Designing for an ageing society: products and services

Silvia Pericu

Università degli Studi di Genova, Scuola Politecnica, Dipartimento Architettura e Design, DAD.
*Corresponding author e-mail: pericu@arch.unige.it

Abstract: Due to increased life expectancy, our society is deeply committed to reaching the target of ageing in place in the near future, to lead an independent and assisted life in one’s own environment. In order to lower social costs, research in the field of Design, with the aid of medical science, aims to define innovative strategies and solutions for user-friendly products and services, that have a reasonable benefit-cost ratio, to help the elderly live a better life on a daily basis. This paper illustrates the design process of an on-going research based on a human-centred approach, to innovate inclusive products and services related to daily-life activities which enable the elderly to lead an independent life, and raise awareness about healthy practices.

Keywords: Ageing in Place, Human-Centred Design, Daily-life Activities, Design Thinking, Design for Social Innovation.

1. Context

1.1 Demographics and health issues

The progressive ageing of our society is a well-known phenomenon that can be faced by implementing adequate strategies mitigating its negative effects on the social and economic system. Additionally, it is essential to pursue strategies that can guarantee a better quality of life for a higher percentage of the population, even in old age.

This concept is referred to active and healthy ageing and it was first introduced by the World Health Organisation (WHO) that described it as “the process of optimising opportunities for health, participation and security in order to enhance quality of life as people age”. (2002, p.12)

It is crucial that active ageing involves the entire life cycle and all its various aspects, especially during the inevitable periods of frailty that may occur when people age. Work, social engagement, health, as well as solidarity between generations, and maintaining one’s autonomy are just some of the pivotal factors that together should contribute in achieving our aim. Healthy ageing can therefore not be achieved through a single initiative, but requires a range of actions and approaches at individual and societal level that work together to achieve this outcome. (AGE Platform Europe, 2011)
In this sense, *ageing in place*, which is “the ability to live in one’s own home and community safely, independently, and comfortably, regardless of age, income, or ability level” (American Planning Association, 2013, p.3), represents another popular term in current ageing policy, because it enables older people to maintain independence, autonomy, and connection to social support, including friends and family (Lawler, 2001). The term is, however, somewhat ambiguous, because its stress on the domestic environment as a familiar place, with strong connotations of identity, could be misinterpreted as communicating the idea of the household being the only factor guaranteeing autonomy to people. It could also suggest a static and permanent relationship between the individual and his own living environment.

Although several studies demonstrate how domestic environment and the physical context in which one lives, just like interpersonal relationships - especially with one’s family - are a decisive element for the psychophysical wellbeing of the elderly (Apolone, Mosconi, and Ware, 2000), we now know that *ageing in place* is a much more complex process.

This process is not merely related to the attachment to a particular home, but one in which the person is constantly “reintegrating with places and renegotiating meanings and identity in the face of dynamic landscapes of social, political, cultural, and personal change” (Wiles, Leibing, Guberman, Reeve and Allen, 2012).

Experiencing an environment to its fullest allows one to lead a full social life, with the complexity of relationships and meanings that people build within the environment around them, with particular reference to the themes of neighbourhood, daily activities and services. These can stimulate people to engage outside one’s household, establish social relationships and lead a healthy life from both a physical and mental point of view.

### 1.2. Ageing in the near future

Focus on the living environment of over-65s, and the way they relate to the habitat around them while continually redefining its meaning, is the object of the research, which forms the basis of the present paper, on products, environment and services for over-65s, which started in 2013 and was developed for several years afterwards.

Since the research began, surveys on the living environments of the elderly population have been oriented towards a process of design-driven innovation with the aim to promote ageing in place and improve the quality of life of those who wish to continue living in their own living environment. The starting point of the research was the fact that in Italy in the last 10 years, despite the constant increase in life expectancy, we are facing a striking decline in quality of life, which is quite the opposite to other European countries.

An unusual phenomenon is currently occurring: even if on average we live 20 years longer than we did 50 years ago and in the majority of Western countries this increase is characterised by a more active and healthier life, in Italy the percentage of elderly people in good health and maintaining their autonomy is rapidly decreasing (from 2005 to 2013 it went from an average age of 67 in good health to less than 62 years old). This alarming countertrend is taking place despite the fact that at the beginning of the 1980s, together with a general increase in chronic diseases (i.e. cardiac, pulmonary, joint diseases, tumours, diabetes, etc.), the number of people with severe disabilities was generally decreasing, even if there were notable differences among countries (Christensen, Doblihammer, Rau and Vaupel, 2009).

It is likely that these differences among European countries regarding short-term changes to one’s active-life expectancy mainly depend on how much a person can participate in the activities in one’s
living environment, because this can or cannot make it easier to keep oneself active and free to move. This hypothesis is coherent with the World Report on Ageing and Health (WHO, 2015), which considers the functional state of an individual as the result of the interaction between one’s intrinsic capabilities and the environment one lives in.

In this sense medical science and design-driven research share common goals in that they both shift the attention to the relationship between the individual and their environment in order to understand how moulding this relationship can consequently modify the quality of life, and how improving the interaction between one’s capabilities and their environment positively influences people’s behaviour.

The medical field is able to define what influences health in old age, but a design project can focus on human experience, the differences characterising our perceptions, the communication tools for prevention, and the creation of a more age-friendly environment. Design is about creating solutions to everyday problems and tackling people’s needs with the aim of bringing their point of view into the design process. Innovation can then become a strategy not only to solve problems, but also to identify problems to be solved.

In this sense, it is important to start from a human-centred approach, placing people and their needs at the centre, because in the present case the elderly population is a category of individuals differing greatly from one another, and who have been shaped, often by contrasting experiences and lifestyles, which made them who they are. Ageing is a process which it is hard to perceive and generalise. It is always different, because it relates to one’s past and it is constantly changing due to how people respond to and cope with illness -from minor conditions to disabling diseases- finding a way to maintain their quality of life.

It should also be noted that demographical changes are taking place and a new generation, markedly different from the previous, is quickly approaching old age. For example, in the field of technology, recent research (Eurostat, 2015) demonstrated how markets are increasingly focusing on the elderly as their primary targets. They are the so-called Silver Surfers, i.e. the first generation who experienced the world of usability. This makes over-65s radically different from the generation before them. Likewise, when considering transportation and mobility, several studies revealed that elderly people are increasingly spending more on travel: today elderly citizens travel more than 10 years ago and this trend is expected to increase with the next elderly citizens, for instance senior tourism is a phenomenon becoming extremely popular. According to the Eurostat data presented at the workshop on Senior Tourism, that took place in Turin, 2013, senior tourism is growing more than youth tourism at a rate of 15% per year, creating a fast-growing market. All statistics underline the necessity of a profound reinterpretation of all life stages in order to modernise the perception of old age, that is central to this revolution.

For this reason, it is pivotal to start from the perception that senior citizens have of themselves and their age, what their expectations are and whether they are satisfied with them, and what opportunities and worries they associate with their age. Likewise, to build a new image of the millennial senior, it is also important to understand how other generations see them, what the expectations of them are and lastly what social representation of seniors is currently emerging (Osservatorio Senior, 2016).
2. Methods.

With this purpose in mind, the research presented in this paper on living environments, products and services for over-65s, took into consideration the complexity of all these themes starting from four fundamental principles:

- the inclusive approach of human-centred design which involves the people in the design process by directly asking them to express their needs or by interpreting these needs with the help of designers, who immerse themselves into the user’s real world;
- the comparison of two different generations, Seniors and Millennials, using their contrasting experiences of the world as well as their strong points of convergence, because both participants often belong to the same family nucleus, which easily leads to their active collaboration;
- the contribution of medical science in prioritising the issues connected with health and prevention in order to identify the problems to be solved and to be a catalyst for change, finding new links between our system, the health service and the built environment as well as the product sector, in order to face some of the serious health issues of modern society, such as obesity, heart disease, high-blood pressure, stroke, diabetes, some forms of cancer, and potentially dementia;
- the need for a conceptual transition from being focused on products to people’s experience, trying to find where to simplify and make the interaction between user and product / service more efficient, consequently with the aid of user-experience design and its tools.

Following these principles, the surveying stage was focused on two topics considered to be relevant in everyday activities and strictly connected to health preservation: the first related to the totality of experiences in the relationship between the individual and food, from its preparation in the kitchen and buying groceries as a social activity, to For All food packaging designed to promote correct eating habits even for fragile consumers, often with the occurrence of comorbidities. The second topic is connected to the concept of *neighbourhood* and specifically to urban parks in a way to promote the use of good design and to encourage daily physical activities in public spaces in cities.

“Thirty years ago, a principal concern was to design new products so that older people could continue to live independently in their own homes. This typically meant redesigning bathrooms, kitchens, furniture and lighting. Today the focus is much broader – to enhance the experience of older age as people remain active in society and the workplace for longer. All types of design are required – from service and interaction design to fashion, transport and communication”. (Hamlyn, 2017)

In this direction, the present research stemmed from an activity, in which students of the degree course in Product Design were asked to participate in designing specific products and services for a more age-friendly environment. At the start of the project designers did fieldwork, building empathic relationships with over-65 seniors in order to understand their real needs with a traditional user-centered approach using a repertoire of human-centered design toolbox. The synergy between designers and users, which acted as a comparison between different generations, became an opportunity to engage with people’s needs and to bring their point of view into the design process.

After the survey of the needs of over-65 in everyday activities the design process included a collaboration between geriatricians and students to provide the necessary medical information, health priorities, nutritional requirements, recommended good habits and any disease’s prevention measures related to seniors. In this sense it was extremely useful the contribution of knowledge
about the main diseases of the elderly population to enable everyone to read and understand some common situations related to aging.

Afterwards, once the contribution of doctors ended, various design concepts have been generated during a series of design thinking activities within multigenerational groups, in which it was possible to develop the skill of working in teams and structure ideas to solve the problems that were previously highlighted. Students were asked to work in workshop activity with senior users following a design thinking process (Buchanan, 1992), that allows to tackle more complex problems, as well as the human-centred-design approach, as a survey tool to engage with people’s real needs and to create products, services and experiences by placing the focus on people’s lives and desires.

Just recently, the social sector also started to use a design thinking approach to develop better solutions for social issues - prioritising the most important of these - and was able to make a real impact. “Design thinking crosses the traditional boundaries between public, for-profit, and non-profit sectors. By working closely with the clients and consumers, design thinking allows high-impact solutions to bubble up from below rather than being imposed from the top” (Brown and Wyatt, 2010, p.32).

As in the case of the present study, in teaching activities aimed at social innovation, the design thinking approach is based, together with a human-centred approach, on an original collaboration between work groups who belong to different generations, that are able to value creativity, as a strategy not only to solve problems, but also to identify other problems to be solved.

From concept to launch the process has been followed and the research stages were developed through a standard progressive order.

Figure 1. Food and products. The topics.

2.1. Empathise

Food and products. The complexity of the factors in the survey required to adapt tools and to develop methods in order to modernise the traditional approach to the topic of age-friendly environments, characterised by deep-rooted stereotypes that endure around ageing.
The applied methodology is pretty close to *a day in the life*, developed to inform the design process by observation of real activities and behaviours in the early stages of the design process and in validating design concepts (Eikhaug, 2010). This approach allowed a full empathy between interviewers and users. However the original contribution is due to the fact that students were asked to gather information by contacting their older relatives. Thanks to this strategy it was possible to bypass the usual barriers when approaching users in the first stage.

Each student directly contacted a senior and compiled a sort of ID of the person that concisely provided the necessary information on lifestyle and health condition. Once the goals of the survey were communicated to the student/designer’s chosen senior, the designers observed the seniors in their daily activities with three main purposes that were the foundation of this three-year piece of research: the cooking activities within the household, daily groceries at the supermarket, and the choice and use of food packaging in food stores and at home.

In trying to understand the seniors’ needs, students were advised not to ask directly to the observed senior about their needs, because elderly people especially are inherently conservative, and having slowly adapted to a progressive limitation of their capabilities, they sometimes cannot easily recognise when they are in need. The direct observation through the process of *shadowing* was then followed by elaborating videos and interviews of the users that provided the highlights observed during the observation stage. Coproducing this survey, the emphatic connection between designers and their elder relatives increased and improved the synergy within them. These activities took place in three successive years and data was gathered on around 200 seniors that had agreed to be interviewed and to participate in this project.

**Neighbourhood and green areas.** The topic of the fruition of green areas was examined using a user-experience approach, equating the park to a service that needs to be made more accessible and pleasant to senior users. For this reason, specific tools pertaining to user experience design were employed during the survey, starting with the definition of character profiles of people regularly using the park, to then build a customer journey map (Schneider and Stickdorn, 2011, p.151) of their activities in this environment. Building a visual map that graphically describes the user’s experience through various steps and touch-points proved to be extremely useful during the survey and analysis stages, especially because it dynamically highlighted the difficult aspects of using this service. Comparing different experience maps, based on the accounts of around 50 people, allowed us to understand what recurrent issues users had in their expectations and experiences when experiencing urban space.

### 2.2. Define & Ideate

Before providing design solutions, it was important to accurately define the encountered problems. During this stage, geriatricians collaborated with the students to help them understand the needs of the elderly population, especially in relation to micro/macro-pathologies which occur when ageing. The issues analysed were related to correct nutrition in elderly users, the importance of a varied diet and finally the prevention of specific pathologies through physical activity. In this sense, the prospect of making the experience of buying groceries easier, as well as encouraging the use of green open spaces for healthy walks, are all priorities that should be incorporated into everyone’s routine.
Designing for an ageing society: products and services.

*Figure 2. Neighbourhood and green areas: character's profile and customer journey map.*

Design can encourage healthy habits as well as active ageing policies by transforming actions like shopping into opportunities to be actively involved in social activities.
“This is not to ignore the medical realities of ageing—the physical, sensory and cognitive impairments that come to us all eventually. However, we must recognize that many older people are disabled by the design of the environment around them, rather than intrinsically disabled.” (Myerson, 2017)

To look at green areas in the city with this approach becomes relevant. If the local administration would promote actions oriented to improve their fruition and daily physical activities, together with facing up urban mobility issues, it would be fundamental. In this direction this new type of collaboration between Millennials and over-65s has been capable of raising awareness on the issue, also thanks to the large number of people involved in the survey.

2.3. Prototype & Test.

Working in groups allowed the designers involved in the survey to develop designing solutions that were strictly connected to the problems observed through ethnographic research during the fieldwork. Consequently, projects were then developed on the kitchen environment, kitchen products, and food packaging throughout its lifecycle, from its transportation and sale in food stores, to house use and disposal. In particular, the activity on packaging allowed students to create low-cost prototypes of the products developed during the project. These prototypes were then tested during a workshop by a team of over-65 users. Specifically, the process of design thinking was carried out in its entirety by the same group that had previously suggested what types of packaging should be rethought in terms of their usability. A qualitative assessment of this activity was carried out in which over-65s were asked to comment about the packaging usability and give their feedback.

2.4. From educational field to companies.

With the introduction and use of design thinking methods on a didactic level to develop innovative age-friendly products and to find ways to adapt the environment to the elderly population, a series
of solutions were proposed by the students. These concepts carry a great communicative value, in that they represent the collaboration between two generations that - although different - managed to find a contact point in their desire to contribute with one’s own experience and to offer solutions coherent with reality. The results of the empathic connection developed between over-65s and Millennials have convinced a prominent food company to establish a collaboration with the academic research team to explore the innovation scenarios connected to their packaging that must be developed For All in the near future.

Ageing issues are in many ways a taboo for bigger industries, as companies are afraid that dedicating products to older users is a strategy that leads to exclude other groups of consumers. This collaboration was based on the idea that designing For All cannot be exclusive, but on the contrary oriented to change the narrative on ageing and to establish the roots of an age-neutral society (Lee and Collie, 2017), retaking an enabling design of products and services to engage a modern and multigenerational customer base. Besides proposing concepts for future packaging, the research carried out with this company, surveyed around 320 consumers of all ages about their food habits and the food packaging in supermarkets.

3. Results

In this paper we underlined how research in design needs to tackle the issue of how to adapt the environment around us, and the available products and services, to the progressive ageing of population with the aim of lowering social costs. This topic belongs to the field of design for social innovation, in which design becomes a trigger and support for cultural and social change, transforming abstract ideas into ready-to-prototype concepts (Manzini, 2015, p.47).

The present research applied a human-centred methodology with the aim of developing a synergy between designers and end users. It touched upon and became entangled with various disciplinary fields, using tools from the practices of design thinking and experience design to identify the problems to be solved, and to stimulate innovation by overturning the conventional way to tackle the issues of accessibility and inclusion of seniors in social life. The aim was to investigate the actual needs of the people with an approach that could revolutionise roles, because people are often not able to pinpoint what their needs are, but “their actual behaviours can provide us with invaluable clues about their range of unmet needs” (Brown and Wyatt, 2010).

In this framework the inclusion of the competences in medicine and gerontology was intended to add innovative aspects to the research, which still need to be explored with more accuracy, because geriatricians weren’t included in the design thinking process. However, this collaboration allowed us to highlight the needs observed in the research in view of the global trends of public health and people’s actual quality of life.

In the end the results must not be found out in the design of innovative products market-oriented, but these solutions and concepts are extremely valuable and become a communication tool able to convey the research’s values to all the subjects involved, i.e. students/designers, doctors, the over-65s that participated in the workshop. To give shape means to design a value for a product (Dahlbom, 2002) and in this sense in the proposed design action the creation of value becomes the original contribution in spreading socially responsible and ethical behaviours, in developing human capital and in improving relationships within the local communities (Fagnoni, Puri and Sabeto, 2012).

To deal with age-friendly environment means also to work on a radical cultural change in which design and communication will have a pivotal role to play in the changing representations of older people in every field.
The various concepts proposed in the design action represent an awareness campaign towards a radical cultural change in how old age is perceived and how the idea of an age-friendly design needs to be quickly modified: not objects shaped for seniors, because if recognisable as targeting the elderly population, they would be rejected. Design must always engage a multigenerational customer base and usually older people are less demanding customer than young and middle-aged: the survey showed that seniors have a higher tolerance than other generations towards unnecessary effort in using products and services.

In this direction the products that were proposed in the design activities are themselves the research, because they communicate and spread a message.

“A significant branch of designerly ways of knowing, then, is the knowledge that resides in objects. Designers are immersed in this material culture, and draw upon it as the primary source of their thinking. Designers have the ability both to ‘read’ and ‘write’ in this culture: they understand what messages objects communicate, and they can create new objects which embody new messages.” (Cross, 1982, p.225)
References

AGE Platform Europe (2011). How to promote active ageing in Europe. EU support to local and regional actors - European Commission, Committee of the Regions. Retrieved Dec. 1, 2016, from http://eurohealthnet.eu/media/new-brochure-how-promote-active-ageing-europe-eu-support-local-and-regional-actors.

American Planning Association, & National Association of County and City Health Officials (2013). Healthy Places Terminology. Retrieved October 24, 2016, from http://www.cdc.gov/healthyplaces/terminology.htm

Apolone, G., Mosconi, P., & Ware, J. (2000). Questionario sullo stato di salute SF-36. Manuale d’uso e guida all’interpretazione dei risultati. Milano: Guerini e Associati. Retrieved Dec. 3, 2016, from http://crc.marionegri.it/qdv/downloads/SF12%20Manuale.pdf.

Brown, T. (2009). Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation. New York: HarperBusiness.

Brown, T., & Wyatt, J. (2010). Design Thinking for Social Innovation. Stanford Social Innovation Review Winter. Retrieved Dec. 1, 2016, from https://ssir.org/articles/entry/design_thinking_for_social_innovation

Buchanan, R., (1992). Wicked Problems in Design Thinking. Design Issues, vol. 8, no. 2, Spring. 5-21.

Christensen, K., Doblhammer, G., Rau, R., and Vaupel, J. (2009). Ageing populations: the challenges ahead. The Lancet- Elsevier. Retrieved Dec. 5, 2016, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2810516/

Cross, N. (1982). Designerly ways of knowing. Design Studies, 3(4) pp. 221–227.

Dahlbom, B., Beckam, S. & Nilsson, G.B. (2002) Artifacts and Artificial Science, Stockholm: Almquist &Wiksell.

Eurostat (2015). Eurostat newsrelease 166/2015 – 29 settembre 2015. Retrieved Dec.5, 2016, from http://ec.europa.eu/eurostat/documents/2995521/7012459/3-29092015-AP-EN.pdf

Fagnoni, R., Puri, G. & Sabeto, C. (2012). Design activities. Formazione e produzione. Esperienze e ricerca in 50 storie, Genoa: Genova University Press

Fisk, D., Rogers, W., Charness, N., Czaja, S. & Sharit, J. (2009). Designing for Older Adults: Principles and Creative Human Factors Approaches, Cleveland: CRC Press.

Hamlyn, H. (2017). The challenge of our time. In Myerson, J. (2017). New old. Designing for our future selves. London: The Design Museum.pp. 12-17.

IDEO (2015). The Field Guide to Human-Centered Design. A step-by-step guide that will get you solving problems like a designer. Retrieved Dec. 1, 2016, from http://www.designkit.org/resources/1.

Lawler, K. (2001). Aging in place: Coordinating housing and health care provision for America's growing elderly population. Washington, DC: Joint Center for Housing Studies of Harvard University & Neighbourhood Reinvestment Corporation. Retrieved 4 Dec. 2016 from http://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/lawler_w01-13.pdf.

Manzini, E. (2015). Design when everybody designs. An introduction to design for social innovation. Cambridge MA: MIT Press.

Myerson, J. (2017). New old. Designing for our future selves. London: The Design Museum.pp. 12-17.

Kelley, D., & Littman, J. (2001). The art of innovation: lessons in creativity from IDEO, America’s leading design firm. New York: Doubleday.

Osservatorio Senior (2016). Un ritratto dei nuovi senior: generazioni a confronto. Retrieved 3 Dec. 2016, from http://osservatoriosenior.it/generazioni-a-confronto/

Plumbe, C., Berg, M., Kunur, M., Eikhaug, O., Gheerawo,R., & Valfort, M. (2010). Innovating with people. The business of inclusive design. Norwegian Design Council, Oslo: Fladby AS.
Ronzon, F., (2008). Sul campo - Breve guida alla ricerca etnografica. Roma: Meltemi.

Schneider, J., & Stickdorn, M. (2011). This is Service Design Thinking. Basics, tools, cases. Amsterdam: BIS Publishers.

Verganti, R., (2009). Design-driven innovation. Changing the rules of competition by radically innovating what things mean. Boston: Harvard Business Press.

WHO (2002). Active Ageing. A Policy Framework. Retrieved Dec. 1, 2016, from http://apps.who.int/iris/bitstream/10665/67215/1/WHO_NMH_NPH_02.8.pdf.

Wiles, J., Leibing, A., Guberman, N., Reeve, J., and Allen, R. (2012). The Meaning of “Ageing in Place” to Older People. The Gerontologist, Oxford University Press doi: 10.1093/geront/gnr098. Retrieved Dec 1, 2016, from http://gerontologist.oxfordjournals.org/content/early/2011/10/07/geront.gnr098.full#ref-2.

About the Author:

**Silvia Pericu** is assistant professor in Design in Genoa. Her current research ranges from public design, strategies for communication and revaluation of local resources in urban space and age & ability issues to improve people’s life and social inclusion.

**Acknowledgements:** This publication was made possible thanks to a contribution of Dipartimento Architettura e Design – DAD – Università degli Studi di Genova and to the long lasting and solid cooperation in researching and teaching about ageing and demographical issues with Maria Benedetta Spadolini.