growing old together. We describe our engagements in chronological order, and after each phase reflect on the key design strategies, and discuss how they become visible during the project period, where they originated and which reiterations we have deemed important. We then draw these strategies together and discuss what this may mean for developing co-design approaches more attuned to longer time-frames of engagement in everyday life.

3. Beginning to age together: from settings to access design and constituency building

As in co-realisation and co-configuration, ageing together strategies build on the premise that design engagements should begin not in the studio or in concept design workshops but in the practices, infrastructures and development trajectories of people who come together to become the 'clients', 'users' and 'designers'. The set-ups that surround all those who engage in a project largely govern what is sensible to design and how to do it. Therefore, we now briefly outline the key settings that laid the ground for and led to the mobilisation of the design research engagement reported here.

3.1 Active Seniors: setting a communal alternative for growing old

The expected number of active years after retirement is steadily increasing in the West. A large number of initiatives has aimed to assist seniors' independent living and increase the efficiency of senior care with innovative technologies. To date, their uptake and impact have remained modest (e.g. Östlund 1995; Hyppönen 2004; Hyysalo 2010) and greater advances have followed from new housing initiatives even though these have provided mostly incremental changes to senior care (e.g. Sonkin *et al.* 1999).

Figure 3. Active Seniors in front of the construction site.

Inspired by the Scandinavian co-housing movement (e.g. McCammant, Durrett, and Hertzman 1994), the Active Seniors Association (www.aktiivisetseniorit.fi) was founded in 2000 to further alternative arrangements for growing old in Finland. It also sought to develop a shared housing arrangement, Loppukiri house (in English: 'last spurt'), which is based on four basic principles: neighbourliness, self-help, community spirit and an open decision-making process (Dahlström and Minkkinen 2009). Members actively participated in the six-year planning and construction of the building.[2] They organised events, parties and courses, as well as developing and trying out associated future practices, rules and infrastructures to make their arrangement viable and sustainable (Figure 3).

Today, Loppukiri consists of a community of approximately 70 people who live in 58 compact apartments in a building with large communal areas. Residents take care of the maintenance and shared regular meals. They have six-week 'work shifts' among them and they nurture social activities, such as reading circles and yoga sessions. Despite numerous challenges, the objectives of providing access to an active, social, safe and familiar environment seem to have been well met. The community is visited and consulted continuously by other groups in Finland and the association itself is involved in the design of a second similar project.

3.2 Organisational and technological setting: Arabianranta 'forerunner' district

The Loppukiri house is located in Arabianranta, a regeneration district of Helsinki built with high broadband connectivity seeking to attract jobs and IT companies. After such networks became more commonplace, plans turned towards developing broadband access more as part of the basic housing infrastructure, akin to water and electricity (Kangasoja 2007). Today the area is still marketed as a Living Lab environment for innovation where

local actors co-operate.[3] For the case at hand, novel ICTs provide a setting that is conducive to gradual and deepening collaboration.

3.3 *Researchers: new media in mundane everyday life*

The Active Seniors Association contacted the researchers in the design school at an early stage of their project in 2000. Researchers were looking for communities to collaborate with in an open-ended participatory project to study how ideas for using digital technology might emerge if a community's capacity for envisioning digital tools and practices was nurtured (Botero and Kommonen 2009). There was also a hidden agenda to offer some 'common sense' scenarios for the Arabianranta network. The Active Seniors were a well-suited collaborator: they were growing as a community, had a design agenda of their own, and were ready to invest effort even if not all members were keen on computers or networks. For the seniors, interacting with the researchers stimulated new interesting concepts for their project. The collaboration also offered both parties the possibility to influence the vision for Arabianranta.

3.4 *Access design to explore collaboration, targets and settings*

Instead of storming in to perform a large joint co-design project, we started with a small joint exercise that could help us all in constituency building and defining targets for design engagement; a sort of 'access design'. It was possible to fund this through an ongoing open project exploring uses for 4G networks.[4] The seniors' working group collaborating with us envisioned that a website for their project was a subtle way to encourage members to use computers more. We recommended adding in an intranet with different levels of access to build new communication channels for the community, as they were still dispersed and getting to know each other (Figure 4). The outcome was immediately useful for sharing

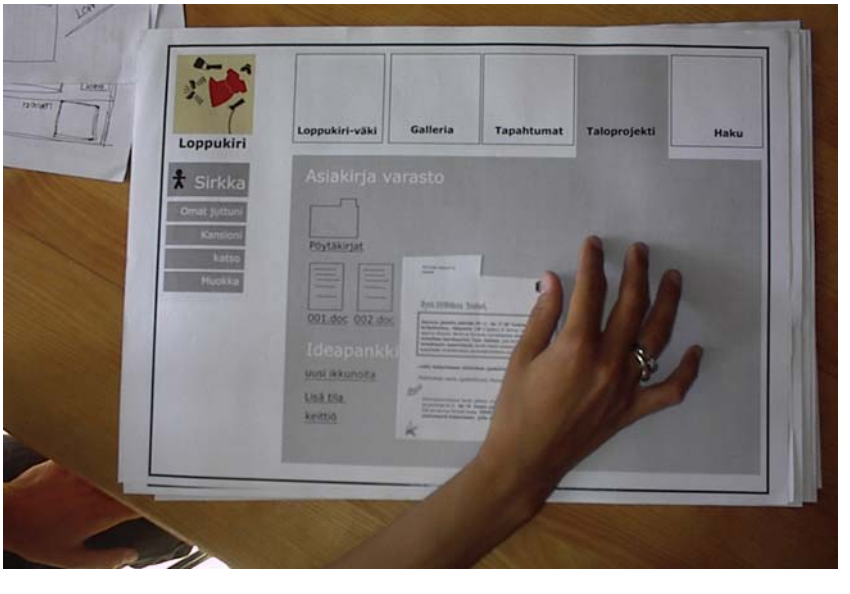

Figure 4. Early paper prototype for the intranet.

newsletters and printed material, and announcing and documenting social events, face-to-face meetings, lectures and so on, as well as for recruiting new members and collaborators to the association. The intranet allowed us to initiate some preliminary knowledge-sharing experiments, even though it was used mainly by the board of directors of the association.

3.5 Design strategies to initiate long-term engagements

Let us now shift from the specifics of the Active Seniors collaboration to the more general design strategies for long-term collaborative design with ordinary communities we have identified. Our first design strategy (DS 1) is *start with social practices*. The possibilities of design are already present in the practices, infrastructures and development trajectories of those involved, which entails that design activities do *not* begin or occur only in the studio or in exploratory workshops. Even as this begins to be acceptable common sense, it is difficult to remember that it is not only the practices of users that are important to recognise.[5] The second design strategy (DS 2) that we want to highlight is the key role played by *exploring the constituency*. For both users and designers it is crucial not to take for granted which kinds of stakeholder configuration are able to achieve the kind of practices, technologies, media or change that the parties envision.[6] At the same time, generating sufficient awareness of starting points and sensible collaboration possibilities also requires careful attention. Our suggested strategy for gaining this (DS 3) is to *begin with small but relevant 'access design'*. A well-bounded initial teaser can initiate trust and give a sense of what the collaboration feels like, which is important in deciding whether or not everybody wants to get more serious.[7] The access design also helps us to start early with our fourth key design strategy (DS 4), which is *managing expectations by anchoring*. Having something concrete to talk about helps in setting joint goals and clarifying the resources and uncertainties involved in more extensive collaboration.[8]

4. Developing an open agenda: envisioning, design seeds and targets

4.1 Developing an open agenda with Active Seniors

After the initiation phase, ageing together strategies turn towards the *development of an open agenda* (DS 5). In these engagements, concept generation activities were organised around practices related to remembering, co-ordinating, sharing, care and security, as well as shopping and cooking (Botero and Kommonen 2009). These ideation activities, facilitated by participatory workshops (Bødker, Kensing, and Simonsen 2004) and co-design techniques such as probes (Mattelmäki 2006) and experience prototyping (Buchenau and Suri 2000), provided a variety of 'design seeds'.

The first type of design seed comprised seeds that spurred 'indigenous design' evolution (Björgvinsson and Hillgren 2009), where ideas took shape and evolved inside the community and were implemented with resources at hand. A good example is that of a video-access concept developed in an early workshop, linked to an 'on-duty porter' to greet visitors to the house when they rang the doorbell. The on-duty porter role grew to include also receiving calls from residents requiring help. Later, the idea of video connection was found to be cumbersome, but the 'on-duty help' was realised by simply purchasing and rotating a mobile phone among the residents. For several years the number was shown next to the doorbell.

The second type of design seed comprised seeds that grew jointly. For example, we worked on knowledge-sharing activities since the seniors had advanced practices for documenting travel stories, gardening tips, recipes and book recommendations, to mention

Figure 5. An ideation workshop with seniors.

a few. This realisation prompted ideas for an audiovisual archive/library for creating and sharing memories and recipes, which we report below in more detail.

Third, joint envisioning was key in helping everybody to map and discuss together the kinds of practices that could take place in Loppukiri (Figure 5). The materials developed made important issues visible to everybody, from practical arrangements and rules all the way to new ideas about what to do and how to relate to others (see DS 1). This required looking beyond technology choices and infrastructures into the social arrangements and commitments that were related to them (see DS 2). The material was also immediately useful in funding applications.

4.2 Ageing together design strategies regarding the development of an open agenda

Cultivating an open agenda (DS 5) means efforts to explore what would be sensible development directions in the design collaboration.[9] Possible design avenues can be explored by *building scaffolds* (DS 6) that help to cultivate the sense of possibilities by bringing in materials, solutions and practices used elsewhere, developing joint vocabulary and experiments.[10] An essential part, however, is doing as much of this on-site as possible, physically *going there and being there* (DS7) to gain sensitivity to the context and to follow how initial ideas begin to evolve. If the community is dispersed or only beginning to emerge, people can be met, workshops can be arranged, and similar practices and experiences can be studied as a starting point.[11]

5. Co-designing through prototypes

5.1 Iterative prototyping with Active Seniors

An open agenda is no good if nothing ever comes out of it. With Active Seniors, both parties agreed on focusing the information-sharing issues on designing a digital 'community calendar' (Lehtimäki and Rajanti 2007), which was elaborated in the seniors' own working groups and in workshops with us. After several rounds of paper prototypes, the calendar idea morphed into something that the seniors called their Everyday Life Management System. The software developers started to work on a more general-purpose

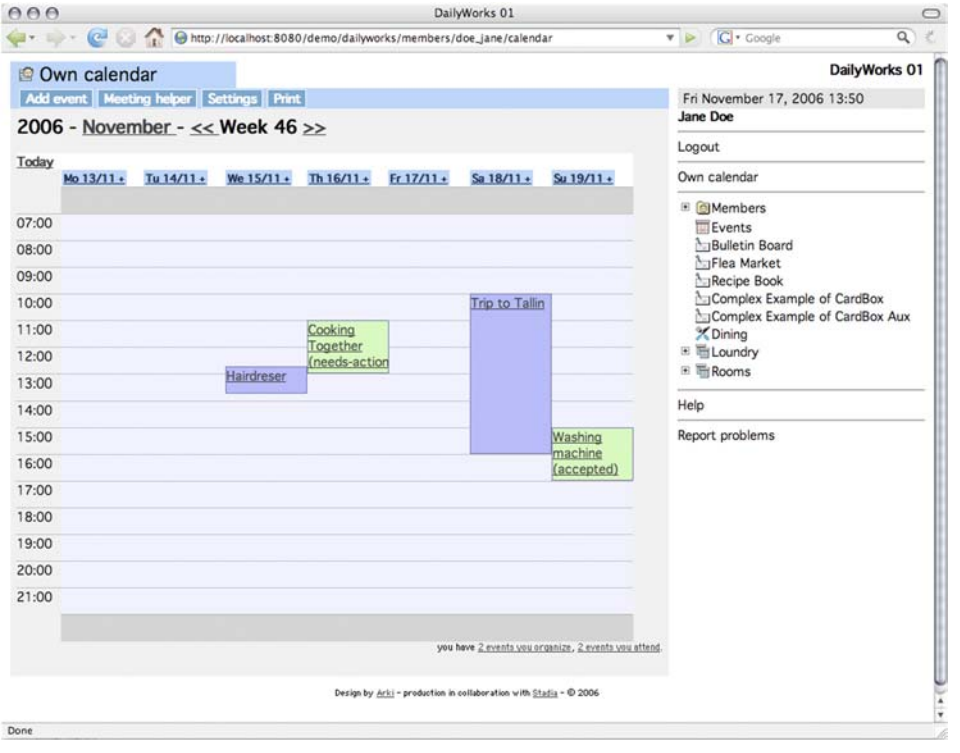

Figure 6. Screen shot showing the personal calendar view (demo version).

framework that could be useful in the future for other communities, available as open source. The system was divided into basic components: (1) the site – a framework for other components and common use cases (such as login and navigation); (2) the profile component, to take care of information on the members of the community; (3) the Dining Calendar, for announcing joint dinners and registering for them; (4) the Shared Resources Calendar, to reserve common shared resources and spaces such as the laundry and sauna; (5) the General Group Event Calendar; and (6) a Personal Calendar (Figure 6).

The first working prototype was released when seniors moved to their new house in May 2006. Volunteers tested and used the calendars for making reservations and creating events, and some working groups used the system to organise the communal dinners. The seniors' IT working group organised what they called 'usefulness testing', and ideation meetings, where they analysed how the different functionalities connected to their practical activities and produced detailed suggestions for changes to the rules and the behaviours of the system. A considerable amount of energy was expended in trying out alternatives for the labels and concepts to use in the interface.

This stage was a period of fluid collaboration. Concrete artefacts produced both in and outside workshops (written document, scenarios, paper prototypes, lists for interface labels, beta testing session reports) helped the seniors to articulate their visions and ideas at different levels from the designers and among themselves. Intense periods of working together for a software release (spurts) were followed by periods of distance and separation. This alternation offered space for reflection and appropriation and saved designer hours. The seniors' IT group felt that they had ownership of and responsibility for the platform.

5.2 Ageing together with prototypes

We encourage choosing one or several development efforts to concretise the visions. The design strategies that became visible at this stage intertwine closely with organising software development, such as *building and releasing prototypes iteratively, rapidly and from early on* (DS 8).[12] This allows community participants to engage with the designs, and for everyone to follow how these are being used, ideas for improvement, shortcomings, contradictions and new design directions, etc., that may emerge. It further allows responding to the evolving needs through design iterations.[13] A characteristic design strategy in ageing together is to *alternate close working periods with lighter engagement* (DS 9). This makes the most of the time spent together, but also allows people to find their own ways to use the technology and to try things out on their own (which avoids spending designer hours unduly). This links to a further key principle, seeking to *foster ownership of the process, technology and media* (DS 10).[14] This requires not only giving time, but also keeping multiple communication channels open for offering advice, showing alternatives and documenting the processes.

6. The age of evolutionary redesigns

6.1 Redesigns with Active Seniors

The difference between working prototypes and evolving ready products has become increasingly blurred in many corners of technology and media design. An open design agenda and iterative development allow us to take advantage of and systematically work with evolutionary redesigns. However, designing for practices means that we endorse evolution not only in design objects but also in other elements and levels of practice. We assert that the full space and time for co-design, the design opportunities and limitations, emerge only through this evolution (Botero, Kommonen, and Marttila 2010).

Let us illustrate this with a four-stage design evolution. Upon release, the system had a dining tool for announcing and registering for meals. Once in daily use, it became evident that knowing the ingredients of a meal was important owing to allergies and other concerns. To co-ordinate this, the community had its own recipe book. When adapting the book to the actual conditions in Loppukiri, typical problems in tailoring (Henderson and Kyng 1991) appeared, such as an increasing number of annotations and alterations, and problems in keeping track of the versions and their location. To remedy the two ‘failures’, designers built a recipe book inside the system using the code from another component. Today, the subsequently evolved recipe book is one of the key reasons for using the system, while registrations for dinner are also partly handled using the parallel paper version.

This recipe book then prompted a further line of design. Living together in the house revealed to the seniors that they often needed to store notes and documents. They had planned to use the neighbourhood community portal discussion boards, but this required learning and maintaining additional systems and passwords. The community calendar seemed to be a preferable location for such information sharing. At the time when the recipe book became available, some of the Active Seniors tried a couple of workarounds to make the new recipe book behave like a community ‘noticeboard’. Someone played with the titles of the recipes to make them appear in a different order (e.g. by adding numbers or other symbols before titles to manipulate the sorting) and others ‘misused’ the recipe fields to create document categories or different kinds of content. Designers received a request with a link to the ‘example’, asking whether it was possible to make a ‘copy’ of the recipe

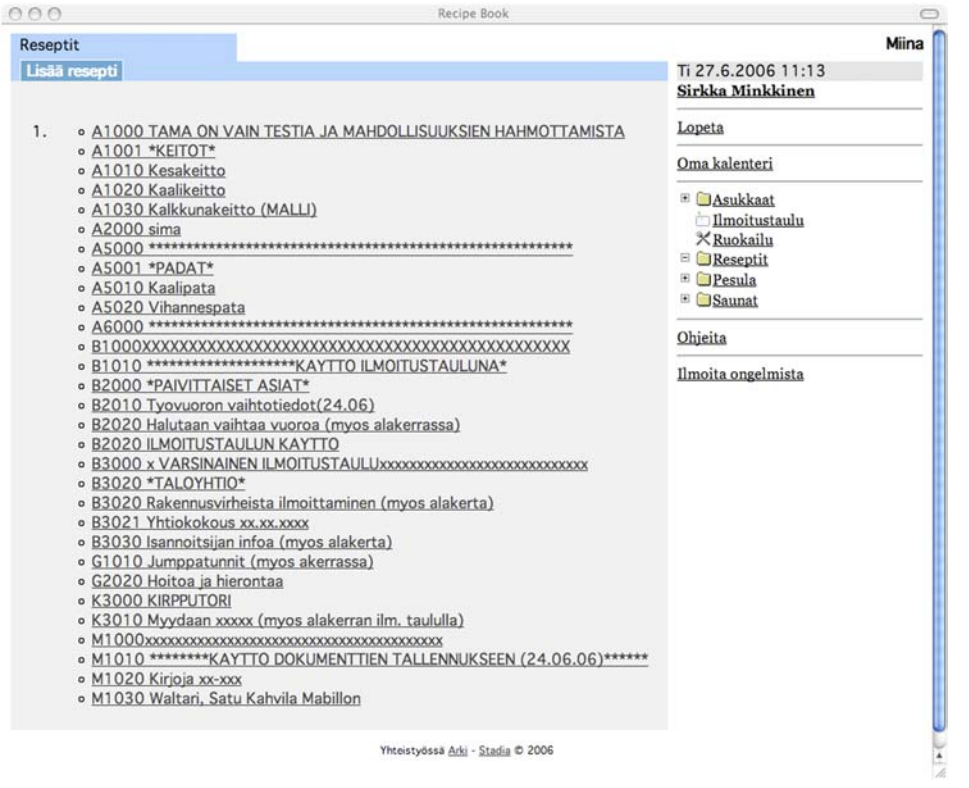

Figure 7. The recipe book co-opted as a bulletin board.

book so that they could use it as a bulletin board in case there were no resources to implement one. This set the scene for a joint workshop in which we sketched what could be implemented (Figure 7). The recipe book thus seeded the development of evolutionary design (Fischer and Ostwald 2002).

The next step was taken by designers, who decided to experiment with ideas of more generic infrastructures, and built a new component to create different information 'containers' in a dynamic way by filling in simple forms. To illustrate the functioning of this new component, a new recipe book, a noticeboard and a place for document storage were created. This jumpstarted the creation of new containers, and since then, seniors have built containers for announcing events, documenting activities in the house, swapping items and so forth. The new component also creates dynamic connections among the containers to generate more advanced structures. Unfortunately, the resources at hand did not allow for the development of an appropriate user interface, so this possibility remains obscure for most seniors. Despite its limitations, this is the most used component in the system, and one that deserves further iterations and development in the future.

Finally, we wish to illustrate how successful design evolution is not just about improving or adapting technology. Calendars for sharing spaces and resources were carefully co-designed; however, their management presented challenges. Not everybody had access to the system, and as seniors' arrangements were fluctuating and our development resources were scarce, it remained difficult to keep both the paper and digital versions of the calendars updated. At some point the paper was chosen over the digital

version, even though this means that the only way to reserve or know whether a resource is free is to walk to where the calendar is physically located.

Similarly, when it came to the general maintenance of the system (members' accounts, use of personal calendars, etc.), it made more sense to develop practices and social agreements, rather than trying to make actual changes in the code, which would, for example, allow neighbours to (automatically) help and take actions on behalf of each other. Many workarounds have been devised by sharing passwords and accounts or by settling on a common known standard to select a password so that the right person can easily guess it. Unfortunately, software infrastructures still embody very simple ideas of access management strategies, ownership, groups and so forth that do not address the complex realities and practices of multifaceted communities. This calls for strategies to expand co-design to the software architecture (Büscher *et al.* 2009).

7. Evolutionary ageing together

The rationale of the ageing together approach lies in interesting and crucial co-design opportunities emerging only in design-in-use, when activities are made concrete and relevant to all. Being there once in a while (see DS 9) makes it possible to closely explore the meaning of certain design decisions and help the collective prototyping process (see DS 10). Our final trio of design strategies begins with *staying attentive to partial failures and what can be learned from them* (DS 11). An encompassing and stable design is slow to achieve and may easily embody things that are not needed or that end up serving other purposes. Failures can provide serendipity handles.[15] Furthermore, it is hard to predict what will work and be most worthwhile investing development effort in. To this end, we stress *embedding design at different levels* (DS 12); that is, supporting multiple access modes and making sure there are parallels from old to new in order to weave things together and support design activities on different scales.[16] In committing ourselves beyond short-term goals we recognised the need for more flexible planning. The challenges to sustain and ensure continuity of the efforts at many levels in turn demand infrastructural strategies for co-designing (Hillgren, Seravalli, and Emilson 2011), such as *avoiding design locking-in with crucial choices* (e.g. technology) (DS 13). Open and/or flexible alternatives for technologies and infrastructures should be preferred, whenever possible.[17]

8. Ageing together design strategies

The ageing together strategies that we have elaborated in the course of describing our work with Active Seniors outline the initial contours of an approach suited for realising an extended and evolving design engagement with ordinary communities in their everyday life practices. Above, we have recounted the key strategies as they became relevant in the design engagement with Active Seniors. It should be noted, however, that initiation strategies aside, they are pervasive rather than chronologically relevant guidelines. Let us now view them together:

(1) *Start with social practices*. Design activities do not occur only in the studio or in exploratory workshops. They are already present in the practices, infrastructures and development trajectories of people who come together to become the 'clients', 'users' and 'designers'.
(2) *Explore the constituency*; build new alliances if needed. It is key to explore stakeholder configurations to be able to achieve the kind of practice and

technology or media change that is being envisioned and determine whether the agendas of each party can be aligned.

(3) *Begin with small but relevant 'access design'*. Design engagement is not guaranteed to work. A well-bounded initial teaser can give a sense of what the collaboration feels like, and whether or not everybody wants to get more serious.

(4) *Manage expectations by anchoring*. Set joint goals; do not expect and do not have the participants expect that you or the resources will be there forever. Clarify and check these constantly. Apply for funding as the project advances and needs arise.

(5) *Develop an open agenda*. The idea is not to focus on realising a killer application but, instead, to foster contributions that lead to improving the practices in the community.

(6) *Build scaffolds*. Provoke imagination and cultivate the sense of possibilities by offering the community a sense of what could be done. Bring concepts, materials, solutions and practices from elsewhere. Design avenues can be explored in hands-on workshops and experiments. Tune in by doing this on site if possible.

(7) *Go there and be there*. Collaborators should get a real feeling of each other. If the community is dispersed or only beginning to emerge, people should meet, workshops should be arranged and similar experiences studied as a starting point.

(8) *Build and release prototypes iteratively, rapidly and from early on*. Follow how things are being used, and what ideas for improvement, shortcomings, contradictions, new design directions, etc., may have emerged, and respond to evolving needs through collective and cumulative design iterations.

(9) *Alternate close working periods with lighter engagement*. Make the most of the time spent together, but also allow people to find their own ways to use the technology and try things out on their own and avoid spending designer hours unduly. Communication channels should be created towards this end.

(10) *Foster ownership of the process, technology and media*. Offer advice, solution help and alternatives so that the community can make final decisions. Negotiate and decide jointly which new design directions will be pursued further and clarify why.

(11) *Stay attentive to partial failures and what can be learned from them.* An encompassing and stable design is slow to achieve and may easily embody things that are not needed or that end up serving other purposes. Failures can provide serendipity handles.

(12) *Embed design at different levels*. Support multiple access modes and make sure that there are parallels from old to new to weave things together. Make possible design activities at different scales.

(13) *Avoid design locking-in with crucial choices* (e.g. technology). Open and/or flexible alternatives for technologies and infrastructures should be preferred whenever possible. An open discussion about things such as intellectual property rights should not be avoided.

9. Conclusions: it's about time

The ageing together experience with elders shows that the kind of co-design exercised here can succeed in introducing helpful technology into the lives of the elderly – a mission where much money has been invested with mostly meagre successes with more designer- and technology-driven approaches (Östlund 1995; Hyppönen 2004; Hyysalo 2010). The design strategies we suggest outline the beginnings of a new extended and evolutionary

approach to organising co-design activities with communities of ordinary people, and this set of strategies makes such engagement feasible beyond 'high-value' work contexts.

To clarify what these strategies entail for design processes, let us contrast them with the still prevalent portrayals of co-design that rest on the assumption that design takes place within R&D project forms. Such a frame is easy for design practitioners and researchers to recognise. With Sanders and Stappers' diagram (Figure 1) there is no need to explain the vertical axis or what their squiggles stand for as readers are thoroughly familiar with the frame in which they operate. This familiar frame carries the implicit assumption that extended collaboration would, by and large, mean repeating the 'start wide and focus to the product' project form, and that it is the design process which should be the area of concern in organising collaborative design (Figure 8).

Alas, this familiar frame is increasingly ill-fitting for design contexts where the market launch of an industrially produced design does not structure the sensible frame of operation. Sustaining co-design throughout concept design, implementations, redesigns and further iterations calls for well-rehearsed means such as design games, workshops, generative tools and observational techniques. On their own, however, these means of engagement are not sufficient to achieve the required levels of learning and trust building. Users' sense of ownership, their coming to understand their own needs and desires as well as designing at multiple levels of practice and technology all require more sustained and open design strategies. The designed systems, uses, users' practices and designers need to become more seasoned, that is, to 'age together'. Ensuring a healthy balance in doing it for the people, with the people and leaving people to grapple with it by themselves is paired with efforts to find resources and tools, and mobilise them, as well as to create conditions to support the unfolding of a truly collaborative space for design.

The ensuing portrayal of an extended co-design process is messier than that ensuing from an R&D project. Design activities fluctuate between developers and users (Figure 9,

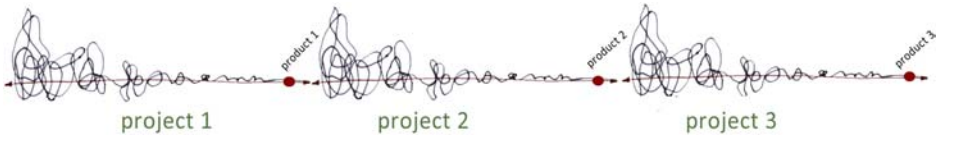

Figure 8. The R&D frame assumes that long-term co-design engagement is about repeating the same process a number of times.

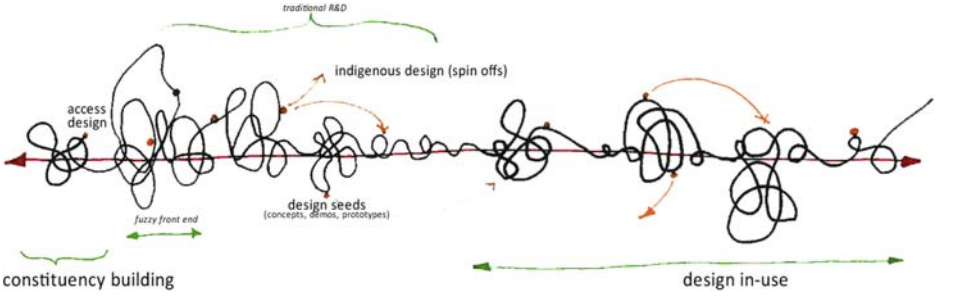

Figure 9. Portraying design engagement with 'ageing together' strategies using Sanders and Stappers' squiggles.

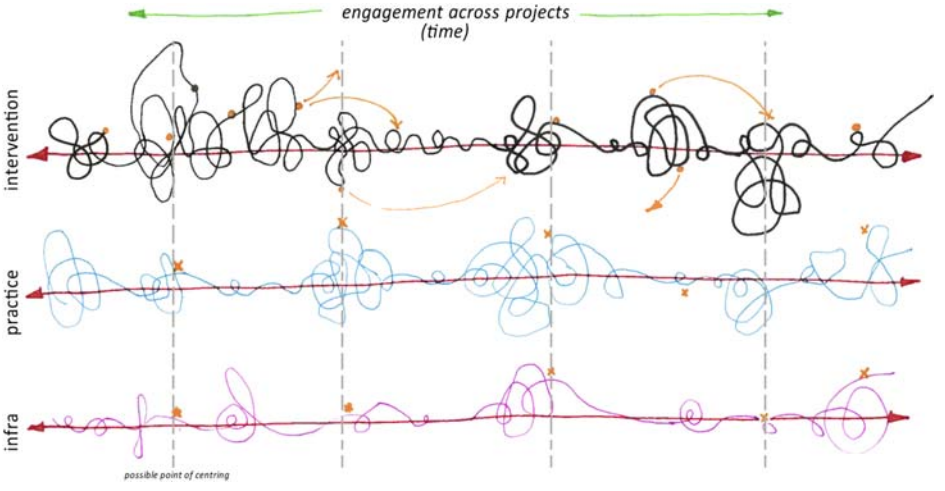

Figure 10. Extending the squiggle metaphor to underscore that long-term co-design engagement requires recognising the trajectories and rhythms of stakeholders' own projects and devising strategies to work with them.

vertical axis), and even as some designs are closed every now and again, they tend to seed further evolution, iterations and design directions later in time (horizontal axis) rather than 'close' or diminish co-design activities.

Increased complexity and less pre-decided temporal structure follow from the fact that when designing for communities with their practitioners, design is only one line of development that affects the attainable outcomes. Figure 10 uses the same squiggle metaphor to highlight how the developments in the co-design engagement, in the community of practice and in the infrastructure factually affect and pace each other. In other words, the point of centring (practice or design) and the temporal organisation of co-design activities are among the key factors to which co-design must pay attention (in addition to methods, norms, tools, power, participant roles, etc.).

This leads us to the question of where ageing together strategies are applicable more generally. Sustained design engagement is certainly not needed for most of our 'culturally mature' artefacts. It makes sense in settings where technological possibilities and/or user practices are evolving, information technologies being one but not the only area at present.[18] We also wish to emphasise that many communities no longer need designers to design for them. A parasitic professional presence in such communities is not what we have in mind.

Reflecting on the engagement with Active Seniors, dedicated research or development funding does not appear to be a necessary requisite either; we believe that many communities of practice, as well as cities and municipalities, may well afford this type of design engagement. Various co-operative and commons movements are on the rise, and sustained collaborative and open design with professional practitioners could make a timely contribution to these movements. Application to a range of projects in communities and foundations may also help to counter one of the key time-related problems in ageing together: platform development and commitment. Guessing what flexibility users may need, the availability and pricing of proprietary solutions, the longevity of open design efforts, and so on, is not straightforward. In good working relations such thorny questions may turn into possibilities for furthering development work, as indicated by a message we

received from the Active Seniors during the writing of the present article, indicating that our engagement with seniors may become still further extended:

> Hi Andrea how is life with two children? … I do not wish to burden you, but one active seniors thing keeps running in my head. Do you think Miina [the system] would work in the new web? I use many iGoogle applications and have lots of photos in Picasa. These days Twitter is available for quick communications. You Andrea have an understanding of web, our house and all the different actors. Do not use too much time to this question now, just tell what do you think of it.
>
> With Sunny spring morning wishes!

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Notes

1. Similar concerns are discussed in urban renewal collaborations such as in Amplify! (Penin, Forlano, and Staszowski 2012), Feeding Milan (Cantù *et al.* 2012) and Malmö Living Lab (Hillgren, Seravalli, and Emilson 2011). However, these settings and correspondingly the strategies used differ somewhat from settings where technological possibilities and/or user practices are evolving rapidly, such as in current information technologies.
2. They negotiated a price-regulated lot from the city of Helsinki and special working agreements with the construction company and the architects' studio.
3. See http://www.openlivinglabs.eu/helsinki.html for how the area is presented as a Living Lab.
4. From the outset it was clear that collaboration would need to happen creatively across different projects and funding instruments.
5. This is not a novel premise as such; it is shared with the most radical co-design approaches. Its roots can be traced to Scandinavian participatory design (PD) in the 1970s (for a review see Voss *et al.* 2009).
6. Confronting from the onset of a project the stakes, interests and limitations of stakeholders has been a feature of PD approaches (Bødker, Kensing, and Simonsen 2004). It was also a starting point for us and its importance was underscored in the course of our design engagements.
7. We are not aware of systematic uses of access design elsewhere; however, various kinds of preliminary study in co-design approaches tend to function as ice-breakers, which suggests that there is a need for further work on possible strategies for this stage.
8. Managing expectations is a pervasive part of successful long-term design collaboration. Its importance was clear to us from the outset, but anchoring it as concretely as possible as an important strategy in its own right became evident only as we went along.
9. In the course of our work we have come to understand that the function of collaborative design techniques for 'ageing together' is to get design moving, not just iterating ideas for the realisation of a design object as in many user-centred design and co-design methods.
10. On the importance of scaffolding for realising one's needs and competences see Vygotsky (1979). For related co-design techniques see, for example, Bødker, Kensing, and Simonsen (2004) and Binder and Brandt (2008).
11. Systematic and sustained presence at user sites has been stressed in the ethnographic tradition to systems design and taken to extremes in the co-realisation approach (Hartswood *et al.* 2002; Voss *et al.* 2009). We discuss in the next section why shorter exposures may work better with ordinary communities.
12. Design strategies 8 and 9 draw on extreme programming and Agile Software (Beck *et al.* 2001) principles; however, their application in pure development contexts may be slightly different.
13. For seeding design processes with prototypes see, for example, Ehn and Kyng (1991), Fischer and Ostwald (2002), Voss *et al.* (2009) and Hagen and Robertson (2010). On collective experimentation and prototyping see Björgvinsson (2008).

14. This principle is core to all PD approaches (e.g. Schuler and Namioka 1993). In ageing together strategies it is also linked to concrete design decisions to be made in terms of intellectual property rights (see DS 13).
15. Henderson and Kyng (1991) provide a nice early elaboration of this.
16. Suchman (2002) argues similarly for the need for artful integrations.
17. Similar implications are discussed in Büscher *et al.* (2009).
18. Work done in urban studies and, for instance, Stewart Brand's study of how buildings 'learn' through time (1994) demonstrate that an extended design space is not an ICT-specific feature, even though its sensible form changes in different design contexts.

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