



MODULE 1

INTRODUCTION TO AGE-FRIENDLY
AND INCLUSIVE ENVIRONMENTS

UNIT

1

FROM DEMOGRAPHIC AND CLIMATE CHANGE
TO HOLISTIC ENVIRONMENTS - THE WHO AND
SHAPE MODELS

Carina Dantas • Juliana Louceiro



DESIRE

DESIGN FOR ALL METHODS TO
CREATE AGE-FRIENDLY HOUSING

DESIRE is a European project funded by the Erasmus+ programme.
Project number 2020-1-SK01-KA202-078245.

ISBN 978-80-227-5286-2



SPEKTRUM
STU

DESIRE will provide professionals in the building industry and home furnishings sector with the tools and skills to apply Design4All methods as an integral part of the design process, with the aim to create or adapt age friendly housing as a solution for the wellbeing, comfort and autonomy of the older adults or dependents at home.

The DESIRE training platform consists of six modules and 21 units.



Co-funded by
the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.



The present work, produced by the DESIRE Consortium, is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

PUBLISHED BY:

© DESIRE, 2023, www.projectdesire.eu

Slovak University of Technology in Bratislava by
Publishing house SPECTRUM STU, Bratislava 2023

AUTHORS:

Miguel Ángel Silvestre Botella	Juliana Louceiro
Zuzana Čerešňová	Soňa G. Lutherová
Carina Dantas	María Sánchez Melero
Natália Filová	Marta Martínez Navarro
Juan Carlos Bañón Guillén	Lea Rollová
Miroslava Hlinčíková	Matic Sašek
Míchal Kacej	Mária Šimková
Veronika Kotradyová	Helena Tužinská
Dean Lipovac	Ľubica Voľanská
Nastja Podrekar Loredan	

ILLUSTRATIONS:

Zuzana Čerešňová	Markéta Kučerová
Natália Filová	Lea Rollová
Míchal Kacej	Lenka Suláková
Veronika Kotradyová	Barbora Valábeková

GRAPHIC DESIGN:

Mária Šimková

TABLE OF CONTENTS

Introduction to age-friendly and inclusive environments	3
UNIT 1 – From demographic and climate change to holistic environments – the WHO and SHAFE models	3
1.1 What are Age-Friendly communities and environments	3
1.1.1 Healthy living and well-being	5
1.1.2 The importance of context – inclusive communities for all ages	8
1.1.3 The 8 areas of Age-Friendly Environments	9
1.2 Smart Healthy Age-Friendly Environments	12
1.2.1 The SHAFE concept – holistic environments for all ages	12
1.2.2 Responding to SHAFE challenges in housing	14
1.2.3 Best practices and examples of SHAFE	17
References	20

INTRODUCTION TO AGE-FRIENDLY AND INCLUSIVE ENVIRONMENTS

This module aims to assist the building industry and furniture professionals to understand what is meant by “Age-Friendly”, how ageing impacts on daily life, and train staff with the skills to communicate effectively, identify accessibility issues and answer to different age and personal needs in the housing creation and retrofit. It aims to be an introduction to the DESIRE training course, presenting transversal

contents, such as some of the concepts that will be further developed in other modules.

In the beginning of each unit, you will find a short description of the main concepts to be elaborated further. If you are looking for more advanced contents or to deepen knowledge in some specific areas, please check the boxes “If you want to know more...”.

UNIT 1 – FROM DEMOGRAPHIC AND CLIMATE CHANGE TO HOLISTIC ENVIRONMENTS – THE WHO AND SHAFE MODELS

In this unit, the policy and societal framework of ageing and climate change will be presented to set the scene towards the design and implementation of age-friendly environments, including outdoor spaces, housing and furniture

aspects. The **World Health Organisation** (WHO) model and the **Smart Healthy Age-Friendly Environments** (SHAFE) approach will be presented, and practical examples and practices shared and highlighted.

1.1 WHAT ARE AGE-FRIENDLY COMMUNITIES AND ENVIRONMENTS

Demographic change, in particular the ageing of the population, and climate change are important variables that must be considered by society as a whole, which must adapt to the challenges caused by these changes. It is therefore important to consider short- and long-term solutions to respond to such demands, where the construction and furniture professionals can have a key role.

During the early 2000s, organisations like the WHO and the European Union started to discuss the need to create cities and communities more adapted to older adults. In order to achieve that goal, it was necessary to intervene to improve

social and physical environments (Buffel et al., 2019). In 2006, the WHO launched the “Global Age-friendly Cities” project (WHO, 2007a), and as a result of various focus groups in 33 cities, it was possible to define what should be an age-friendly city: a city that encourage “active ageing by optimising opportunities for health, participation and security in order to enhance quality of life as people age” (WHO, 2007a, p.1).

Now we invite you to learn more about the concepts underlying Age-Friendly Environments.

IN A NUTSHELL

Health is defined as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 2020, p. 1).

Well-being is a multidimensional concept that integrates mental well-being, emotional well-being, physical well-being and social well-being (WHO, 2012).

Ageing is determined and influenced by different factors: gender, culture, economic determinants, social and health services available, behaviour, social, physical and personal determinants.

The **environment** in which a person lives determines the way (s)he grows and adjust to the loss of some functions that is inherent to the ageing process.

Healthy Ageing is “the process of developing and maintaining the functional ability that enables well-being in older age” (WHO, 2019, p. 1).

An **age-friendly city and community** is one in which policies, services, and structures related to the physical and social environment are designed to support and enable people to “age actively” – that is, to live in security, enjoy good health, and continue to participate fully in society (WHO, 2007b).

To achieve this kind of community, all the stakeholders, including building and furnishing industries must be engaged, and must count with older adults in a co-creation process.

Demographic change has an impact on climate change, and vice-versa; both lead to demands on the future of cities and communities.

The response to this challenge depends on the context of each region. For instance, in a region where the population is declining, it is possible to create and expand green corridors in places where once there were only spaces of construction.

Besides biomedical health and social support, there are other areas that must be considered when the aim is to create an age-friendly community: Housing; Transport and accessibility; Outdoor spaces and buildings; Community support and health services; Communication and information; Civic participation and employment; Respect and social inclusion; and Social participation.

These domains are interdependent.

1.1.1 Healthy living and well-being

According to the WHO (2020), health “is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (p. 1). This definition is consistent with the biopsychosocial model of health, that integrates physiological, psychological and social factors and the interaction between them to measure health. The WHO definition of health explicitly links health and well-being, so it is possible to understand that these two concepts are somehow connected, and we possibly cannot achieve one without the other.

The WHO also proposed a definition for well-being, stating that is a concept with two dimensions: subjective and objective; and comprises an individual's experience of their life, as well as a comparison of life circumstances with social norms and values. Well-being is a multidimensional concept that integrates mental well-being, emotional well-being, physical well-being and social well-being (WHO, 2012).

Some studies show that well-being is associated with factors such as self-perceived health, longevity, healthy behaviours, mental and physical illness, social connectedness, productivity and physical and social environment (Diener & Seligman, 2004; Lyubomirsky et al., 2005).

Active ageing is connected to a healthy life. This first concept was developed during the United Nations' Year of Older People, in 1999. Active ageing occurs when the person can continue to participate in all spheres of life, regardless of his/her age. Health and well-being affect the way each person ages and they are determined not only by genetic inheritance and personal characteristics, but also by the physical and social environment in which we live. Ageing is not a static variable and is influenced by several factors: gender, culture, economic determinants, social and health

services available, behaviour, social, physical and personal determinants (c.f., Figure 1), as stated by the WHO (2002).

The environment where we live impacts our physical and psychological capacity since we are born, and the way we adjust to loss of some functions and other forms of adversities that we experience during our life. When the interaction between the environment and the person is satisfactory, there are more chances to have a healthy ageing. According to the WHO, healthy ageing is “the process of developing and maintaining the functional ability that enables well-being in older age.” (WHO, 2019, p. 1).

In 2021, the European Commission adopted the Green Paper on Ageing that promotes a “life-course” approach to ageing, stating that we start ageing the moment we are born. In that report, the European Commission also states that, although healthy and active ageing are personal choices, they are strongly dependent of the environment in which we live, work, and socialize (European Commission, 2021).

This Green Paper also acknowledges that providing EU citizens with adequate digital skills to monitor their health status will increase their prospects to continue active as they age; but also, that there is the need to adopt housing solutions, age-friendly and smart homes to improve the health and safety of the older people living alone and empower them to continue with active and independent lives, as long as they wish. The same is also mentioned in the recently adopted Council Conclusions on Human Rights, Participation and Well-Being of Older Persons in the Era of Digitalisation (2020).

Healthy living is a concept focused mainly on the prevention of diseases and illnesses through the adoption of healthy lifestyles; in

other words, it is a way of living that lowers the risk of being seriously ill or dying early but it implies having the opportunity, capability and motivation to act in a way that positively affects physical and mental well-being (European Food Information Council, 2022). This goes beyond intrinsic factors and implies having resources, services and environments that support a healthy life.

However, a huge share of the building stock is not adapted to allow ageing in place. In addition, bringing new smart home solutions to market is still challenging because of the absence of a common EU market and economies of scale. Actions tackling these issues are needed to progress in the direction of active and healthy living.



Figure 1.1.1 Determinants of active aging, according to the WHO

DO YOU WANT TO KNOW MORE ABOUT...

Active ageing is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age (WHO, 2002, p. 12). This process is influenced by different factors, that are briefly detailed below.

Culture determinants: all the persons and populations are immersed in cultures that are responsible for sharing norms, rules, traditions and ways of thinking. The culture determines the way a society looks to the ageing process and the older persons, so it influences all the determinants of active ageing. For example, cultural factors influence health-seeking behaviours (e.g., enhancing or not the adoption of behaviours such as smoking) (WHO, 2002).

Gender determinants: are a “lens” through which consider the appropriateness of policy options and how they affect the different genders. For example, the traditional role of women as caregivers of the family increases the susceptibility to serious diseases in later adulthood; on the other hand, men are more prone to engage risk behaviours that could lead to illness and death (WHO, 2002).

Social determinants: the conditions in which people are born, grow, work, live and age, and the broader set of forces and systems (political, economic and social) that shape the conditions of daily life. The social environment plays a fundamental role in physical and mental capacity throughout life, being indispensable in determining how a person adjusts to the loss of some functions that is inherent to the ageing process (WHO, 2002).

Economic determinants: income, work and social protection are strong determinants of active ageing. The income can determine the access to nutritious food, adequate

household or good health care. Social security measures in Europe can include pensions, compulsory saving funds, insurance programmes, etc., Nowadays, there is a multi-pillared approach that mixes funding from the state with private support (WHO, 2002).

Behavioural and personal determinants: in all stages of life, it is possible to engage in healthiest behaviours that can lead to a more successful ageing. Stop smoking, starting physical activity or eat healthier food are some behaviours that could lead to increased active living (Centers for Disease Control and Prevention, 2021).

For many diseases, genes may be the cause; but the environment is usually the precipitating factor; this means that a person cannot change genes but can change their behaviour in order to prevent the genes to cause the disease (WHO, 2002).

Health and social services: the health system is a determinant of active ageing, and to promote it, a perspective of health promotion must be adopted, not only with disease prevention campaigns but also by promoting equitable access to primary health care and long-term care (WHO, 2002). This means that all people, of all ages, should have access to all the health services they need.

Physical environments: can determine the independence or dependence of a person. If the environment has many barriers or is not safe, it is less likely that older people leave their houses and, therefore, have less functional capacity, more mobility problems, being more exposed to social isolation and emotional disturbances (WHO, 2002).

1.1.2 The importance of context – inclusive communities for all ages

The community context and resources are of utmost importance in the ageing process. The WHO “Healthy Cities” approach “recognizes the determinants of health and the need to work collaboratively between public, private, voluntary and community-sector organizations”. Through political, strategic and technical support, as well as capacity building, the WHO intends to engage the communities and societies in order to achieve change for the better, tackling inequalities and promoting good governance and leadership for health and well-being (WHO, 2015).

A healthy city expands the community resources enabling people to mutually support in all the functions of life and developing to their maximum potential (WHO, 2015). Also, it is committed to health and to continually create and improve its physical and social environments.

Although most of the age-friendly initiatives focus primarily on urban environments, the guidelines and principles they promote are widely applicable in any community environment. Regarding the rural areas, the need of improving of physical environment is particularly acute. Older adults and caregivers from rural and remote areas consider accessibility as one of the most important traits of their communities and this often fails (e.g. lack of sidewalks, walkways and ramps on the public road, increased isolation and greater distance from health, banking and administrative services) (van Hoof et al., 2018).

A key strategy to facilitate the inclusion of older people is the adjustment of their environment to their needs. An age-friendly environment allows people, regardless of their

age, to actively participate in the community and be treated with dignity, facilitating intergenerational connection. On the other hand, it helps people to stay healthy and active throughout the ageing process, offering adequate support to those who can no longer take care of themselves (Dantas et al., 2020).

In Europe, considered as the most aged continent of the world, the concept of age-friendly environment is of great interest. However, a huge share of the building stock is not adapted to allow ageing in place and many older adults are living in inadequate housing, but unable to fund the improvements needed (Marley, 2015).

Build age-friendly cities and environments requires the coordination of different policy and service areas to strengthen each other, a work that has been developed under the Smart Healthy Age-Friendly Environments (SHAFE) a Stakeholders Network approved by the European Commission in 2018. Meaningful change can only be achieved by listening to those concerned and thinking beyond the “silo” of each sector. A central aspect of this approach is to create a participatory process in collaboration with older people, third sector organisations, and citizens in general (Dantas & van Staaldunin, 2020).

People know what they need and therefore must be at the heart of any effort to create a more adapted community. A participatory approach to research, planning, implementation, monitoring and evaluation of initiatives is the best safeguard to make each community a better place to live (van Staaldunin et al., 2020).

1.1.3 The 8 areas of Age-Friendly Environments

The WHO Age-friendly Cities framework is developed based on eight interconnected domains that can help to identify and address barriers to the well-being and participation of older adults in society. The domains are not independent; they overlap and interact between each other (WHO, 2007a).

They go beyond traditional biomedical health and social support approaches to a methodology that intervenes throughout the life cycle and addresses the different perspectives that have an impact on the environment around the person:

- Housing
- Transport and accessibility
- Outdoor spaces and buildings
- Community support and health services
- Communication and information
- Civic participation and employment
- Respect and social inclusion
- Social participation



Figure 1.1.2 Areas of an age-friendly city or community

A community that follows these guidelines will really be for all ages. It will design and adapt its natural environment for all citizens (e.g., accessible and safe road and transport infrastructure, barrier-free access to buildings, public rest and leisure places, adapted sanitary facilities). The information available will be adapted to different capacities and resources, integrated at the social, community and health levels, allowing people to maintain their health and autonomy longer. These services will also benefit younger generations, enhancing inclusion and participation.

The longer that older people manage to stay healthy, live in their own homes and own communities, and remain active in their economic and social life, the better the environment serves their well-being and quality of life. They remain vital contributors (e.g. as workers and consumers) and less time, money and effort are needed in social and health care provision through formal or informal channels. **Suitable living environments are one of the key elements that need to be in place to achieve such objectives**, including several domains such as buildings, outdoor spaces and mobility. The WHO also developed a Checklist of Essential Features of Age-friendly Cities where it is possible to see all the essential factors to an age-friendly environment (WHO, 2007b).

DO YOU WANT TO KNOW MORE ABOUT...

According to WHO (2007b), there are eight aspects that need to be considered when planning an age-friendly community. Here you can know them in more detail.

Community and health care

The community must have accessible and affordable care services, close to where older people live, as well as health and social workers trained to provide services specifically to this age group. Preventive care, geriatric clinics, adult day centres and residential care services located in residential areas allow older people to stay supported by their family and friends (WHO, 2007a).

Transportation

The community transport system should be accessible and affordable. This will ensure that the older adults continue to be engaged with the community and more independent. The public transports should be perceived as safety and accommodate people with mobility needs. Education and training are also an important requirement for the drivers and station staff, in order to know how to deal with this age group. (WHO, 2007a). The roads, traffic and street lighting should be also a target of attention in an age-friendly community to maintain the confidence of the older drivers.

Participation

Leisure, social, cultural and spiritual activities are key factors to maintain the participation of older adults in the community, reduce the isolation and depression risk. Therefore, an age-friendly community should guarantee different kinds of activities, made them affordable and in hours and spaces suitable for older adults. Activities that encourage intergenerational contact are mutually enlightening: seniors may transfer knowledge about traditions

and experiences of the past, and the younger may help them with technology and new practices (WHO, 2007a).

Respect and social inclusion

An age-friendly community promotes the participation of older adults in social, civic and economic life. There are still many negative prejudices and discrimination connected to ageing (known as ageism). To tackle and reduce it, it is necessary to invest in education and promote intergenerational interactions (WHO, 2007a). Activities that consciously involve older adults enhance their self-esteem, make them more engaged and valuable in the community.

Civic Participation and Employment

Through voluntary, paid employment and participation in the political process, older adults, even after retirement, are an asset for an age-friendly community. Participation in these activities improves their satisfaction and maintains them socially engaged. The community should guarantee and publicise different opportunities, counting on diverse preferences, needs and skills. It is also needed to transform the urban space and transport infrastructure to ensure the accessibility of everyone.

Educating employers to see the benefits of giving opportunities of work to older people may reduce ageism in the workplace. Older adults have experience and expertise that can be used to improve the company (WHO, 2007a).

Also, older people must be involved in the decision-making processes. They should be invited to platforms or interest groups, or even motivated to create their own groups, making sure their voice is heard (WHO, 2007a).

Communication and information

key part of an active ageing is staying connected with events, news and relevant information in time. The spread of Information and Communication Technology (ICT) like computers, cell phones or other similar resources can increase the social exclusion of the older adults who may not have sufficient digital literacy. For this reason, governments and organisations must ensure that information regarding policies and issues that directly affect older adults are available through the traditional print and broadcast media, and accessible to people that experience vision and hearing loss (WHO, 2007a).

Investing in community programs to improve digital literacy and computer training, adapted to older adults, can have an important role as it brings them closer to the community and fights technological exclusion (WHO, 2007a).

Outdoor Spaces and Buildings

The external environment has a great impact on the independence and quality of life. An age-friendly community invests in recreational areas, safe pedestrian and building infrastructure to all. A clean environment, with low noise and pollution levels, green and safe places where older adults can easily arrive enhances social participation, physical activity and well-being in general. Buildings, pavements, walkways and pedestrian crossings must be retrofitted bearing in mind possible difficulties in locomotion or sensory capacities (WHO, 2007a).

Housing

Housing conditions and the proximity to services are important factors that contribute to independence and active ageing. The older adults must be capable of doing their daily activities by themselves, feel safe and secure (WHO, 2007a).

1.2 SMART HEALTHY AGE-FRIENDLY ENVIRONMENTS

IN A NUTSHELL

Smart Healthy Age-Friendly Environments (SHAFE) is a concept based on a holistic approach that aims to optimize social and physical environments, supported by digital tools and services that promote independent living, equity and active participation in society (Dantas et al., 2021).

It is necessary to engage citizens, communities and specific sectors like ICT, building industry, urban planning and also the health and social care sector (Dantas et al., 2021) to successfully implement this approach.

1.2.1 The SHAFE concept – holistic environments for all ages

Smart, adaptable and inclusive solutions can help to improve and support independent life throughout the course of life, regardless of a person's age, gender, disabilities, cultural background and personal choices. This idea was the baseline for the development of the Smart Healthy Age-Friendly Environments (SHAFE) concept, created in 2017 as a Thematic Network, approved by the European Commission in 2018 and consolidated as a steady movement after that, initially as a Stakeholders Network (Dantas et al., 2019) and most recently as a Foundation.

A holistic approach that optimizes social and physical environments, supported by digital tools and services, allows to provide better health and social care, promoting not only independent living, but also equity and active participation in society. This approach follows the United Nations Sustainable Development Goals – in particular Objectives 3 (Good health and well-being) and 11 (Sustainable cities and communities) – stating that sustainable environments for all ages represent the basis for ensuring a better future for the entire population and addressing most of the growing issues of the ageing population (Dantas et al., 2018).

SHAFE aims to foster awareness and support the creation and implementation of smart, healthy indoor and outdoor environments, for present and future generations, that will enable citizens to learn, grow up, work, socialise and enjoy a healthy life, by benefiting from the use of digital innovations, smart living and accessibility solutions and shared assistive models adaptable within the European setting (Dantas et al., 2021).

The challenges of different sectors, such as Information and Communications Technology (ICT), the building industry, urban planning and the health and social care domain, as well as those of citizens and their communities, are clearly interlinked. Responding to these challenges will foster awareness and support for the creation and implementation of smart, healthy and inclusive environments in the European context (van Staalduinen et al., 2021)

The community is the physical, social and cultural ecosystem closest to a person, built on relationships of trust, sharing, solidarity and intimacy, where each person finds social, cultural and identity references, socialises and lives. The objective conditions of the environment

NET4
Age-Friendly

HEALTHY environments

Healthy environments support people to remain active and prevent from certain diseases. Healthy environments are safe and inviting, promote physical activity and participation in society.

Healthy lifestyle

Food, physical activity, moderate use of alcohol and tobacco, relaxation, good mental health support wellbeing and health

Medicines and therapies

Pharmaceutical treatment, physical activity therapy, rehabilitation, music therapy or trainings support recovery or life with a disease or impairment

Caretaking

Taking care of people who struggle with chronic diseases or impairments, such as dementia, Parkinson's disease, mobility problems, mental problems

Figure 1.1.3 Healthy environments

NET4
Age-Friendly

SMART environments

Digital or ICT applications are everywhere. For example: smartphones, internet and WIFI at home, streaming services, and digital watches. The devices and software need to be user-friendly designed, safe to use, supportive to citizens and offer reliable data handling.

Smartphones and tablets

Phones with iOS or Android or tablets provide many functionalities such as internet, data, social media, games.

Smart home technology

WIFI, home sensors, internet: comfort, health advice and monitoring, independent living support

Outdoor smart technology

Wearables, smart lighting, transport orientation aids, and many others support and promote an active lifestyle

Figure 1.1.4 Smart environments

(pollution, accessibility, mobility, safety, comfort) affect the quality of life and well-being of citizens, particularly in the context of climate change and thus affect the whole community circle (Dantas et al., 2021).

Thus, SHAFE fosters actions that promote partnerships between technological and digital innovation, architecture, urban planning, social

studies and health sciences to design and simulate communities of belonging that leverage on the potential of each sector to promote the existential dignity of all persons, regardless of their age, gender, health, social, educational, economic, cultural and identity conditions, as well as the levels of development of the region where they live (Dantas et al., 2018).

1.2.2 Responding to SHAFE challenges in housing

Demographic change is a concept used to describe a change in population size and structure, that can happen due to birth rates, death rates or migration (Max Planck Institute for Demographic Research, 2022). The decrease in the birth rate and increase in average life expectancy results in the ageing and shrinking of the European population. Demographic changes lead to very diverse demands for housing characteristics. Climate change and demographic change are two megatrends that need to be analysed together as there is great potential to adapt to climate change while building or retrofitting homes fit for older adults needs.

Every citizen has different needs and different ways of perceiving their home and immediate living environment. Modern living spaces are expected to be accessible, affordable, smart, energy efficient, safe, secure and comfortable. These characteristics are what help to turn a house into a home. For many, our homes and living environments have been transformed over the years: they have become greener, more efficient, safer and more automatized. However, the next step is to design or reconfigure them to be more versatile, easy to enter, easy to navigate (inside and around).

Europe needs a broad supply of responsive, smart age-friendly living environments and housing that will enable citizens, and in

particular older people and those who are frail, have impairments or disabling illnesses, to continue to live in their own homes or to move to other suitable (non-residential) housing. A responsive, smart age-friendly home shall meet the changing needs of its occupants across their lifetime.

For a growing number of older people, the current housing stock and other building facilities are no longer fit to meet the requirements for continued independent living. Investments in housing and in smart living solutions by construction and IT companies, homeowners and households themselves, are needed urgently to upgrade the current housing stock into appropriate smart living environments for ageing well. The needs of remote monitoring, using mHealth applications and robotics, are also rapidly increasing, which needs to be considered in planning age-friendly homes or environments.

Despite the huge evolution over the last decades, there is still no clear consensus and understanding of what are good practices in the design of smart or responsive spaces, with several concepts and terms referring to the same or similar situation, such as age-friendly city, community, housing, environment, lifelong housing, senior-friendly space, smart homes, and living environments. They all imply that older adults or those with lower

functional abilities are able to live at home, if duly supported by an environment that includes the needed services, technology, and infrastructure. If these environments are well-thought of, also those with lower income levels can afford the comfort of home across life stages (Velikov & Thün, 2013).

The definition of a “Smart” Building foresees a holistic and integrated design: “Smart Buildings are buildings which integrate and account for intelligence, enterprise, control, and materials and construction as an entire building system, with adaptability, not reactivity, at the core, in order to meet the drivers for building progression: energy and efficiency, longevity, and comfort and satisfaction. The increased amount of information available from this wider range of sources will allow these systems to become adaptable and enable a Smart Building to prepare itself for context and change over all timescales” (Buckman et al., 2014, p. 98).

A “responsive” environment, is interactive, adaptive and represents “how natural and artificial systems can interact and adapt” (Lee et al., 2002), including functionalities and performance characteristics similar to those of an “intelligent” building: e.g. real-time sensing, climate-adaptive elements, smart e-health devices, automation and the ability for user override, as well as interactive characteristics, such as computational algorithms that allow the building system to self-adjust and learn over time, e.g. to control environmental conditions, comfort, security and energy consumption (Beesley et al., 2006; Cole & Brown, 2009).

This smart age-friendly living environment foresees:

1. Inclusion of ICT for increasing user-autonomy, user-comfort and energy efficiency;
2. Inclusion of building and interior design features according to Design for All (D4All) standards;
3. Mutability of environment so that individuals with different habits and needs find comfort in it.

Responsive houses react to user needs and behavioural changes to increase comfort, safety and well-being of users. According to Atkin (1998), buildings should “know what's happening inside and immediately outside”; “decide the most efficient way of providing a convenient, comfortable and productive environment for the occupants”; and “respond quickly to occupants” requests, being almost a humanised system, which senses, adapts and reacts to human challenges.

It also needs to be part of the community, considering ICT, accessibility issues and offer potential for greater engagement, inclusion and privacy. In order for a home to be compliant to the changing needs of a growing ageing population with different abilities, backgrounds and requirements, such a responsive age-friendly environment must include ICT, be energy efficient and safe and also incorporate D4All features in terms of accessibility, usability and affordability.

Design for All is a tool and an approach which aims to ensure equal opportunities for all to participate in all spheres of society. “To achieve this, the built environment, everyday objects, services, culture and information – in short, everything that is designed and made by people to be used by people – must be accessible, convenient for everyone in society to use and responsive to evolving human diversity” (European Institute for Design and Disability, 2004, p. 1). D4All is an approach that integrates the characteristics of the user in the building environment and also aims to guarantee the environmental sustainability and economic viability of the design (Prestamburgo et al., 2019).

Finally, it must answer to the challenges of social inclusion and the context of the neighbourhood and community it is included in, offering opportunities for increased participation, e.g., with public services, workplaces and educational institutions or mobility solutions.

These premisses are applicable to all types of property. New properties will have to answer to the needs of the population by providing a set of minimal adaptable, accessible in accordance with privacy and the EU General Data Protection Regulations (GDPR) (European Union Regulation 2016/679).

In terms of the existing housing stock, the majority of already built properties across Europe have other issues to be addressed, namely through building adaptations, but also through the integration of ICT, that can

be explored by the user, according to financial affordability, feasibility, needs and personal choices.

People want to be in control of their own lives, their own environments and their own future so they can continue living independently, despite the loss of intrinsic and functional capacities and abilities, despite their economic and social positioning (Decorme et al., 2020) and this is why a SHAFE approach is needed, connecting ICT, the building, the resident and the environment in a meaningful way.

DO YOU WANT TO KNOW MORE ABOUT...

The first smart buildings appeared in the late 1960s. They were commercial spaces that utilised “building automation systems” which focused on labour saving and energy conservation issues. Energy saving is a relevant societal and environmental topic, that also refers to health and quality of the indoor environment. In different European countries, the quality of heating or cooling systems in many houses is a significant issue in terms of costs, efficiency and availability of energy for the technical systems. By the mid-1980s these concerns had moved from the workplace to places of residence, and home automation was moving from being a high-tech hobby into a more mainstream

activity. The focus of home automation subsequently shifted towards ambient assistance to provide comfort and care for all homeowners, particularly vulnerable residents.

Housing must be planned in a way that allow a positive user experience, to with this in mind, the European Innovation Partnership on Active and Healthy Ageing (EIPonAHA) and its Action Group C2 on interoperable independent living solutions developed a guide with recommendations that manufacturers and developers of Active and Healthy Ageing solutions (EIPonAHA, Action Group C2, 2018).

1.2.3 Best practices and examples of SHAFE

This section aims to present specific examples of SHAFE building solutions around Europe and was kindly provided by the project Homes4Life.

The Homes4Life project (2019–2021) was designed with the aim to provide better choices European citizens in regard to independent living at home and in the community, supported by the full range of digital opportunities, while promoting investments to update Europe's built environment.

Homes4Life addressed the existing barriers to boost investments in a smarter age-friendly building stock by developing and implementing a certification scheme, in close collaboration with end-users and relevant European R&I

initiatives. This scheme is ready for widespread adoption by a dedicated community of lead users and will provide guidance for public and private investors.

To showcase good examples of smart age-friendly buildings, that could be benchmarked and further adopted/upscaled across Europe, Homes4Life opened a call to existing practices that would represent a suitable typology for replication.

In the following pages these good examples are illustrated and links to available information on their features and business models are provided, with the aim to show in practice what SHAFE environments might be.



Figure 1.1.5 France | PÔLE INTERGÉNÉRATIONNEL DE NICE MÉRIDIA, CCAS DE NICE

[CLICK HERE to see](#) → [Business Case](#) → [Press article](#)



Figure 1.1.6 France | RÉSIDENCE KALIA, A2L SENIORS

[CLICK HERE to see](#) → [Business Case](#) → [Pilot website](#)



Figure 1.1.7 France | ALICE ET VICTOR VILLAGE SENIORS

[CLICK HERE to see](#) → [Pilot website](#)



Figure 1.1.8 Spain | ETXEGOKI, BIZKAIKO FORU ALDUNDIA – DIPUTACIÓN FORAL DE BIZKAIA

[CLICK HERE to see → Business Case](#)



Figure 1.1.10 Poland | U SIEBIE MIMO WIEKU WZORCOWE MIESZKANIE SENIORA, FUNDACJA MIMO WIEKU

[CLICK HERE to see → Business Case](#)



Figure 1.1.9 Spain | CIUDAD RESIDENCIAL BRISA DEL CANTÁBRICO, EL CAMINO, COOPERATIVA BRISA DEL CANTÁBRICO

[CLICK HERE to see → Business Case](#)



Figure 1.1.12 Italy | CASA S.M. MADDALENA – CASA MAZZINI – CASA DEL GRANO, CASA DEL CHIOSTRO, ISRAA TREVISO

[CLICK HERE to see → Business Case \(Casa del Chiostro\)](#) → [Business Case \(Casa S.M. Maddalena | Casa Mazzini | Casa del Grano\)](#)



Figure 1.1.13 Ireland | HOUSING WITH SUPPORTS, INCHICORE, DUBLIN 8, OBFA, CIRCLE VHA, ALONE

[CLICK HERE to see → Business Case](#) → [Pilot website](#)



Figure 1.1.14 The Netherlands | DE HOGWEYK, VIVIUM ZORGGROEP

[CLICK HERE to see → Business Case](#)



Figure 1.1.11 Poland | MULTIGENERATIONAL HOUSE IN LODZ / DOM WIELOPOKOLENIOWY W ŁODZI, CITY OF LODZ / MIASTO ŁÓDŹ

[CLICK HERE to see → Business Case](#)

ACKNOWLEDGEMENTS

The unit authors are very grateful for the careful and engaged peer-review and contributions of the following experts in the SHAFE domain:

- Willeke van Staalduinen
- Oscar Zanutto
- Luis Pires
- Raul Castano de la Rosa
- Ann Whyte
- Mónica Sousa
- Jesper Schulze
- Kalina Ekova
- Andrea Ferenczi
- Silvia Urriarte Urra

REFERENCES

- Atkin, B. L. (1998). *Intelligent Buildings: Applications of IT and Building Automation to High Technology Construction Projects*. Kogan Page.
- Beesley, P., Hirose, S., & Ruxton, J. (2006). *Responsive Architectures. Subtle Technologies 06*. Cambridge: Riverside Architectural Press.
- Buckman, A.H., Mayfield, M. & Beck, S. (2014). What is a Smart Building?. *Smart and Sustainable Built Environment*, 3(2). 92-109. doi: 10.1108/SASBE-01-2014-0003
- Buffel, T., Phillipson, C., & Rémillard-Boilard, S. (2019). Age-friendly cities and communities: new directions for research and policy. D. Gu, M.E. Dupre (Eds.), *Encyclopedia of Gerontology and Population Aging*, Springer Nature, Cham, Switzerland. doi: 10.1007/978-3-319-69892-2_1094-1
- Centers for Disease Control and Prevention. (2021). Social Determinants of Health: Know what affects health. <https://www.cdc.gov/socialdeterminants/>
- Cole, R., & Brown, Z. (2009). Reconciling human and automated intelligence in the provision of occupant comfort”, *Intelligent buildings international* 1, 39–55.
- Council of the European Union. (2020). *Humans Rights, Participation and Well-being of Older Persons in the Era of Digitalisation: Council Conclusions*. <https://data.consilium.europa.eu/doc/document/ST-11717-2020-REV-2/en/pdf>
- Dantas, C., & van Staalduinen, W. (2020). *Smart Healthy Age-Friendly Environments: Stakeholders network position paper*. <https://shine2.eu/wp-content/uploads/2021/07/SHAFE-Position-Paper-011020.pdf>
- Dantas, C., Machado, N., Oliveira, A., Ortet, S., Campos, A., & Rodrigues, F. (2020). *Hands-on SHAFE: 01 – Study to cross knowledge gaps and to prepare online training packages*. https://www.afedemy.eu/wp-content/uploads/2020/12/HoS_O1_National_Report_Portugal_FINAL_V01.04.pdf
- Dantas, C., van Staalduinen, W., Illario, M., & Spiru, L. (2021). Smart and inclusive environments for all-SHAFE explained. *Technium Social Sciences Journal*, 25, 630–638. <https://doi.org/10.47577/tssj.v25i1.4844>
- Dantas, C., van Staalduinen, W., Jegundo, A. L. & Ganzarian, J. (2018). *Joint Statement on Smart Healthy Age-Friendly Environments*. (n.p.) https://shine2.eu/wp-content/uploads/2021/07/Joint-Statement_SHAFE_20181203.pdf
- Dantas, C., van Staalduinen, W., Jegundo, A., Ganzarian, J., Van der Mark, M., Rodrigues, F., Illario, M., & De Luca, V. (2019). *Smart healthy age-friendly environments – policy recommendations of the thematic network SHAFE*. *Translational medicine @ UniSa*, 19(15), 103-108. <https://www.unisa.it/uploads/14684/15.pdf>
- Dantas, C., van Staalduinen, W., van der Mark, M., Jegundo, A. L., & Ganzarain, J. (2018). *Framing Paper Thematic Network 2018 Smart Healthy Age-Friendly Environments* (n.p.) <https://shine2.eu/wp-content/uploads/2021/07/Framing-Paper-SHAFE-20181121.pdf>
- Decorme, R., Urra, S., Nicolas, O., Dantas, C., Hermann, A., Peñaloza, G., Garcia, F., Ollevier, A., Vassilliou, M., & van Staalduinen, W. (2020). *Sustainable Housing Supporting Health and Well-Being*. *Proceedings*, 65(1), 12. <https://doi.org/10.3390/proceedings2020065012>
- Diener, E., & Seligman, M. E. P. (2004). *Beyond Money: Toward an Economy of Well-Being*.

Psychological Science in the Public Interest, 5(1), 1–31. <https://doi.org/10.1111/j.0963-7214.2004.00501001.x>

EIPonAHA Action Group C2. (2018). Personal User Experience (PUX) Recommendations and Lessons Learned. Guidelines for manufacturers and developers of Active and Healthy Ageing solutions aiming for a Personal User Experience. <http://gpil.eu/pux/guidelines>

European Commission. (2021). Green Paper on Ageing: Fostering solidarity and responsibility between generations. https://ec.europa.eu/info/sites/default/files/1_en_act_part1_v8_0.pdf

European Food Information Council. (2020). Healthy living. Food facts for healthy choices. <https://www.eufic.org/en/healthy-living>

European Institute for Design and Disability. (2004). The EIDD Stockholm Declaration 2004. Available at: https://dfaeurope.eu/wordpress/wp-content/uploads/2014/05/stockholm-declaration_english.pdf (Accessed 18 April 2022).

Lee, L., Selkowitz, S., Bazjanac, V., Inkarokrit, V., & Kohler, C. (2002). High-performance commercial building facades. Building Technologies Program, Environmental Energy Technologies Division, Ernest Orlando Lawrence Berkeley National Laboratory, University of California, Berkeley, CA. <https://eta-publications.lbl.gov/sites/default/files/lbnl50502.pdf> Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: does happiness lead to success?. Psychological bulletin, 131(6), 803–855. <https://doi.org/10.1037/0033-2909.131.6.803>

Marley, F. (2015). Exploring the impact of the ageing population on the workforce and built environment. The Chartered Institute of Building. <https://d8.ciob.org/sites/default/files/2020-05/CIOB-research-Exploring-the-impact-of-the-ageing-population-on-the-workforce-and-built-environment.pdf>

Max Planck Institute for Demographic Research. (2022). Demographic change. Glossary of Demographic Terms. Max Planck Institute for

Demographic Research. https://www.demogr.mpg.de/en/about_us_6113/what_is_demography_6674/glossary_of_demographic_terms_6982/#D

Prestamburgo, S., Sgroi, F., & Zanin, C (2019). “Anthropic space and design for all. New knowledge paths for urban planning strategies”v, Science of the Total Environment (663), 944-949. doi: <https://doi.org/10.1016/j.scitotenv.2019.01.398>.

Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016. Official Journal of the European Union L 119/1. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679>

Van Hoof, J., Kazak, J., Perek-Białas, J., & Peek, S. (2018). The Challenges of Urban Ageing: Making Cities Age-Friendly in Europe. International Journal of Environmental Research and Public Health, 15(11), 2473. <http://dx.doi.org/10.3390/ijerph15112473>

Van Staalduinen, W., Dantas, C., van Hoof, J., & Klimczuk, A. (2021). Building Smart Healthy Inclusive Environments for All Ages with Citizens. In I. Pires, S. Spinsante, E. Zdravetski, & P. Lameski (Eds.), Smart Objects and Technologies for Social Good. GOODTECHS 2021. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering (Vol. 401, pp. 255–263). Springer. https://doi.org/10.1007/978-3-030-91421-9_19

Van Staalduinen, W., Ganzarain, J.G., Dantas, C., Rodriguez, F., Stiehr, K., Schulze, J., Fernandez-Rivera, C., Kelly, P., McGrory, J., Pritchard, C., Berry, D., Zallio, M., Ciesla, A., Ulanicka, M., Renaux, S., Guzy, M. (2020). Learning to implement Smart Healthy Age-Friendly Environments. *Translational Medicine @ UniSa*, 23(4)rticle 21. <https://doi.org/10.37825/2239-9747.1021>

Velikov, K., & Thün, G. (2013). Responsive Building Envelopes: Characteristics and Evolving Paradigms. In Trubiano, F. (ed.) *Design and Construction of High-Performance Homes: Building Envelopes Building Envelopes, Renewable Energies and Integrated Practice*. London: Routledge.

World Health Organization (2002). *Active Ageing: a Policy Framework*. <https://extranet.who.int/agefriendlyworld/wp-content/uploads/2014/06/WHO-Active-Ageing-Framework.pdf>

World Health Organization. (2007a). *Global Age-friendly Cities: A Guide*. World Health Organization. https://apps.who.int/iris/bitstream/handle/10665/43755/9789241547307_eng.pdf?sequence=1&isAllowed=y

World Health Organization. (2007b). *Checklist of Essential Features of Age-friendly Cities*. <https://extranet.who.int/agefriendlyworld/wp-content/uploads/2018/04/Age-Friendly-Checklist-WHOedit.pdf>

World Health Organization. (2012). *Measurement of and target-setting for well-being: an initiative by the WHO Regional Office for Europe*. WHO Regional Office for Europe. https://www.euro.who.int/__data/assets/pdf_file/0003/180048/E96732.pdf

World Health Organization. (2015). *World Report on Ageing and Health*. World Health Organization. http://apps.who.int/iris/bitstream/handle/10665/186463/9789240694811_eng.pdf;jsessionid=12FB4852401E3E8F748910C54BA5C3B2?sequence=1

World Health Organization. (2019). *Decade of Healthy Ageing*. World Health Organization. https://www.who.int/docs/default-source/documents/decade-of-health-ageing/decade-healthy-ageing-update-march-2019.pdf?sfvrsn=5a6d0e5c_2

World Health Organization. (2020). *Basic documents (49th ed.)*. World Health Organization. https://apps.who.int/gb/bd/pdf_files/BD_49th-en.pdf

LIST OF PICTURES

Figure 1.1.1. Determinants of active aging, according to the WHO. World Health Organization. (2007a). *Global Age-friendly Cities: A Guide*. World Health Organization. https://apps.who.int/iris/bitstream/handle/10665/43755/9789241547307_eng.pdf?sequence=1&isAllowed=y

Figure 1.1.2. Areas of an age-friendly city or community. City of San Rafael. (s.d.) *Creating an Age-friendly and Livable Community*. <https://www.cityofsanrafael.org/creating-an-age-friendly-and-livable-community/>

Figure 1.1.3. Healthy Environments. Dantas, C. (2020).

Figure 1.1.4. Smart environments. Dantas, C. (2020).

Figure 1.1.5. France: Pôle Intergénérationnel de Nice Méridia, Ccas de Nice. Homes4Life (s.d.)

Figure 1.1.6. France: Résidence Kalia, A2L Seniors. Homes4Life (s.d.)

Figure 1.1.7. France: Alice et Victor Village Seniors. Homes4Life (s.d.)

Figure 1.1.8. Spain: Etxegoki, Bizkaiko Foru Aldundia – Diputación Foral de Bizkaia. Homes4Life (s.d.)

Figure 1.1.9. Spain: Ciudad Residencial Brisa del Cantábrico, El Camino, Cooperativa Brisa del Cantábrico. Homes4Life (s.d.)

Figure 1.1.10. Poland: U Siebie Mimo Wieku Wzorcowe Mieszkanie Seniora, Fundacja Mimo Wiekui. Homes4Life (s.d.)

Figure 1.1.11. Poland: Multigenerational House in Lodz / Dom Wielopokoleniowy W Łodzi, City Of Lodz / Miasto Łódź. Homes4Life (s.d.)

Figure 1.1.12. Italy: Casa S.M. Maddalena – Casa Mazzini – Casa Del Grano, Casa Del Chiostro, Israa Treviso. Homes4Life (s.d.)

Figure 1.1.13. Ireland: Housing With Supports, Inchicore, Dublin 8, Obfa, Circle Vha, Alone. Homes4Life (s.d.)

Figure 1.1.14. The Netherlands: De Hogeweyk, Vivium Zorggroep. Homes4Life (s.d.)



MODULE 1

INTRODUCTION TO AGE-FRIENDLY
AND INCLUSIVE ENVIRONMENTS

UNIT

2

AGEING AND ENVIRONMENT THROUGH
THE LENS OF ANTHROPOLOGY

Soňa G. Lutherová • Helena Tužinská • Ľubica Voľanská



DESIRE

DESIGN FOR ALL METHODS TO
CREATE AGE-FRIENDLY HOUSING

DESIRE is a European project funded by the Erasmus+ programme.
Project number 2020-1-SK01-KA202-078245.

ISBN 978-80-227-5286-2



STU
FAD
SLOVAK UNIVERSITY OF
TECHNOLOGY IN BRATISLAVA
FACULTY OF ARCHITECTURE AND DESIGN



Institute of Ethnology
and Social Anthropology
Slovak Academy of Sciences



Technical Research
Centre of Furniture and
Wood of the Region of
Moravia
CETEM



SHINE
2Europe



SPEKTRUM
STU

DESIRE will provide professionals in the building industry and home furnishings sector with the tools and skills to apply Design4All methods as an integral part of the design process, with the aim to create or adapt age friendly housing as a solution for the wellbeing, comfort and autonomy of the older adults or dependents at home.

The DESIRE training platform consists of six modules and 21 units.



Co-funded by
the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.



The present work, produced by the DESIRE Consortium, is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

PUBLISHED BY:

© DESIRE, 2023, www.projectdesire.eu

Slovak University of Technology in Bratislava by
Publishing house SPECTRUM STU, Bratislava 2023

AUTHORS:

Miguel Ángel Silvestre Botella
Zuzana Čerešňová
Carina Dantas
Natália Filová
Juan Carlos Bañón Guillén
Miroslava Hlinčíková
Michal Kacej
Veronika Kotradyová
Dean Lipovac
Nastja Podrekar Loredan

Juliana Louceiro
Soňa G. Lutherová
María Sánchez Melero
Marta Martínez Navarro
Lea Rollová
Matic Sašek
Mária Šimková
Helena Tužinská
Ľubica Voľanská

ILLUSTRATIONS:

Zuzana Čerešňová
Natália Filová
Michal Kacej
Veronika Kotradyová

Markéta Kučerová
Lea Rollová
Lenka Suláková
Barbora Valábeková

GRAPHIC DESIGN:

Mária Šimková

TABLE OF CONTENTS

UNIT 2 – Ageing and environment through the lens of anthropology	3
2.1 Anthropological perspectives on ageing	3
2.1.1 What is anthropology?	3
2.1.2 Culture as one of the determinants of life course	6
2.1.3 Theories of Ageings	7
2.2 Basic anthropological concepts	10
2.2.1 Space/place	11
2.2.2 Time	12
2.2.3 Age	14
2.2.4 Gender/Sex/Nonbinary	16
2.2.5 Inclusiveness/exclusiveness	17
2.2.6 Biographical memory	18
2.2.7 Home	20
2.2.8 Social networks	21
2.2.9 Intergenerational communication and cooperation	23
References	26

UNIT 2 – AGEING AND ENVIRONMENT THROUGH THE LENS OF ANTHROPOLOGY

This unit explores basic anthropological concepts and practices that can be mobilized by designers, architects, and other professionals

in the design process (Murphy, 2016) while creating or adapting age-friendly housing.

2.1 ANTHROPOLOGICAL PERSPECTIVES ON AGEING

Each one of us has many ideas about ageing. In our minds, we create notions of what it means to grow old and how it is experienced. What are older adults' motivations, and what drives them in their everyday lives? What are the challenges and obstacles they have to overcome? What are their needs, and how can designers and architects possibly help them in their everyday lives? Many of professionals' ideas originate from their own experience and might be affected by various preconceptions and biases.

Anthropology is an interdisciplinary social scientific field that can provide designers with practical tools to get closer to their clients and understand them better. That way, designers and architects can reshape and recreate older adults' material environment not only more effectively, but also more inclusively.

To do this, we first need to rethink and reconsider socially and culturally inflected phenomena that come into play when we think and talk about ageing.

2.1.1 What is anthropology?

IN A NUTSHELL

Anthropology is the study of what makes us human. Anthropologists study different aspects of the human experience: the past and the present societies and cultures; comparing various human groups and how their behaviour is similar or different; trying

to understand how people interact in their social relationships, how they communicate and relate to one another; how they experience their everyday lives; what are their norms, notions, and ideals, etc.

Modern anthropology seeks answers to the fundamental questions of the human species: what does it mean to be human? What are our origins? What might be our future? This scientific field is based on the recognition that people and human communities, their origins, development, and transformations are determined by interacting with their environments having specific biological, medical, psychological, social, cultural, and other characteristics. It is, therefore, essential for current anthropology to use holistic research, which insists on perceiving cultural and social phenomena as a whole in their complex connections and relations.

Anthropologists seek the answers to questions about the origins and development of human culture and communication, socialisation, the diversity of social structures, and the identity of groups and individuals. It studies the

practices, the way humans interpret the world, and how they live and interact as members of a particular society. Hence, the discipline are engaged in “translation” of cultures, explaining social and cultural differences and similarities. They interprets questions of race, ethnicity, gender, age, manifestations of power, and the nature of religious, economic, and political phenomena and relationships. It explains, for example, the existence of various social groups, rituals, and beliefs about the ordering of the world and how are they expressed in material culture and folklore.

Most importantly, anthropology gives us insight into why people act like they do, how they make sense of the world around them, and how they experience it. This is particularly important for the areas like design, that directly influence lives of people as it reshapes their material worlds.



Figure 1.2.1 (HWG, 2019)

DO YOU WANT TO KNOW MORE ABOUT...

The emergence of both, cultural anthropology (USA) and social anthropology (UK), was anticipated in the second half of the 19th century by representatives of evolutionist anthropology by expanding the object of research of classical physical anthropology to include a sociocultural dimension; however, these remained only theoretical investigations. The turning point came with the introduction of field research directly among members of the cultures under the study. In the USA, it was introduced by Franz Boas and his pupils (spending time with Native Americans), and in the UK, Bronislaw Malinowski and Alfred Radcliffe-Brown. In past centuries, the domain of anthropology was non-industrial societies. Today, the practitioners of anthropology acknowledge that to understand people they have to study them in their own living environment,

to get to know their own perspectives, habits, and behaviour. This means to study them anywhere in the world, be it in highly developed urban areas or in the remote parts of rural areas and other peripheries.

To make things even more complicated, we can also add ethnology into this mix. In the 19th century, its practitioners focused on studying the local national cultures and traditional folk culture. In the present, ethnological approach, research, and methodology are close to the anthropological. The object of the study of all three disciplines (social anthropology, cultural anthropology and ethnology) are human beings, human culture, and society, sharing the concern for the existence of human culture (Tužinská, 2008, 178).

Why are anthropological or ethnological approaches, concepts, and methods inspirational for this course? A lot of aspects of our everyday lives, which we perceive as “natural”, are, in fact, shaped by our culture and society we live in and what seems “natural” to some, might be considered unacceptable and strange for the others. This is also relevant in regard to ageing.

In the designing process, designers need to find the ways to distance themselves from their own biases and get a clearer perspective on how

their clients live and what are their particular needs and challenges. The “sensitivity to social context and cultural moment” ensures that design products resonate with the clients and general public (Lunenfeld, 2003, 13). Only that way they can design environment and objects that are inclusive for all people regardless their age, ability or disability. Thus, thinking of specific needs of particular social groups (including older adults and ageing) makes every design project more accessible for all the perspective users.

2.1.2 Culture as one of the determinants of life course

IN A NUTSHELL

Culture determines the way we interact with our environment and the things that are part of it. It moulds our relationships with other people in and outside of families. Finally, it is reflected in the very notion of

what makes us human. Many decisions we take daily are dependent on what we understand as culturally appropriate to do at a certain point in our lives.

In traditional society, the course of life is understood through subsequent stages or belonging to certain groups that reflect the age structure of community members. The members of individual groups are peers who pass to the next group or the next stage in life in a similar way – often through ceremonies taking place under public control. The signs of age groups, what is allowed and what is forbidden, are firmly standardized and valid for the entire collective. All of this relates to our culture, which shapes our beliefs, ideas, values, and knowledge.

Culture is also central to how we think about older adults and how we “do” ageing. There are a lot of culturally determined stereotypes related to old age. These are connected to how we expect a “typical” old person to be (i.e., expectations regarding ageing). They are also influenced by our notion of what considers a successful life trajectory and successful ageing. However, social practice is usually much more varied than our expectations. Like any other social group, older adults have miscellaneous characteristics that influence how they live. A good design needs consider this diversified group's varied needs and requirements. This makes the design more inclusive for all the other social groups and people as well.

EXAMPLE:

For people from different cultures, “ageing well” means different things. For example, within Indigenous communities, health is a holistic concept connected to the land, family,

and community. It does not refer to individual physical state, but rather to the well-being of the whole community (Gee et al., 2014).



Figure 1.2.2 (Franco, 2017)

EXERCISE:

How is the typical older person in your cultural context like? Which stereotypes connected to old age do you recognize? In what aspects do or do not the older adults you know fit these profiles?

2.1.3 Theories of Ageing

IN A NUTSHELL

Ageing can be classified as a universal, intrinsic and progressive process, that arouses curiosity of scientists from various fields, physicians and general population to understand it. In order to achieve this goal, hundreds of comprehensive theories had been developed to predict and explain it.

Nowadays it is assumed that the expectation of a unifying theory involving all the phenomena associated to ageing is

unrealistic (Viña et al., 2007). But the input from researchers with different disciplinary backgrounds can be key to extend our comprehension about the ageing process and the older adults.

Knowing more about the theories of ageing enables us to think better about changes in the physical and social environment, as well as technologies that can be integrated into older adults' everyday life.

Since the beginning of the production of professional and fiction literature on old age and ageing, two perspectives on the issue have been presented, which in some cases go to extremes: on the one hand, old age stands as “the peak of suffering”, and on the other, the principle of “active old age”. As the German historian Peter Borscheid states, in almost every cultural or social history of old age we encounter positive and negative interpretations and identifications of the image of old age. There are not a single unambiguous philosophical, religious, literary, scientific or political representation of old age. Older adults were and are at the same time objects of ridicule or respect, since there have always been several possibilities and shades of perception and evaluation of the course of a person's life (Borscheid, 1995).

Age is closely related to the life cycle (i.e., the system of stages, rules and events organized into individual life sections that vary historically and socially). Attempts to map life experiences into graded stages are probably as old as the study of old age and ageing itself (Fry, 2002: 21–24). At different periods, people used various systems for this mapping (for example, the system of four seasons, seven planets, seven

days of the week, etc.), which were related to natural phenomena and various myths (the theory of bodily fluids, the wheel of Fortune, etc.). They offered the possibility of orientation, a scheme that made the unpredictable human life course in the past more imaginable. They were based on the person's age in the calendar or chronological age, which is very often identified with biological age.

The chronological age represents the seemingly most straightforward boundary, which is the first to be offered when searching for when old age begins. We can find different age borders in various definitions of old age (Voľanská, 2016, 117–125). One of the most known is probably the division of life into four phases, as proposed by Peter Laslett (1989), which is widely present in public discourse today. It is more of a proposal of how it should be, not so much a theory that would explain the existing state. It reflects the idea of active old age as an age of fulfilment. According to Laslett, the beginning is the age of dependence, socialization, immaturity, and upbringing – the first age. It is followed by the age of independence, maturity, responsibility, earning activity, and savings. However, the second age cannot be an age of fulfilment because work and its status (despite everything

it means to society) are often determined by other people, usually the employer. On the contrary, the third age is a period of personal fulfilment, mostly related to later life after retirement. It attempts to conceptualize old age positively, considering the third age as the peak of the life course. A new perception of older adults has developed as socially active in society, choosing new identities through consumption and different lifestyles. Finally comes the fourth age, as suggested by Laslett, characterized by irreversible dependence, weakness, and death. However, it can take various forms when it occurs, as the third age does not have a fixed upper dividing line. Entering the fourth age, we can continue to pursue many activities and interests even when the body is subject to gradual changes, even weakening to an advanced degree.

The divisions based on chronological age are simple just seemingly, because it presents a borderline that is too hard. According to the principle of dividing human life into individual stages, the whole system – based on commonly used stages such as childhood, youth, middle age and old age, etc. – is based on the assumption that the years after birth are related to the corresponding physical and personality development. However, persons of the same chronological age do not behave precisely the same. There is probably no type of 30-something, 40-something or 70-something, even if there are ideas or images about them.



Figure 1.2.3 The “stairs of life” is one example how to represent the phases of human life. It was developed in the 16th century and partially persists to the present, although more in humorous forms. (Unknown author)

The ambivalent perception of ageing is related to its character – on the one hand, there is its “physical character”; on the other, its social construction. It ranges from a deficit perception of old age to a perception influenced by the concept of active ageing, the so-called third age and the “imperative of not ageing”, which is also inherently discriminatory.

More recent research seeks to highlight the diversity of ageing and old age. Research focuses on understanding the various factors and circumstances that result in different late-life experiences. Currently, especially in public discourse, the influence of the trend in the perception of old age and ageing, which was already indicated in some works at the end of the last century, is noticeable. One such theory was, for example, the “continuity theory” represented by the work of Robert C. Atchley (1989, 1993). He argues that older adults need and seek change, but they also desire a certain degree of continuity (psychologically and socially). Thus, the continuity theory of normal ageing states that older adults usually maintain the same activities, behaviours, personalities, and relationships that they had in their “previous lives” – using strategies that stem from their previous experiences. It could be called a “micro-level” theory – it penetrates down to the level of the individual. The critics of this theory reproached it for separating normal ageing from pathological, neglecting to look at older adults with chronic diseases; that it defines normal ageing according to the male model of ageing and insufficiently demonstrates how social institutions influence the way individuals age.

Chris Gilleard and Paul Higgs (2000) also proposed to continue the emerging trend of diversification of old age – instead of constantly monitoring the incapacity and use of welfare state services, according to them, ageing and old age research should move towards “cultural gerontology”, i.e., focus on, for example, ways of consumption in older age, different ageing of individual social generations with their own generational lifestyles. We could

perhaps interpret this position as a renewed emphasis on the life cycle perspective, as the need to understand the entire ageing process, the interaction between agency and changing social structures.

Demographer Frank Schirrmacher in his book *Methusalem Komplott* (2004) also fights for a new, positive perception of old age. However, he does not mean seniors as part of the consumer carousel of vacations, sports and enjoying the “gained years”, but a positive perception of old age with all its negative aspects. The possibility to remain oneself in the sense of “Alters coolness” by Hans-Peer Zimmermann (2013). According to him, this is the only chance to save ourselves – i.e., the current numerous middle generations, which would otherwise in the future become the most numerous groups of outsiders in history.

Nowadays, the principle of interdisciplinarity seems to be crucial. The British gerontologist Anne Jamieson in no way wants to consider this “multidisciplinary field of work” called social gerontology as a separate discipline (Jamieson, 2002, 10). Various social sciences (anthropology, psychology, sociology, gerontology) try to capture individual life changes in the context of changing social structures within the framework of research on old age and ageing.

The Socioemotional Selectivity Theory proposes that as people age, perceived limitations on time lead to motivational change and the improvement of societal issues is reckoned as an analytical, long-term goal that may not necessarily affect current well-being. As a result, older adults are expected to be less interested in acquiring new knowledge and participate in fewer sustainable behaviours.

However, other research suggests that people in older age are more likely to engage in pro-social and environmental behaviours. The Theory of Generativity posits that ageing involves a re-examination of life roles and a shift towards other-centred orientation as

it is associated with increased wisdom and emphasis over the feeling of self-importance and being needed, thus older adults are eager to contribute to society and impart a lasting legacy for themselves and future generations.

In a similar vein, the positive psychology of ageing proposes that despite the stereotypical image of decline and losses, there are gains and areas of growth during old adulthood, such as enhanced appreciation of the fragility and beauty of life, which enables them to be better citizens.

The effectiveness of long-term urban policies, meant to promote durable changes in citizens' behaviours towards more sustainable and healthier habits, strongly depends on a fundamental cultural shift. To give an example, read more about The WHO Age-friendly Cities framework in Module 1, Unit 1.1.3.

An important part of the cultural shift is related to the integration of digital technologies and solutions into various areas of our everyday life. It is as much a cultural change as a technological one, requiring people, communities, institutions and organizations to make fundamental changes in the way they live, work and function. While youth is possibly the most well positioned to create such

transformation, namely due to the extended adoption of internet and social media, older adults are possibly those that are in need of most targeted interventions that tackle digital skills. Also, they are in a need of the targeted training and awareness raising. The use of digital tools can be an effective means to address societal challenges and provoke change in these groups, aiming to incite improvements in lifestyles, mobility and consumption decisions that secure them higher quality of life and protect the environment we all live in. Most of the environment-related issues and domains, such as age-friendly housing, sustainable mobility, energy or healthy food consumption, are often perceived as “far from the world” for many older adults and hence seen as something to be tackled by the younger generations.



Figure 1.2.4 (Pflueger, 2022)

2.2 BASIC ANTHROPOLOGICAL CONCEPTS

In the unit, we will introduce the basic anthropological concepts that are relevant to understanding how we as individuals and as society approach older adults as a particular group and ageing as a process. These include inclusiveness and exclusiveness, space and

place, time, age, biographical memory, home, and social networks. We also focus on the topic of intragenerational communication and cooperation in families, neighbourhoods, and beyond.

2.2.1 Space/place

IN A NUTSHELL

Space and place are two concepts that are often confused and changed for one another. However, it is necessary to think about them in order to understand how people relate to them (albeit unconsciously) and how they experience them. Generally speaking, spaces, as opposed to places, have been traditionally

considered more abstract and without boundaries (Sen & Silverman, 2014, 3). On the other hand, places refer to a physical location with various meanings attached to it. To experience place as meaningful, people need to feel personally attached to it.

The way each one of us perceives their living environment, starting with notions as basic as what is considered to be part of their “world,” what its limits are, what is “close,” and what is “far,” is at the same time individually, socially, and culturally determined. Certainly, this consideration is a necessary part of the designing process, for example, what do older adults perceive as non/accessible, and for what reason? Where do they feel that they belong?

Let's pause for a moment here and think about the difference between the concepts of space and place. At times, we use them as interchangeable terms; at other times, we don't (Janz, 2017). As anthropologist Setha M. Low has argued, studying spaces and places “needs to be process-oriented, person-based, and allow for agency and new possibilities. One way to solve this problem is to acknowledge that place and space are always embodied. Their materiality can be metaphoric and discursive, as well as physically located” (Low, 2009, 22).

What does this mean for the design process? When we think about spaces/places, we must consider how our bodies engage with them. What is our conscious or unconscious sense of the spaces/places when we reside, move, and act in them? To learn more about Age-friendly environments, read Module 3, Unit 3.

For a space to become a place, it has to hold meaning attached to it. It is not a neutral site into which people enter, our perception is influenced by our current experience, but also by our memories of past events (Sen & Silverman, 2014, 4). When we think about place, we also need to consider the process of “placemaking”, that is part of social as well as individual agency. People create and negotiate their perspectives, notions, ideals, and even their own subjectivities through their interaction with the world around them. The interactive process between subjects and objects is ever-going, and it certainly is not a one-way road. As people recreate the world around them simultaneously, they are also being recreated in this process (Miller, 1993). To find out more about ageing in place in relation to the design process, read Module 3, Unit 3.

DO YOU WANT TO KNOW MORE ABOUT...

Apart from (1) embodied space, the anthropological theory of space and place also focuses on (2) how global/local power relations are spatially embedded, (3) how design functions both materially and metaphorically, and (4) how language and discourse transform spaces into places in terms of assigned meanings (Low, 2009, 21).

Space encompasses references to all the dimensions mentioned above and emphasises communicative potential. An indissociable part of space is its symbolic dimension in what can be expressed. Communicative space is what makes credibility conceivable. Space of this kind is a platform that participants actively create anew with every interaction; otherwise, they are not “on the same plane”. Being close to each other or being too far removed, speaking from the depths, words touching or talking too shallowly, crossing borders, and having capacity; are metaphors for a certain dimension of communication. Space as such is of tactile character, and if there is no space,

people cannot move, not just between places but also within an argument. Communicative space, as presented here, is the scope for self-expression, the pressures, limitations, and the trouble taken to understand and respect the person, instead of automatically dealing with them as an anonymous “object” with “a number in a sheet”. Communicative space refers to circumstances that make the speaker's statement acceptable before the argument is reasoned. The key term space thus invites readers to sensitively read the context in which the whole utterance becomes invalid or valid. It refers to expectations of what could be said and what are the conditions of sayability and interpretability. There is a clash of institutional limits with the participants' opportunities when the latter interpret events, each from the standpoint of their own space-time framework (Bakhtin, 1981). Space may concern even the speaking accent that the applicant is supposed to have. This need not correspond with the institutional language regime, which is normally static (Blommaert, 2009).

2.2.2 Time

IN A NUTSHELL

Our perception of time is at the same moment individual as well as influenced by the society and culture we live in. The stages of life (childhood, adulthood, late adulthood)

are also culturally formed and the transitions from one to another are often accompanied by particular rituals (the rites of passage).

Time expresses the duration of phenomena and allows you to monitor their variability in development. Although there is an idea that the study of time is mainly dealt by natural

science disciplines (biology, astronomy ...), it is also an important object of research in social science disciplines such as history, philosophy, or psychology.

For anthropology/ethnology, it is important to distinguish between “chronos” and “kairos”, i.e., linear and cyclical time. If we perceive time as cyclical, constantly recurring, and repetitive (cycle of nature during the year, cycle of day, cycle of human life), we must realize its importance for cultures that are dependent on the natural cycle (such as agrarian cultures).

The perception of cyclical time was associated with the binary opposition between summer and winter, the individual phases of the moon, day and night, and was strongly associated with the perception of light – its increase and decrease in the individual phases of the year or day. It was similar to the feeling of heat, which was also related to these year or day changes. We carry this evolutionary setting to the present and it deeply influences our perception of the space around us.

DO YOU WANT TO KNOW MORE ABOUT...

The arrival of Christianity and the associated education, which will bring about a change in the perception of time, is very important for our geographical area in Europe. Time unfolds linearly, as if in a straight line from creation to the Last Judgment. It is also associated with finiteness, and straightforwardness, it has its beginning and end in the life of nature, plants, animals, and people. The course of time thus became measurable on a straight line, governed by a calendar and timekeeping devices. However, there still exist 38 different calendar systems in the world today.

With the expansion of calendars, people are gradually losing the ability to measure and determine time-based on the length of the shadow and the position of the stars in the sky.

The winter solstice, the summer solstice, the full moon, and the moon, sunrise and sunset, are simply the transition from one phase or state to another, similarly to the peaks and halves of a period of time (noon, midnight ...) were perceived as magical turning points and it was necessary to provide or secure them with rituals.

Related to the life cycle, the rituals were important to ensure a smooth transition from one stage of life to another, especially from childhood to adulthood. These are called the rites of passage (van Gennep, 2004) and a good example of this is prom at the end of high school. However, in the modern Western societies, the rites of passage are usually absent in the transition to old age.



Figure 1.2.5 (Pauliniová, 2022a)

2.2.3 Age

IN A NUTSHELL

Human age in its various phases as well as human ageing is not only a biological process, but also anchored in a social context – influenced by what is happening in society and what is its cultural background.

We grow old among friends, family members and partners, we grow old with them. Therefore, we have different ideas and expectations about other people, whom we often put into groups.

Although ethnology and social anthropology focused relatively early on individual phases of human life, when researching non-European societies, they were more focused on childhood and youth, and not on the period of old age. As Margaret Clark (Clarke, 1967, 55) writes, the time interval between marriage and death appears to be a monotonous field or “ethnographic vacuum”. For many cultures, entering into marriage also means entering into age of maturity; old age is not separated by any other special border. A classic example is the research from the direction of “personality and culture” by Margaret Mead (1928), who in her work *Coming of Age in Samoa* devotes a fraction of space to mature age and old age in one common chapter (Mead, 1949, 124–129).

One could say that today the situation is different. The situation has changed because of the turn to the individual experience of ageing and living in old age. To hear and include the voices of actual people can contribute significantly to the interdisciplinary debate in the field of age and ageing (Voľanská, 2016). When we talk about people of a certain age, but especially about older adults in general, we less often refer to persons as individuals, just as we talk about the process of ageing rather than a number of different unique paths and ways to grow old. Finally, we tend to think of old age as a single phase in a person's life and not the various and colourful life situations of different people. Once we stop noticing the

differences between individuals, we tend to treat older adults as a homogenous mass, to generalize situations related to ageing and life in old age – thus creating stereotypes. We call stereotypical ideas about older adults, ageing and old age “ageism”, similarly to actions that are based on stereotypical ideas and often result in age discrimination (Voľanská, 2018).

To learn more about how should be an age-friendly housing designed, read Module 3, Unit 3.2.



Figure 1.2.6 (Pauliniová, 2018)

DO YOU WANT TO KNOW MORE ABOUT...

In general, any stereotyping or subsequent step, discrimination based on age is called ageism. It can be applied to young people, for example, school graduates without experience on the labour market, or older adults. The most direct and visible forms of discrimination, which can affect different age groups, appear in the case of disadvantaged groups (within structures – state, corporate, etc., that privilege some groups over others) as follows: lack of voice – opportunities to express themselves, to be heard, lack respect or reverence and limitation of one's own space or place. Such effective discrimination leads to symbolic or even physical abuse.

Ageism has serious and far-reaching consequences for the health, well-being, and human rights of the population. For older adults, ageism is associated with lower life expectancy, worse physical and mental health, slower recovery from disability and cognitive decline. Ageism worsens the quality of life of the older adults, increases their social isolation and loneliness, restricts their ability to express their sexuality and can increase the risk of violence and abuse against the older adults. When talking about young people, ageism can also reduce young people's commitment to the organization in which they work.

British sociologist Anthony Giddens understands ageism as discrimination against people based on their age; it is similar to racism or sexism. According to him, in modern societies, people are judged by age, not by characteristics, activities and identities (Giddens, 1999, 145–146). There are many clichés that apply to the elderly, as in other areas that are laden with prejudice. However, we think that ageism has a different character than the other “-isms” mentioned: the view of “us – them”, such as “we are young”, “they are old” and “old age does not concern us”; changes over time (Giddens, 1999, 145–146).

Also, there is an issue of intersectionality that relates to the social positioning of older adults. The intertwined effects of “belonging” to more than one social category (age, gender, race, class, etc.) influence the possibility of fulfilling the specific needs of different people. Due to this, in social practice, some older adults do not have access to some things that are accessible to others.

2.2.4 Gender/Sex

IN A NUTSHELL

Sex is connected to the physical and biological attributes and traits. Gender is a cultural interpretation of what we perceive as physical, cognitive, or other differences between men and women. What we tend to understand as “natural” traits, are often

in fact characteristics and generalizations created by culture. The term non-binary refers to the gender identities that are outside of the binary system (male – female) and belong to the wider spectrum.

Culture creates asymmetries and differences in power, authority, and value between people of different gender in any social group. Even places might be gendered, as men and women are culturally associated with different parts of houses, and spaces are arranged and even designed to what is perceived as belonging to males or females (Low & Lawrence-Zunigais, 2003).

In relation to old age, there are particular cultural stereotypes and expectations connected to the old women and old men. There is an old saying that “men age like wine and women like milk”, representing the difference in the way our culture addresses ageing of men and women. As stated by Susan Sontag, there exists a considerable double standard in the way we perceive one or the other (Sontag, 1972). The gender stereotypes concern almost every aspect of men and women lives, including

their roles in and outside of the families, their demeanour, sexuality, but also the way they spend their free time or even how they dress. This often leads to many inequalities that are deeply embedded in social realities on various levels – from families to state.



Figure 1.2.7 (Mossholder, 2022)

2.2.5 Inclusiveness/exclusiveness

IN A NUTSHELL

While inclusiveness means “to include everyone” or “to be open for everyone”, the idea of exclusiveness relates to being “not shared”, or assigned for particular people, excluding the others. Recognition of “the otherness” can often lead to discrimination or an unequal treatment of members of a particular social group or category. The main features by which people are judged, evaluated and subsequently discriminated against include: gender, ethnicity, political

opinion, religious affiliation, sexual orientation, physical appearance, disability, and last but not least, age.

The idea of inclusiveness is at the core of the design for all. To have an inclusive approach in design, the practitioner needs to understand the different needs and ideals people have and approach them with curiosity and respect.

Social and cultural anthropology, as scientific disciplines about the “culturally” other, in their beginnings used otherness – in the sense of examining the other/“other” person – as a justification for their existence within the framework of the need to translate or explain the activities and actions of others.

The other is a member of an out-group – an external group that is often considered inferior and whose identity is considered insufficient. The latter is an individual who is perceived by the members of a group as someone who does not belong to it because he differs from it in some fundamental way. The “we” group considers itself the norm and judges those who do not meet this norm (that is, those who are different in any way) as “Others”. “We” cannot exist without “them”, they are reference groups whose members can have an indifferent, negative, critical, negative or even hateful attitude. “We” can create multiple “them”.

The “us and them” dichotomy in the case of old age and youth takes on a different dimension than in other “us and them” distinctions. Everyone who is young will become old one day. Examining the lives of older adults is

permissible; old age refers to the conditions of their life (they have grown old), but to talk about the “old” as a homogenous group is to create a category of people that we define only on the basis of their old age itself.

In addition, there is a risk that we adopt this discriminating view and so often pave our way to unpleasantness ourselves – like a self-fulfilling prophecy, we age into an old age that we often do not wish for ourselves, yet we adopt this idea in the process of our own ageing.

The dichotomy of “we” and “the others” is the base for inclusiveness and exclusiveness. The differentiation of people leads to the denial of the normative principles of equality and equal treatment of certain members of society, they are denied certain privileges, means of subsistence. Discrimination can be direct and indirect. Direct discrimination occurs when, in the same or a comparable situation, we treat someone unfairly on the basis of their or their affiliation with a particular group. Indirect discrimination occurs when we treat someone in a less favourable way on the basis of a seemingly neutral decision or seemingly fair

rules. For example, the tax bonus for children is often set in the way that it brings benefits only to the employed persons.

Although we generally imagine negative phenomena under discrimination, they can also take on a positive character. Then it is focused on favouring certain social groups (ethnic, gender, age ...). Positive discrimination seeks to level the playing field, achieving balance in society. However, sometimes positive discrimination can have a negative effect and the beneficiary group is labelled as benefiting from positive discrimination as an injustice (Fredman, 2011).

For more information, see Module 2, Unit 4.



Figure 1.2.8 (Pauliniová, 2022b)

2.2.6 Biographical memory

IN A NUTSHELL

Biographical memory relates to remembering the events in one's life (Conway & Rubin, 1993). Reminiscing is an active and recurring process, which continuously shapes our memories and identities (van den Hoven & Eggen, 2008). Our memories are part of who we are today. Consciously or even unconsciously, they shape us, not only our

past but our present and future as well. They influence the way we perceive the world around us, but also our position in it. When designing the places/spaces for older adults, it is crucial to include their past experiences. This way, they will be able to feel at home and make it their own.

For some, biographical memory refers to a specific memory system. For others, it relates to knowledge and schemata forming the memorial basis of self. There are many theories of self: philosophical, religious, or psychological. Indeed, there are also anthropological theories of self, that understand it as a cultural, social, and cognitive phenomenon, related to

identity-making (Edwardes, 2019). In the end, biographical memory also means the study of the processes and mechanisms whereby subjects recall and recognise the events they have experienced in their lives (Baddeley, 1992).

Why is it important to think about memory regarding the process of designing the environment for older adults? We tend to appreciate what seems familiar to us. We feel comfortable when we understand what surrounds us. We feel safe in what we consider certain. These notions are related to the feelings of intimacy, warmth, and privacy. All of these are connected to our past knowledge and experiences.

The research on biographical memory has been developing hand in hand with research on old age and ageing, and both are connected, both at the level of social and cultural sciences, as well as in the field of professional support (therapy, social work...) (Fischer-Rosenthal, 2000, 120). For several decades, gerontologists themselves have been encouraging older adults to tell or write life stories, also because of the

therapeutic effect of such narrating or writing. The view that people can give real value to their lives by creating and constantly renewing personal narratives (Kenyon, Bohlmeijer & Randall, 2011) underlined their importance and the importance of talking about life in general in relation to the perceived quality of life of older adults today.

It is necessary to start from the assumption that the previous experiences of older adults, influenced by historical events and cultural tradition, are related to their adaptation to old age, to retirement, to their family relationships and expectations regarding family support in old age (different emphasis placed on the role of the family and institutional structures) and last but not least on the form and design of the environment in which they live or would like to live.



Figure 1.2.9 (Library 2022)

2.2.7 Home

IN A NUTSHELL

Having a home is a basic human need that relies on the idea of having a place of intimacy, authenticity, and safety. A feeling of homeliness might be created through various aspects, such as particular visual sights,

sounds, and smells (Lutherová, 2009). We bind many feelings to home, some might be pleasant, others less so, but in general, all of us have some notions of what an ideal home is supposed to be and look like.

A home is a place of remembrance and memories, and it is particularly important to consider this when designing housing for older adults. In this case, as well as generally, notions about home often relate to the memories and places from their childhood. It is also a personal space related to our notion of self. It is not a static phenomenon but rather an ever-changing one. In this sense, home is a process (Miller, 2001; Clarke, 2001). Through our interaction with things, we create and recreate our social relationships and – at the same time – ourselves.

A home is a place of consumption where we express our cultural affinities and preferences. In this process, we are not completely independent, our choices are often shaped without us ever knowing so (Bourdieu, 2002) as we fight for social prestige and acknowledgment of our peers through consumption. Creating a home is an act of creativity through which we react to our past experiences and try to understand the world around us (Miller, 1993). We need to feel there is space to interact with our home and make it our own, apart from how well it is designed to suit our needs and preferences.

For more information about home as “a place to get older” and its role throughout the life course, see Module 3.

CURIOUS EXAMPLE:

A particular type of housing facility is a care home. As the term itself suggests, the institution should provide a “homely environment” for older adults. But how can we conceptualize the term of homeliness? What does it stand for? And finally, how do we imagine and experience this feeling? When asked, people usually identify it with the feeling of privacy (Lutherová, 2009). This also relates to feeling in control, that in relation to place means having possibility to recreate it freely and without any constraints. This might be a problem in the system of institutional care, but should always be taken into consideration as a prerequisite of the clients feeling at home. For more information, read Module 2, Unit 3 – Embodiment and materiality of old age.

2.2.8 Social networks

IN A NUTSHELL

When we imagine society as a spiderweb, every member is one knot, connected to the others. Their connection is apparent to the knots in their close vicinity. According to the Italian epidemiologist de Belvis and his colleagues, social networks are defined as stable but evolving structures of relationships that are made up of family members, friends and acquaintances, work and study relationships and connections that arise from each individual's participation in formal and informal organizations. In every social network, nodes are connected by reciprocity relations. The social role of people integrated into social networks is

thus strengthened and they are likely to have lower mortality from cardiovascular diseases, accidents, suicides and all other causes (de Belvis et al. 2008, 785). In other words, social networks are a set of interpersonal ties that people of all ages maintain in different contexts (Wenger, 1996).

Through design, we can create opportunities for people to extend their social networks or nourish the existing ones. As social ties to others are a crucial part of one's well-being, we have to include these considerations also in the design process when (re)creating places and spaces for older adults.

When talking about the social networks, it is necessary to think about the long-term patterns of the forms of family and relatives (Hank, 2007; Le Bras, 1995; Švecová, 1989) that give a structure to intergenerational relationships, relationships with friends, and the forms of peer support. In different regions, different meanings and importance can be ascribed to the social networks of family members and relatives, friends, neighbours etc. In individualistic countries, there is a higher frequency of contacts and relationships with friends compared to the ones within family and kinship (Lykes & Kemmelmeier, 2014, 480).

Being part of the community to a large extent allows the subjects/persons to realize social interaction with individuals who may belong, but rather do not belong to the closest circle of family and friendship. In many cases, they replace non-existent, extinct or dysfunctional ties within the family. Research on subjective well-being indicates the importance of close friendships throughout life, although there may not be many of them. Loneliness, then, is

not related to the number of friends we have, but to how we think about them (Bruine de Bruin, Parker & Strough, 2020).

In any case, the quality of social networks of any kind influences the quality of life because the absence of them leads to social exclusion and loneliness, which are, according to the literature, the most serious social concerns perceived not only by seniors (de Belvis et al., 2008). Peter Bath and Alison Gardiner (2005) also confirm that social engagement is associated with improved health outcomes in older adults. In their research, older adults with higher social involvement were less likely to use health and social care services and to take medication.

Most often, the positive view of ageing and older adults' contributions to society are overall not reported or ignored. In that way, society is led to see older adults only as the ones who imply more resources to be spent, and their contribution is forgotten, mainly if they are no longer in the labour market.

This approach promotes – or at least does not prevent – ageism.

Acknowledging older adults' contributions is key to promote more age-inclusive societies. Within this rationale, contribution in society is a preponderant factor for the well-being of the older adults' population, constituting one of the key pillars of healthy living. Changes in social networks and family relationships resulting from the ageing process can lead to older adults living more alone, or as couples, isolated or institutionalized in their last years of life. Therefore, the various institutional subsystems, such as family, civil associations

(sports, parties, local networks, and volunteering), labour market and economy, are spaces where older adults contribute the most, even if often this support is invisible.

In a broader sense, the functioning of the community or communities is a fixed part of the concept of an age-friendly city, or a city friendly to all ages. Such a city provides, or at least tries to create space for the life of all residents, taking into account both social and environmental aspects, and allows older residents to continue their daily life and participate in the life of the community (Fitzgerald & Caro, 2014).



Figure 1.2.10 (Sargu, 2017)

2.2.9 Intergenerational communication and cooperation

IN A NUTSHELL

Today, the relationships between various generations of members in the family are even more crucial than before. Family structures are being verticalized as several generations co-exist at the same time. In many societies all over Europe, intergenerational communication and care relate to the culturally constructed feelings of moral duty. As the population is ageing, cooperation

between generations should also be a focal point of view in the design process. When designing places and spaces inclusively, designers must consider what enhances cooperation and communication between generations. The overall goal is to help older adults feel included and allow them to participate actively in the life of the broader community.

The demographic changes (the ageing of the population) that have taken place in Europe mainly since the latter half of the 20th century have created an unprecedented situation where the intragenerational context (relationships within one generation) changes to an intergenerational one (relationships between the generations). The family structure is being verticalized in the “family of a beanstalk” (Mitterauer, 1997), the number of generations in the family increases, and the number of members in each generation decreases. Intergenerational relationships are currently gaining importance within as they are increasingly played between several coexisting generations. In this historically new situation, it is necessary to reconsider the concepts of intergenerational solidarity, mutual learning, and care or nursing of the individual members, since these areas are characterised by a clash/overlapping of different (generation-, age-, as well as gender-specific) expectations (Vořanská et al., 2021).

Moreover, in present day Europe, we are witnessing the phenomenon that the distance between generations in the broadest sense of the word is deepening, although in the context of population ageing, cooperation between generations is becoming inevitable and necessary. That is why intergenerationalism,

i.e., the relationship between generations (young and old) becomes significant, whether from the point of view of society as a whole, economic, but also family and individual.

At the same time, the models of family co-existence change, which reshapes the broader social discourse on family. The different trends related to the daily lives of families and relationships within them have become more visible. The functioning of care, communication, and two-way help within families, with relatives, neighbours, or in the broader community context is essential when designing the common space and places of intergenerational dwelling (Vořanská et al., 2019). How to make the living environment more inclusive for older adults while creating opportunities for intergenerational communication and care? This is undoubtedly one of the most critical tasks for design in the following decades.

DO YOU WANT TO KNOW MORE ABOUT...

In the context of intergenerational relations, American historian Tamara Hareven suggests that the basis of the life-course paradigm is an attempt to synchronize “individual time”, “family time”, and “historical time” (Hareven, 2000, 127). That means that timing of life transitions or changes in the life of the individual takes place in a historical context (compulsory school attendance, retirement age, etc.) and at the same time in connection to family relationships and family needs (leaving home, marriage, birth of a child, care for the oldest generation etc.). Time and its control are one of the characters features of self-updating as one aspect of modernity. As for the beginning of 21st century, Anthony Giddens considers insisting on the priority of personal (individual) time, as one of the ways to control the time available to each person for their own life (Giddens, 1996). In this context, Tamara Hareven argues that under

the influence of demographic, economic, and cultural changes, many changes in individual life have gradually ceased to adapt to family needs and intergenerational relationships since the second half of the 20th century and become regulated by specific age norms and primates of individual time, especially in the case of the youngest generation in the family (Hareven, 2000, 137). That means a gradual breaking out of family responsibilities. For example, when speaking about the area of care for the older generations, there exist examples of the life stories of daughters in the 19th century staying at home and not marrying just to provide care for their parents in old age. Such decisions have gradually become more rarely in the course of 20th century. The responsibilities in the area of care were gradually divided among several stakeholders.

EXCERCISE I.

Let’s think about examples of one's own decisions related to life transitions, decisions made by people in our families, in our neighbourhood related to our own lives and the lives of the others. When we were children, the decisions were made for us by other people, parents, grandparents, teachers etc. As we get into our adulthood, our decisions become more autonomous. As we go into the stage of older adulthood, we are losing this autonomous way and become more and more dependent on the decisions of others.

EXCERCISE II.

Try to find answers to the following questions:

- What does communication between generations look like in your environment?
- How does it take place, who is the initiator, and in what kind of situations?
- Who, how, when and where cares for whom?
- Who, how, when and where helps whom?
- How do different generations within families reflect intergenerational relations?

EXAMPLE:

According to a study published by the European Centre for Social Welfare Policy and Research, complex or multigenerational families are an important factor in the provision of care and solidarity for older citizens. Multigenerational families, with living elements in 3 or 4 generations, are currently more common due to a set of social, family, and demographic changes, mainly, the decrease in the birth rate and the increase in longevity. The prevalence of multigenerational households may give a sign of mutual support between different generations of a family, even in the case they do not live under the same roof, but closely in the same community. Furthermore, families that live together may find it easier to cope with difficulties in older age (Zaidi et al., 2012).

In the early 2000s it was normal to have grandparents taking care of their grandchildren full-time. Meanwhile, the situation is changing, thanks to public policies that have allowed the increase of the nursery network and full-time primary school (Matos, 2014).

How is this related to preferences and timing the life transitions? It is important to highlight that caring for grandchildren full time can also

reflect on ageism. The idea that grandparents are totally available people, without the need for a life of their own, needs to be fought. Their independence and autonomy must be respected, their availability must be valued and not used in a utilitarian manner. However, if a good balance is reached, then intergenerational relationships are enriching, not only for younger people, but also for older adults, as both can share knowledge and experiences. The generation gap is not a barrier to dialogue, but an opportunity of sharing and can contribute to the personal and social development of the people involved.



Figure 1.2.11 (Pauliniová, 2017)

CONCLUSION

How to make use of all these concepts in the design practice and architecture? First, merely considering them when creating the environment is a plus. Acknowledging that people's perception of their identities is, at the same time, individual and shaped by their society and culture is the right direction.

However, besides inspiring theoretical concepts, anthropology provides valuable tools for researching people and their everyday lives. For more on this, read Module 1, Unit 5. To learn how to create an Age-friendly environment and residential buildings in accordance to the principles of D4All, read Module 3, particularly the Units 3 and 4.

REFERENCES

- Atchley, R. C. (1989). A Continuity Theory of Normal Aging. *Gerontologist*, 29(2), 183-190. <https://doi.org/10.1093/geront/29.2.183>
- Atchley, R. C. (1993). Continuity theory and the evolution of activity in later adulthood. In J. R. Kelly (Ed.), *Activity and Ageing: Staying Involved in Later Life*. Sage Publication, 5-16.
- Baddeley, A. D. (1992). What is autobiographical memory? In M. A. Conway, D. C. Rubin, H. Spinnler, & W. A. Wagenaar (Eds.), *Theoretical Perspectives on Autobiographical Memory*. Kluwer, 13-29. https://doi.org/10.1007/978-94-015-7967-4_2
- Bakhtin, M. M., & Holquist, M. (Ed.). (1981). *The Dialogic Imagination: Four Essays by M. M. Bakhtin*. University of Texas Press.
- Bath, P. A., & Gardiner, A. (2005). Social engagement and health and social care use and medication use among older people. *European Journal of Ageing*, 2(1), 56-63. <https://doi.org/10.1007/s10433-005-0022-9>
- Blommaert, J. (2009). Language, Asylum and the National Order. *Current Anthropology*, 50(4), 415-441. <https://doi.org/10.1086/600131>
- Borscheid, P. (1995). *Alter und Gesellschaft (Marburger Forum Philippinum)*. Stuttgart: Hirzel: Wiss. Verl. -Ges.
- Bourdieu, P. (2002). *Outline of a Theory of Practice*. Cambridge University Press.
- Brookover, B. C. (2013). Gary Kenyon, Ernst Bohlmeijer, and William L. Randall (2011). *Storying Later Life: Issues, Investigations, and Interventions in Narrative Gerontology*. Oxford University Press, 397 pages. *Journal of Women & Aging*, 25(2), 201-203. <https://doi.org/10.1080/08952841.2013.760375>
- Bruine de Bruin, W., Parker, A. M., & Strough, J. (2020). Age differences in reported social networks and well-being. *Psychology and Aging*, 35(2), 159-168. <https://doi.org/10.1037/pag0000415>
- Clark, M. (1967). The Anthropology of aging, a new area for studies of culture and personality. *Gerontologist*, 7(1), 55-64. <https://doi.org/10.1093/geront/7.1.55>
- Clarke, A. J. (2001). The Aesthetic of social aspiration. In D. Miller (Ed.), *Home Possessions*. Berg, 23-46.
- Conway, M. A., & Rubin, D. C. (1993). The structure of autobiographical memory. In A. F. Collins, S. E. Gathercole, M. A. Conway, P. E. Morris (Eds.), *Theories of Memory*. Psychology Press, 103-137.
- de Belvis, A. G., Avolio, M., Spagnolo, A. et al. (2008). Factors associated with health-related quality of life: the role of social relationships among the elderly in an Italian region. *Public Health*, 122(8), 784-793. <https://doi.org/10.1016/j.puhe.2007.08.018>
- Edwardes, M. P. J. (2019). *The origins of self*. UCL Press.
- Fischer-Rosenthal, & W., Rosenthal, G. (2001). Analýza narativně-biografických rozhovorů [Analysis of the narrative-biographical interviews]. *Biograf*, 24 (34), 1-11. <http://www.biograf.org/clanek.php?clanek=v2402>
- Fitzgerald, K., & Caro, G. F. (2014). An Overview of Age-Friendly Cities and Communities Around the World. *Journal of Aging and Social Policy*, 26(1-2), 1-18. <https://doi.org/10.1080/08959420.2014.860786>

- Fredman, S. (2011). *Discrimination law* (2nd ed). Oxford University Press.
- Fry, Ch. (2002). Age. In D. J. Ekerdt, *Encyclopedia of Aging*. Macmillan Reference, 21-24.
- Gee, G., Dudgeon, P., Schultz, C., Hart, A., & Kelly, K. (2014). Aboriginal and Torres Strait Islander social and emotional well-being. In P. Dudgeon, H. Milroy, R. Walker (Eds.), *Working Together: Aboriginal and Torres Strait Islander Mental Health and Well-being Principles and Practice* (2nd ed.). Department of the Prime Minister and Cabinet, 55-68.
- Giddens, A. (1996). *Modernity and Self-Identity*. Polity Press.
- Giddens, A. (1999). *Soziologie*. Nausner & Nausner.
- Gilleard, Ch., Higgs, P. (2000). *Cultures of Ageing: Self, Citizen and the Body*. Prentice Hall.
- Hank, K. (2007). Proximity and Contacts Between Older Parents and Their Children: A European Comparison. *Journal of Marriage and Family*, 69(1), 157-173. <https://doi.org/10.1111/j.1741-3737.2006.00351.x>
- Hareven, T. (2000). *Families, History and Social Change*. Westview Press.
- Jamieson, A. (2002). Theory and practice in social gerontology. In Jamieson, A., Victor, Ch. *Researching Ageing and Later Life. The practice in social gerontology*. Open University Press, 7-20.
- Janz, B. B. (2017). *Place, Space, and Hermeneutics*. Springer.
- Le Bras, H. (1995). La fécondité, condition de la perpétuation. Évolutions divergentes en Europe. In M. Gullestad, & M. Segalen (Ed.), *La famille en Europe*.
- Laslett, P. (1989). *A Fresh Map of Life: The Emergence of Third Age*. Basingstoke, Hants.
- Low, S. M., & Lawrence-Zuniga, D. (2003). *The Anthropology of Space and Place: Locating Culture*. Malden: Blackwell Pub.
- Low, S. M. (2009). Towards an anthropological theory of space and place. *Semiotica*, 2009(175). <https://doi.org/10.1515/semi.2009.041>
- Lunenfeld, P. (2003). The Design Cluster. In B. Laurel (Ed.), *Design research. Methods and Perspectives*. The MIT Press, 10-16.
- Lutherová, S. (2009). Význam vlastníctva v procese tvorby domova [The meaning of ownership in the process of creating home]. In *Slovak Ethnology/Slovenský národopis*, 57(3), 367-385. <https://www.ceeol.com/search/viewpdf?id=264151>
- Lykes, V. A., & Kemmelmeier, M. (2014). What Predicts Loneliness? Cultural Difference Between Individualistic and Collectivistic Societies in Europe. *Journal of Cross-Cultural Psychology*, 45(3) 468-490. <https://doi.org/10.1177/0022022113509881>
- Matos, A. (2014, July 26). Avós já não substituem infantários mas têm papel fundamental na vida dos netos [Grandparents no longer substitute nurseries but play a fundamental role in the lives of their grandchildren]. *Público*. <https://www.publico.pt/2014/07/26/sociedade/noticia/avos-ja-nao-substituem-infantarios-mas-tem-papel-fundamental-na-vida-dos-netos-1664259>
- Mead, M. (1928, 1949). *Coming of Age in Samoa. A Psychological Study of Primitive Youth for Western Civilisation*. Morrow.

- Miller, D. (1993). *Material Culture and Mass Consumption*. Blackwell.
- Miller, D. (2001). Behind closed doors. In D. Miller (Ed.), *Home Possessions*. Berg, 1-22.
- Mitterauer, M. (1997). Das moderne Kind hat zwei Kinderzimmer und acht Großeltern“ – Die Entwicklung in Europa. In M. Mitterauer, N. Ortmayr (Ed.), *Familie im 20. Jahrhundert. Traditionen, Probleme, Perspektiven*. Brandes & Apsel/Südwind, 13-51.
- Murphy, K. (2016). Design and anthropology. *Annual Review of Anthropology*, 45, 433-439. <https://doi.org/10.1146/annurev-anthro-102215-100224>
- Sen, A., & Silverman, L. (Eds.). (2014). *Making Place: Space and Embodiment in the City*. Indiana University Press. <http://www.jstor.org/stable/j.ctt16gz4z9>
- Schirmacher, F. (2004). *Methusalem Komplott*. Blessing Verlag.
- Sontag, S. (1972, September 23). The double standard of aging. *The Saturday Review*. 29-38. https://warwick.ac.uk/fac/arts/english/currentstudents/undergraduate/modules/literaturetheoryandtime/susan_sontag_the_double_standard_of_aging.pdf
- Švecová, S. (1989). Dva typy tradičnej roľníckej rodiny v Československu [Two types of traditional peasant families in Czechoslovakia]. *Český lid*, 76(4), 210-222.
- Tužinská, H. (2008). How Far Have We Gone with Being Applied? From Národopis to Anthropology. *Curricula Heterogeneity and Public Engagement in Slovakia*. *Studia ethnologica Croatica*, 20, 193-209. <https://hrcak.srce.hr/file/46307>
- van den Hoven, E., & Eggen, B. (2008). Informing augmented memory system design through autobiographical memory theory. *Pers Ubiquit Comput*, 12, 433-443. <https://doi.org/10.1007/s00779-007-0177-9>
- Van Gennep, A. (2004). *The Rites of Passage*. Psychology Press.
- Viña, J., Borrás, C., & Miquel, J. (2007). Theories of ageing. *IUBMB Life*, 59(4), 249-254. <https://doi.org/10.1080/15216540601178067>
- Voľanská, Ľ. (2016). “V hlave tridsať, v krížoch sto” [“Old bodies, young minds”. Ageing in Autobiographies from Bratislava and Vienna]. VEDA, Institute of Ethnology SAS.
- Voľanská, Ľ. (2018). Contextualising ageism in an interdisciplinary perspective. An introduction. In *Slovenský národopis*, 66(2), 178-189. <https://www.doi.org/10.26363/SN.2018.2.01>
- Voľanská, Ľ., Káčerová, M., & Majo, J. (2019). People, space and culture – dimensions of intergenerational relationships. Introduction. *Slovenský národopis*, 67(2), 122-143. <https://doi.org/10.2478/se-2019-0007>
- Voľanská, Ľ., Káčerová, M., & Majo, J. (2021). On Nearness and Distance. Seniors' Life in Urban Areas in Slovakia. In D. Grammshammer-Hohl, O. Hergenröther (Eds.), *Foreign Countries of Old Age: East and SE Perspectives on Aging*. Transcript Verlag, 149-178.
- Wenger, G. C. (1996). Social networks and gerontology. *Reviews in Clinical Gerontology*, 6(3), 285-293. <https://doi.org/10.1017/S0959259800004780>
- Zaidi, A., Gasior, K., Hofmarcher, M. M., Ielkes, O., Marin, B., Rodrigues, R., Schimdt, A., Vanhuysse, P., & Zolyomi, E. (2012). *Active Ageing Index 2012: Concept, Methodology and Final Results* (Project: ‘Active Ageing Index (AAI)’ UNECE Grant No: ECE/GC/2012/003). European Centre Vienna. <https://www.euro.centre.org/publications/detail/370>

Zimmermann, H. P. (2013). Alters-Coolness – Gefasstheit und Fähigkeit zur Distanzierung. In T. Rentsch, H. P. Zimmermann, A. Kruse. Altern in unserer Zeit: Späte Lebensphasen zwischen Vitalität und Endlichkeit. Campus Verlag, 101-124.

LIST OF PICTURES

Figure 1.2.1 HWG, S. (2019). Dementia, imagine the loneliness of not being around the ones you love (because you just can't remember them as they are now). Downloaded from www.unsplash.com.

Figure 1.2.2 Franco, D. (2017). Old woman closing her eyes. Downloaded from www.unsplash.com.

Figure 1.2.3 Unknown author, Picture 3, downloaded from Wikimedia Commons, https://upload.wikimedia.org/wikipedia/commons/e/e3/Stufenalter_01.jpg

Figure 1.2.4 Pflueger, G.A. (2020). Our granny got ninety and all her grandchildren could send her were a few clips on YouTube. Downloaded from www.unsplash.com.

Figure 1.2.5 Pauliniová, Z. (2022a). Untitled.

Figure 1.2.6 Paulíniová, Z. (2018). Untitled.

Figure 1.2.7 Mossholder, T. (2022). Retired and happy. Downloaded from www.unsplash.com.

Figure 1.2.8 Paulíniová, Z. (2022b). Untitled.

Figure 1.2.9 Library of congress. (2022). Generations. Downloaded from www.unsplash.com.

Figure 1.2.10 Sargu, V. (2022). Suceava. Downloaded from www.unsplash.com.

Figure 1.2.11 Pauliniová, Z. (2017). Untitled.



MODULE 1

INTRODUCTION TO AGE-FRIENDLY
AND INCLUSIVE ENVIRONMENTS

UNIT

3

BASIC PATHOPHYSIOLOGY OF AGEING

Matic Sašek • Nastja Podrekar Loredan



DESIRE

DESIGN FOR ALL METHODS TO
CREATE AGE-FRIENDLY HOUSING

DESIRE is a European project funded by the Erasmus+ programme.
Project number 2020-1-SK01-KA202-078245.

ISBN 978-80-227-5286-2



SPEKTRUM
STU

DESIRE will provide professionals in the building industry and home furnishings sector with the tools and skills to apply Design4All methods as an integral part of the design process, with the aim to create or adapt age friendly housing as a solution for the wellbeing, comfort and autonomy of the older adults or dependents at home.

The DESIRE training platform consists of six modules and 21 units.



Co-funded by
the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.



The present work, produced by the DESIRE Consortium, is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

PUBLISHED BY:

© DESIRE, 2023, www.projectdesire.eu

Slovak University of Technology in Bratislava by
Publishing house SPECTRUM STU, Bratislava 2023

AUTHORS:

Miguel Ángel Silvestre Botella
Zuzana Čerešňová
Carina Dantas
Natália Filová
Juan Carlos Bañón Guillén
Miroslava Hlinčíková
Michal Kacej
Veronika Kotradyová
Dean Lipovac
Nastja Podrekar Loredan

Juliana Louceiro
Soňa G. Lutherová
María Sánchez Melero
Marta Martínez Navarro
Lea Rollová
Matic Sašek
Mária Šimková
Helena Tužinská
Ľubica Voľanská

ILLUSTRATIONS:

Zuzana Čerešňová
Natália Filová
Michal Kacej
Veronika Kotradyová

Markéta Kučerová
Lea Rollová
Lenka Suláková
Barbora Valábeková

GRAPHIC DESIGN:

Mária Šimková

TABLE OF CONTENTS

UNIT 3 – Basic pathophysiology of ageing	3
3.1 Introduction to ageing	3
3.1.1 Biology and theories of ageing	3
3.1.2 Epidemiology and demography of ageing	5
3.2 Changes in body function	7
3.2.1 Changes in body composition	7
3.2.2 Changes in musculoskeletal system	8
3.2.3 Changes in cardiovascular system	10
3.2.4 Endocrine system changes	11
3.2.5 Functional (dis)ability due to ageing	12
References	15

UNIT 3 – BASIC PATHOPHYSIOLOGY OF AGEING

This unit begins with an introduction to ageing as a process we all encounter. It goes on to cover demography and epidemiology of ageing and introduces the major determinants of

ageing. In the final part of the unit focuses on explaining the basic pathophysiological mechanisms that describe the ageing process.

3.1 INTRODUCTION TO AGEING

IN A NUTSHELL

Ageing can be succinctly described as a multifactorial process in which an individual is influenced by various triggers throughout life. Therefore, both genetics and environmental factors play an important role in the biology of ageing. Internal and

external factors, such as hormones, nervous system signals, or immune responses that help maintain homeostatic conditions, can influence the ageing process. Overall, genes and environmental factors enable growth, development and ageing.

3.1.1 Biology and theories of ageing

Chronological age is often used as a criterion for classification as an older adult. While this may seem straightforward, it is more complex in application. There are at least two reasons why age has often been set at about 65: retirement age and illness. In developed countries, the retirement age is about 65. However, there is no uniform retirement age across countries, and the usual retirement age varies by occupation (Holliday, 2006). It is undeniable that as we age, we become more prone to develop one of developing one or more chronic diseases (comorbidity). In older age, this is due to the breakdown of the maintenance function of the body, which is manifested in a gradual decline in biological and psychological

functions that vary greatly from person to person (Bulterijs et al., 2015).

It is now a widely accepted notion that ageing is a multifactorial process, and several theories of ageing have attempted to explain it coherently (Vijg & Wei, 1995; Kirkwood & Austad, 2000). Biological theories of ageing are based on the belief that ageing or lifespan is part of the design of the organism and is distinct from disease because it occurs in any multicellular animal that reaches a certain size at reproductive maturity, occurs in all species after reproductive maturity, and has the same universal molecular aetiology, namely thermodynamic instability. Although the ageing process is clear and relatively well

understood, false myths and stereotypes still circulate about it and misjudge the capabilities of older adults. Some of these myths and stereotypes are presented along with the true claims in Figure 1.3.1 to give readers a more vivid picture of how ageing actually affects people (Timiras, 2007).



Figure 1.3.1 Myths and stereotypes about aging and older adults

One of the theories described by Darwin is the traditional theory of evolution, which holds that the design of today's organisms is the result of a gradually accumulative evolutionary process. This is essentially the premise of "survival of the fittest" which somehow did not fit with a concept of ageing. Subsequently, many theories were developed to correct Darwinian evolution, such as the theory of group selection, the theory of selfish genes, and the theory of evolvability. For example, the theory of evolvability states that organisms in general can develop characteristics that enhance their ability to evolve and adapt to external circumstances by altering the genetic

design of subsequent generations. If ageing is a design trait, it could be advantageous if a species can regulate lifespan. For example, the lifespan of individual animals with the same genetic design could be adjusted to compensate for external conditions. Damage theories are another group of theories about ageing that have been propagated. These theories state that ageing is a consequence of wear and tear caused by damage to basic life processes that occur in accumulative microscopic steps, such as damage to chromosomes, accumulation of toxic byproducts, nuclear radiation, or the forces of entropy (Viña et al., 2007)

3.1.2 Epidemiology and demography of ageing

IN A NUTSHELL

In the 21st century, the European population is growing larger and older along with the rest of the world. In particular, the size and proportion of older adults is increasing significantly. As a result, the ratio of older to younger people is expected to change dramatically in the future. This brings with it the need to adapt lifestyles, including housing and living environments. Therefore,

in order to achieve a good quality of life, it will be necessary to adapt buildings so that they are accessible to all people, especially the most vulnerable. To adapt it as effectively and efficiently as possible, it is required to higher awareness to the epidemiological and demographic characteristics of the elderly population.

The number of elderly people in the world has increased both in absolute and relative terms. The growth in numbers may be due to advances in medical science, which have improved survival rates for certain diseases, and due an increased birth rates. The ratio of the number of people born today to the number of people born before age 65 is critical to estimating

the size of the workforce available to care for an elderly population (Marois et al., 2020). This ratio is declining, and the impact of this trend can be better represented in Figure 1.3.2, which shows the growth of the elderly population as a percentage of the total population in the United States (US).

THE ELDERLY POPULATION OF THE US: 1900–2050								
PERCENTAGE OF THE TOTAL POPULATION								
AGE (YEARS)	1900	1940	1960	1990	2010	2030	2050	CHANGE FROM 1900 TO 2050
65–74	2.9	4.8	6.1	7.3	4.3	12.0	10.5	+ 7.6
75–84	1.0	1.7	2.6	4.0	4.3	7.1	7.2	+ 6.2
85+	0.2	0.3	0.5	2.2	2.2	2.7	5.1	+ 4.9
65+	4.0	6.8	9.2	9.2	13.9	21.8	22.9	+ 18.9

Figure 1.3.2 Projection of population structure in the USA from 1900 to 2050

A similar phenomenon is observed in the European Union (EU), where the average age of the population is estimated to increase dramatically (see Figure 1.3.3). If we define older adults as those over the age of 65, they are estimated to make up 20.8 % of the estimated total population of 447.2 million in the 27 countries of the EU in 2021. However, by 2050, older adults are projected to represent 29.4 % of the total population in the EU. According

to the World Health Organization (2015), the proportion of older adults living in good health has remained constant despite increases in average life expectancy, which may indicate that while people are living longer, a greater proportion of older adults are less healthy and consequently have a lower quality of life.

The gain in survival rates includes both active and dependent years. One of the major controversies in modern gerontological epidemiology is whether the gain in life expectancy is accompanied by a corresponding gain in dependency-free years. Although increased life expectancy may be associated with more disability, the overall effect is a pattern of decreasing disability. Moreover, not

all disability is permanent. Some older people experience temporary episodes. Therefore, disability was used as the basis for defining quality of life. To this end, the concept of active life expectancy was transformed into a concept of quality-adjusted life years. According to this formulation, the goal of health care is to maximize the period of “healthy” years for the individual.

		AGE (YEARS)		
		> 65	≤ 75	≤ 80
EASTERN EUROPE	2008	14.3	6.0	3.0
	2020	17.3	6.9	4.3
	2040	24.4	12.6	7.8
	CHANGE	+ 9.9	+ 6.6	+ 4.8
WESTERN EUROPE	2008	17.8	8.5	4.9
	2020	20.9	10.1	6.2
	2040	28.1	15.0	9.3
	CHANGE	+ 10.3	+ 7.5	+ 4.4

Figure 1.3.3 Projection of the population structure in the EU from 2008 to 2040 in percentages

Although forecasts can vary with the future birth and death rates, they are likely to be reasonably accurate. By the year 2030, older population will have almost doubled and there will be as many people older than 75 years as there are today the ones who are older than 65 years. This demographic observation is calling for several urgent measures such as the redefinition of retirement age; encouragement of younger persons to invest in their health in order to avoid excessive dependency on public funds when they grow older; encourage volunteerism

among older adults; provide professional services and change public programs to address the needs of an ageing society with emphasis on the living environment. As such “healthy” years could be increased using tools that successfully promotes active and healthy ageing and provides stimulating environment via the concepts of Universal Design (UD) and Design for All (D4All) based on which living environments are adapted and redesigned to meet the needs of older adults.

3.2 CHANGES IN BODY FUNCTION

IN A NUTSHELL

Since the body system structure is changing due to a natural process of ageing, everyday function of older adults becomes limited. This results in the fact that older adults have different needs in comparison to youth and adults. In order to preserve the satisfactory

level of the lifestyle, living environment should be designed in a way to allow for living healthy and independent. Therefore, the professionals responsible for planning and building should be aware of older adult needs in living environments.

Ageing is a complex multifactorial process in which physiological changes usually underlie functional decline in later years. The body structure together with the body system function is changing due to a natural

process. The most significant changes occur in body composition, musculoskeletal system, cardiovascular system, endocrine system and cognition that, all together can result in functional (dis)ability.

3.2.1 Changes in body composition

IN A NUTSHELL

As we age, body composition changes naturally meaning that there are significant alterations in fat, muscle and bone mass. It is important to understand that these changes can affect health, physical function,

and well-being. Although the general pattern of change is clear, a high degree of heterogeneity in body composition changes with age is observed (He et al., 2018).

Free fat mass is composed of muscle, organs, water, bone, and connective tissue. Muscle mass peaks in early adulthood, and a nonlinear decline in muscle in the upper and lower body is observed from about 45 years old. For bone mass, the peak is reached in men in their early 20s and in women in their mid-30s (Jackson et al., 2012; Nassis & Geladas, 2003). After that, the loss of bone mass is most noticeable in certain parts of the body, such as the hip, forearm, or spine. Unlike muscle and

bone mass, fat mass increases in a curvilinear fashion with ageing (Baumgartner, 2000). These changes have significant implications for health and physical function. Therefore, interventions that prevent, attenuate, or even eliminate muscle and bone mass loss should be promoted (see Figure 1.3.8). As healthy lifestyle affects these changes in positive way, an environment that encourages physical activity may be a key strategy for maintaining healthy ageing.

3.2.2 Changes in musculoskeletal system

IN A NUTSHELL

Along with mass, the composition of muscles and bones changes as we age. Overall, the biological process of ageing systematically alters both the quantity and quality of skeletal muscle, resulting in a reduction in muscle strength and power capacity that,

without preserving musculoskeletal function, could negatively affect the overall health of older adults. One of the effective means to help older adults maintain normal muscle function is physical activity, which is briefly introduced in this subsection.

At the end of puberty, skeletal muscle fibres develop and reach a normal size. At this time, an average person has about 12 % more type II fibres compared to type I fibres. With age, the size and number of muscle fibres decrease, which is most evident in type II fibres. Thus, the ratio between type II and type I fibres is altered in favour of type I fibres. Since these are slow-twitch fibres that are active during slow, prolonged movements and consist mainly of so-called antigravity muscles, the ability to generate power and immediate force is severely impaired in older adults. With ageing muscle mass is also severely reduced due to muscle fibre atrophy and muscle fibre loss (Wilkinson et al., 2018). In addition, higher amounts of intramuscular fat observed in older adults (see Figure 1.3.4) are associated with impaired mechanical properties of muscles (Pinel et al., 2021).

Two systems, namely the nervous system and the skeletal muscle system, are responsible for most age-related changes in muscle strength as the force in the muscle is generated by muscle contraction, initiated by the neuro-

muscular activation process. It can be described as a process by which the nervous system recruits and encodes the rate of muscle contraction (Frontera & Ochala, 2015). It has been shown that also the nervous activation capacity decreases during the ageing process. Furthermore, a decrease in motor control is observed with age due to qualitative and quantitative changes in the brain motor cortex and spinal cord (Delbono, 2003). In addition to changes in the nervous system and muscle typology, the architecture of skeletal muscle is also affected by the ageing process. In addition to the size and anatomical structure of skeletal muscle, a number of changes in skeletal muscle morphology affect its ability to contract and generate force. Presumably, older adults have shorter muscle fascicles, smaller pennation angles, and lower muscle density. Together with that a reduction in tendon stiffness is observed in older adults, which further affects the ability to produce force (Scanlon et al., 2014). Along with these anatomical and morphological characteristics of muscle, the mechanics of muscle contraction changes resulting in decreased strength and power.

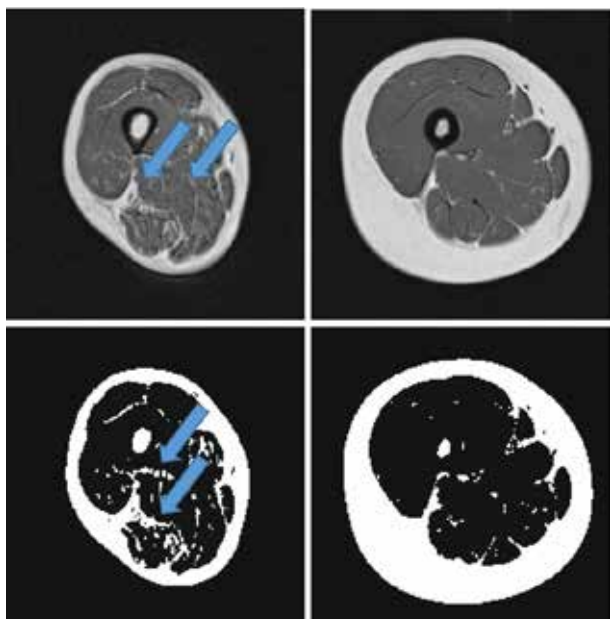


Figure 1.3.4 Magnetic resonance images showing the thigh muscles, from women aged 71 years (left upper and lower subfigures) and 21 years (right upper and lower subfigures) (Yoshiko et al., 2017). Increased amount of intramuscular fat is observed on two right figures.

Due to the many changes in the muscle and nervous system that accompany ageing, a decrease in muscle strength can have a significant impact on mobility in the elderly. The living environment of the elderly should therefore be designed to reduce the decline in function of muscles and nerves. Among the

most effective means to counteract this decline are strength and power exercises, which should be integrated into the daily lives of older adults. This could preferably be accomplished by providing a environment that allows for the safe performance of resistance exercises (see Figure 1.3.5) for the upper and lower extremities.







SQUATS	RAISING FROM THE CHAIR	
BICEPS CURLS	LIFTING OBJECTS	
LUNGES	PICKING UP AN OBJECT FROM THE GROUND	
CHEST PRESSES	PUSHING LARGE OBJECTS SUCH AS DOORS	
FARMERS WALK EXERCISE	CARRYING SHOPPING BAGS	
FINE MOTOR SKILLS EXERCISES	UNLOCKING DOORS, HOLDING CUTLERY	

Figure 1.3.5 Association between strength exercises and daily functions

3.2.3 Changes in cardiovascular system

IN A NUTSHELL

The cardiovascular system changes with age and, as a result, changes in cardiovascular physiology occur. At some point these changes affect everyone, but the extent of the changes is very individual. Cardiac structure changes in such a way that the

heart becomes larger but responds less and with a delay to various stimuli, resulting in less functional capacity. In addition, there are changes in the blood vessels and reflex control of the cardiovascular system that further impair cardiovascular function.

Cardiac hypertrophy is normally observed with healthy ageing. Most often left ventricle wall and to lesser extent left atrium are thickening. On the molecular level, myocytes (i.e., the muscle cell) number may decline due to increased cell death and reduced regenerative ability of the stem cells. Additionally, the vessels of older adults are less elastic resulting in the increase of peripheral resistance. This cause that the existing myocytes must grow in order to be capable of providing sufficient cardiac mechanical work (Pugh & Wei, 2001). As also number of cells in the sinus node pacemaker decreases ageing heart is also characterized by changes which affecting rhythm-generating system, making a heart more susceptible to both rhythm and conduction disorders (Pugh & Wei, 2001). Among structural changes in the heart and vessels, blood volume is also reduced in older adults and anemia can occur (Stauder et al., 2018). Suma sumarum cardiovascular response tolerance to physical stress is altered with age which significantly effects the life of older adults.

Most age-related changes in cardiovascular function do not alter the way the heart works at rest, with the exception of increased blood pressure. These changes become more apparent when older adults exercise or play sports, which represents a kind of physical stress. The most notable are changes in heart rate, namely maximum heart rate appears to be reduced in both men and women. Meanwhile resting heart rate is not affected by age (Lakatta, 2015). When workload (or physical stress) increases, the heart of older adults is unable to increase its stroke volume to a sufficient level. Therefore, under overload conditions, heart failure may manifest. The structural changes mentioned earlier, along with changes in vascular tone, result in increased blood pressure (Pugh & Wei, 2001). Although most of these changes in the heart typically accompany the normal ageing process and cannot be avoided, some or most of them can be significantly reduced and delayed by a healthy lifestyle. Among other things, the cardiovascular system of older people benefits most from endurance exercise such as walking.

3.2.4 Endocrine system changes

The endocrine system is affected by age in various ways. In the course of normal ageing, a progressive loss of secondary cell mass of the endocrine glands, a decrease in the rate of hormone degradation, changes in the sensitivity of end organs and target tissues to hormones together with changes in the modulation of the feedback mechanism of the endocrine glands (Hackney & Lane, 2015).

As these structural changes affect the organs that are supported by the endocrine system it is only natural that the levels of sex steroid hormones decrease, adrenal gland function changes, and the growth hormone system changes. The body system of older adults is therefore changed, leading to menopause, andropause, adrenopause and somatopause, in both men and women (see Figure 1.3.6).

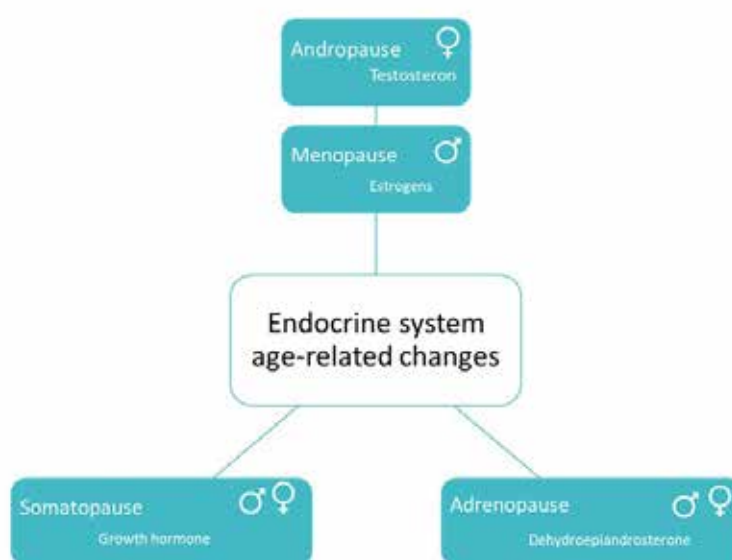


Figure 1.3.6 Interchange between menopause, andropause, adrenopause and somatopause in older adults

The decrease in estrogen levels, one of the major sex hormones in women, is due to the progressive loss of ovarian follicles during ageing. This can also be referred to menopause (Broekmans et al, 2009). A similar process is observed in men, the gradual decline of testosterone with ageing and is described under the term andropause. As a result of the deficiency of these two hormones, their role as physiological anabolic-androgenic mediators is diminished, leading to sarcopenia and osteoporosis in older adults. The term adrenopause refers specifically to adrenal androgenic hormones such as

dehydroepiandrosterone and its sulfate conjugate form, whereas somatopause refers to a significant decline in growth hormone with age in both sexes (Toogood et al., 1996). In addition to these important changes in the endocrine system, thyroid hormone clearance also decreases with age and thyroid hormone secretion is reduced (Gauthier et al., 2020). Overall, these reductions and changes in selected hormones and endocrine glands function have far-reaching and varied consequences, which are reflected primarily in decreased health and quality of life.

3.2.5 Functional (dis)ability due to ageing

IN A NUTSHELL

Because age negatively affects some body systems that are critical to maintaining normal daily living functions, some older adults tend to have problems with vital needs, such as problems with locomotion (i.e., walking) and

performing daily tasks. To counteract these changes, exercise and physical activity have been identified as effective ways to maintain functional capacity and health in older adults.

Maintaining balance while walking, standing, and moving depends on three primary systems that contribute to good posture, namely the sensory system, the motor system, and the cognitive system (see Figure 1.3.7 for details) (Shumway-Cook & Woollacott, 2012). As we age, it is commonly observed that structural changes in the eye itself lead to impaired vision (Owsley, 2016), such as visual acuity, contrast sensitivity, and altered depth perception (Bell

et al., 1972). In addition to these, sensory function changes, older adults have fewer proprioceptors in their muscles (Henry & Baudry, 2019), and this resulting in slower reflexes. As early as age 30, the function of the vestibular system begins to decline, leading to decreased sensitivity to head movements (Anson & Jeka, 2016). The ability to maintain the balance is therefore impaired.

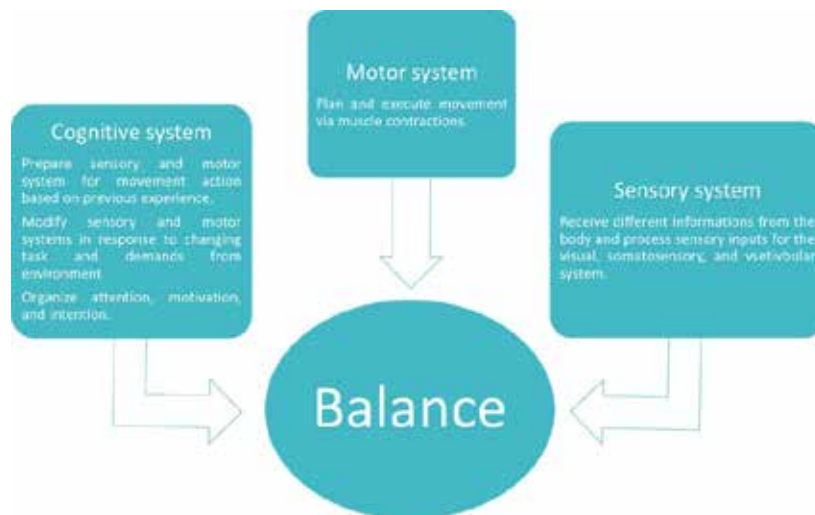


Figure 1.3.7 Three body systems that significantly affect balance and postural stability (Shumway-Cook & Woollacott, 2012)

With increasing age, not only changes in voluntary motor control, but also in automatic motor control of movements are observed. Loss of large motor neurons in the motor cortex and other areas of the motor system (Oliviero et al., 2006), along with a decrease in neurotransmitters such as dopamine, leads to impaired movement patterns in otherwise healthy older adults (Morgan, 1987). In addition, decreased lower limb mobility is observed in older adults, which significantly affects their posture and the ability to exert the movement with whole range of motion.

The changes in walking are most notable, as it is most common mode of locomotion. Older adults are walking slowly due to decrease in stride length and walking cadence, and also due to increased foot contact time with the ground (Shumway-Cook & Woollacott, 2012). Other age-related changes that affect gait speed and quality, are linked to some other characteristics of gait. The decrease in the ability to maintain balance during walking leads to an increased rate of falls in older adults (Kannus et al., 1999).

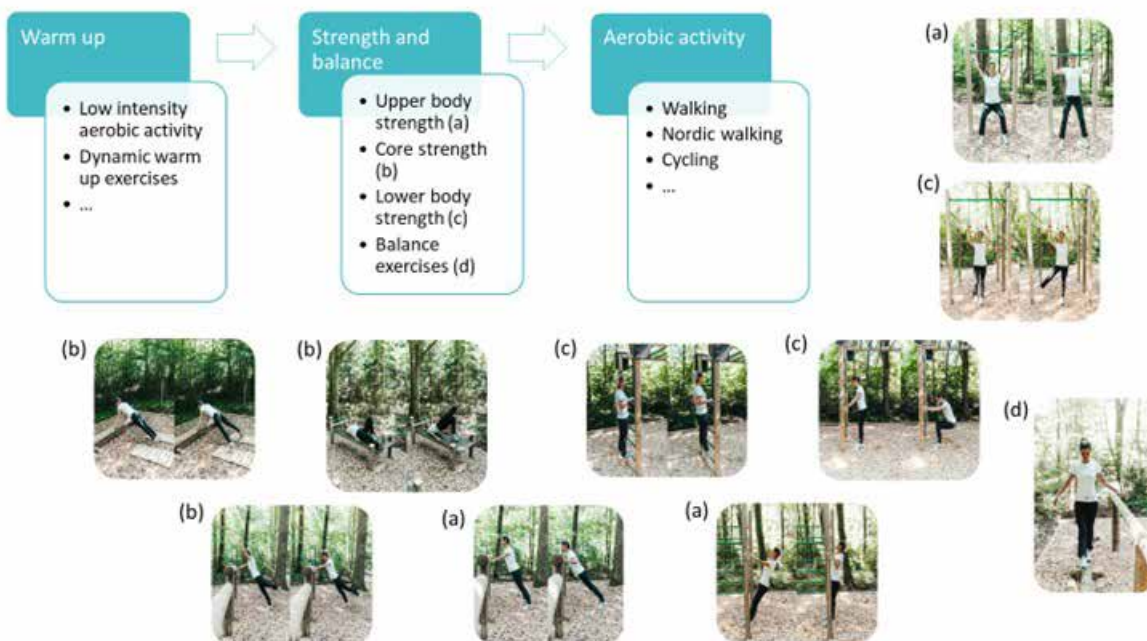


Figure 1.3.8 An example of exercises suitable to improve strength, endurance and balance of older adults

With the purpose to counteract against these alterations in movement ability physical activity programs have been shown to be effective in helping older adults to maintain walking function, balance and mobility and also reduce their overall risk of falls. Therefore, older adults should be encouraged and provided with the opportunity to exercise. A stimulating living environment could increase physical activity adherence of older adults. One of such examples could be outdoor environments designed purposely for exercise and physical activity (e.g.,

outdoor fitness). Ideally, the design of such places should not fit only to well-trained users but should be designed “for all”. To demonstrate such good example in Figure 1.3.8 the exercises plan suitable for older adults from one of many local trail-run tracks in Slovenia is presented. Using the nature and simplistic training tools made of natural materials to perform specific physical exercises that improve strength, power, balance, and general function is effective strategy to preserve health and mobility of older adults.

Common impairments of older adults and related design solutions

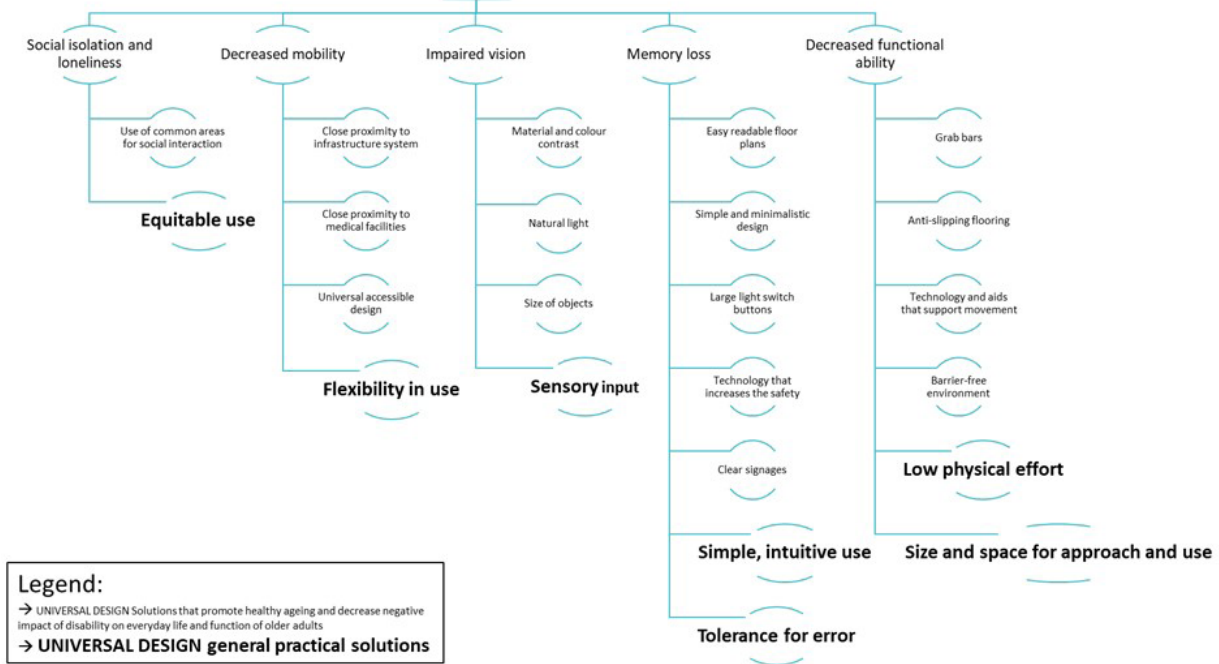


Figure 1.3.9 Practical guidelines on how to cope with important age-related changes when designing the living environment of older adults based on the Universal Design

By being aware of the social, cognitive and potential functional limitations of older adults, the living environment can be modified to meet their needs. As represented in Figure 1.3.9, safe and healthy ageing can be ensured through UD and planning of the environment. The knowledge of the physiology of ageing

could contribute significantly to understanding the topic, interested readers are therefore invited to read Module 2 Ageing process and design on the interaction between the physiology of ageing, the living environment, and health.

REFERENCES

- Anson, E., & Jeka, J. (2016). Perspectives on aging vestibular function. *Frontiers in Neurology*, 6, 1–7. <https://doi.org/10.3389/fneur.2015.00269>
- Baumgartner, R. N. (2000). Body composition in healthy aging. *Annals of the New York Academy of Sciences*, 904, 437-448. <https://doi.org/10.1111/j.1749-6632.2000.tb06498.x>
- Bell, B., Wolf, E., & Bernholz, C. D. (1972). Depth Perception as a Function of Age. *Aging and Human Development*, 3(1), 77-81. <https://doi.org/10.2190/Orqm-rrnk-a8gn-x99j>
- Broekmans, F. J., Soules, M. R., Fauser, B. C. (2009). Ovarian Aging: Mechanisms and Clinical Consequences. *Endocrine Reviews*, 30(5), 465–493. <https://doi.org/10.1210/er.2009-0006>
- Bulterijs, S., Hull, R. S., Björk, V. C. E., & Roy, A. G. (2015). It is time to classify biological aging as a disease. *Frontiers in Genetics*, 6, 1-5. <https://doi.org/10.3389/fgene.2015.00205>
- Delbono, O. (2003). Neural control of aging skeletal muscle. *Aging Cell*, 2(1), 21-29. <https://doi.org/10.1046/j.1474-9728.2003.00011.x>
- Frontera, W. R., & Ochala, J. (2015). Skeletal Muscle: A Brief Review of Structure and Function. *Behavior Genetics*, 45(2), 183-195. <https://doi.org/10.1007/s00223-014-9915-y>
- Gauthier, B. R., Sola-García, A., Cáliz-Molina, M. Á., Lorenzo, P. I., Cobo-Vuilleumier, N., Capilla-González, V., & Martín-Montalvo, A. (2020). Thyroid hormones in diabetes, cancer, and aging. *Aging Cell*, 19(11), 1-25. <https://doi.org/10.1111/accel.13260>
- Hackney, A. C., & Lane, A. R. (2015). Exercise and the Regulation of Endocrine Hormones. In *Progress in Molecular Biology and Translational Science*, 135 (1st ed.). Elsevier Inc. <https://doi.org/10.1016/bs.pmbts.2015.07.001>
- He, X., Li, Z., Tang, X., Zhang, L., Wang, L., He, Y., Jin, T., & Yuan, D. (2018). Age- and sex-related differences in body composition in healthy subjects aged 18 to 82 years. *Medicine (United States)*, 97(25), 12-17. <https://doi.org/10.1097/MD.00000000000011152>
- Henry, M., & Baudry, S. (2019). Age-related changes in leg proprioception: Implications for postural control. *Journal of Neurophysiology*, 122(2), 525-538. <https://doi.org/10.1152/jn.00067.2019>
- Holliday, R. (2006). Aging is no longer an unsolved problem in biology. *Annals of the New York Academy of Sciences*, 1067(1), 1-9. <https://doi.org/10.1196/annals.1354.002>
- Jackson, A. S., Janssen, I., Sui, X., Church, T. S., & Blair, S. N. (2012). Longitudinal changes in body composition associated with healthy ageing: men, aged 20-96 years. *The British Journal of Nutrition*, 107(7), 1085-1091. <https://doi.org/10.1017/S0007114511003886>
- Kannus, P., Parkkari, J., Koskinen, S., Niemi, S., Palvanen, M., Järvinen, M., & Vuori, I. (1999). Fall-induced injuries and deaths among older adults. *Jama*, 281(20), 1895-1899. <https://doi.org/10.1001/jama.281.20.1895>
- Kirkwood, T. B. L., & Austad, S. N. (2000). Why do we age? *Nature*, 408(6809), 233-238. <https://doi.org/10.1038/35041682>
- Lakatta, E. G. (2015). So! What's aging? Is cardiovascular aging a disease? *Journal of Molecular and Cellular Cardiology*, 83, 1-13. <https://doi.org/10.1016/j.yjmcc.2015.04.005>

- Marois, G., Bélanger, A., & Lutz, W. (2020). Population aging, migration, and productivity in Europe. *Proceedings of the National Academy of Sciences of the United States of America*, 117(14), 7690-7695. <https://doi.org/10.1073/pnas.1918988117>
- Morgan, D. G. (1987). The dopamine and serotonin systems during aging in human and rodent brain. A brief review. *Progress in Neuropsychopharmacology and Biological Psychiatry*, 11(2-3), 153-157. [https://doi.org/10.1016/0278-5846\(87\)90053-4](https://doi.org/10.1016/0278-5846(87)90053-4)
- Nassis, G. P., & Geladas, N. D. (2003). Age-related pattern in body composition changes for 18-69 year old women. *Journal of Sports Medicine and Physical Fitness*, 43(3), 327-333.
- Oliviero, A., Profice, P., Tonali, P. A., Pilato, F., Saturno, E., Dileone, M., Ranieri, F., & Di Lazzaro, V. (2006). Effects of aging on motor cortex excitability. *Neuroscience Research*, 55(1), 74-77. <https://doi.org/10.1016/j.neures.2006.02.002>
- Owsley, C. (2016). Vision and Aging. *Annual Review of Vision Science*, 2, 255-271. <https://doi.org/10.1146/annurev-vision-111815-114550>
- Pinel, S., Kelp, N. Y., Bugeja, J. M., Bolsterlee, B., Hug, F., & Dick, T. J. M. (2021). Quantity versus quality: Age-related differences in muscle volume, intramuscular fat, and mechanical properties in the triceps surae. *Experimental Gerontology*, 156, 111594. <https://doi.org/10.1016/j.exger.2021.111594>
- Pugh, K. G., & Wei, J. Y. (2001). Clinical implications of physiological changes in the aging heart. *Drugs and Aging*, 18(4), 263-276. <https://doi.org/10.2165/00002512-200118040-00004>
- Scanlon, T. C., Fragala, M. S., Stout, J. R., Emerson, N. S., Beyer, K. S., Oliveira, L. P., & Hoffman, J. R. (2014). Muscle architecture and strength: Adaptations to short-term resistance training in older adults. *Muscle and Nerve*, 49(4), 584-592. <https://doi.org/10.1002/mus.23969>
- Shumway-Cook, A., & Woollacott, M. (2012). *Motor Control: Translating research into clinical practice* (4th ed.). Lippincott Williams & Wilkins.
- Stauder, R., Valent, P., & Theurl, I. (2018). Anemia at older age: etiologies, clinical implications, and management. *Blood*, 131(5), 505-514. <https://doi.org/10.1182/blood-2017-07-746446>
- Timiras, P.S. (Ed.). (2007). *Physiological Basis of Aging and Geriatrics* (4th ed.). CRC Press. <https://doi.org/10.3109/9781420007091>
- Toogood, A. A., O'Neill, P. A., & Shalet, S. M. (1996). Beyond the somatopause: Growth hormone deficiency in adults over the age of 60 years. *Journal of Clinical Endocrinology and Metabolism*, 81(2), 460-465. <https://doi.org/10.1210/jc.81.2.460>
- Vijg, J., & Wei, J. Y. (1995). Understanding the Biology of Aging: The Key To Prevention and Therapy. *Journal of the American Geriatrics Society*, 43(4), 426-434. <https://doi.org/10.1111/j.1532-5415.1995.tb05819.x>
- Viña, J., Borrás, C., & Miquel, J. (2007). Theories of ageing. *IUBMB Life*, 59(4-5), 249-254. <https://doi.org/10.1080/15216540601178067>
- Wilkinson, D. J., Piasecki, M., & Atherton, P. J. (2018). The age-related loss of skeletal muscle mass and function: Measurement and physiology of muscle fibre atrophy and muscle fibre loss in humans. *Ageing Research Reviews*, 47, 123-132. <https://doi.org/10.1016/j.arr.2018.07.005>
- World Health Organization. (2015). *World report on ageing and health*. World Health Organization. <https://apps.who.int/iris/handle/10665/186463>

LIST OF PICTURES

Figure 1.3.1 Myths and stereotypes about aging and older adults. Adapted from Bouchard, D. (2021). Exercise and Physical Activity for Older Adults. Human Kinetics.

Figure 1.3.2 Projection of the population structure in the USA from 1900 to 2050. Adapted from World Health Organization data.

Figure 1.3.3 Projection of the population structure in the EU from 2008 to 2040 in percentages. Adapted from World Health Organization data.

Figure 1.3.4 Magnetic resonance images showing the thigh muscles. Adapted from Yoshiko, A., Hioki, M., Kanehira, N., Shimaoka, K., Koike, T., Sakakibara, H., Oshida, Y., & Akima, H. (2017). Three-dimensional comparison of intramuscular fat content between young and old adults. *BMC Medical Imaging*, 17(1), 1-9. <https://doi.org/10.1186/s12880-017-0185-9>

Figure 1.3.5 Association between strength exercises and daily functions. Obtained from FreeVector.

Figure 1.3.6 Interchange between menopause, andropause, adrenopause and somatopause in older adults. Adapted from Bouchard, D. (2021). Exercise and Physical Activity for Older Adults. Human Kinetics.

Figure 1.3.7 Three body systems that significantly affect balance and postural stability. Adapted from Shumway-Cook & Woollacott (2012).

Figure 1.3.8 An example of exercises suitable to improve strength, endurance and balance of older adults. Personal archive.

Figure 1.3.9 Practical guidelines on designing the living environment. Adapted from Imrie, R. (2004). From universal to inclusive design in the built environment. *Disabling barriers—enabling environments*, 279-284.



MODULE 1

INTRODUCTION TO AGE-FRIENDLY
AND INCLUSIVE ENVIRONMENTS

UNIT

4

TOWARDS HUMAN-CENTERED DESIGN

Zuzana Čerešňová • Veronika Kotradyová • Mária Šimková • Natália Filová



DESIRE

DESIGN FOR ALL METHODS TO
CREATE AGE-FRIENDLY HOUSING

DESIRE is a European project funded by the Erasmus+ programme.
Project number 2020-1-SK01-KA202-078245.

ISBN 978-80-227-5286-2



SPEKTRUM
STU

DESIRE will provide professionals in the building industry and home furnishings sector with the tools and skills to apply Design4All methods as an integral part of the design process, with the aim to create or adapt age friendly housing as a solution for the wellbeing, comfort and autonomy of the older adults or dependents at home.

The DESIRE training platform consists of six modules and 21 units.



Co-funded by
the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.



The present work, produced by the DESIRE Consortium, is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

PUBLISHED BY:

© DESIRE, 2023, www.projectdesire.eu

Slovak University of Technology in Bratislava by
Publishing house SPECTRUM STU, Bratislava 2023

AUTHORS:

Miguel Ángel Silvestre Botella	Juliana Louceiro
Zuzana Čerešňová	Soňa G. Lutherová
Carina Dantas	María Sánchez Melero
Natália Filová	Marta Martínez Navarro
Juan Carlos Bañón Guillén	Lea Rollová
Miroslava Hlinčíková	Matic Šašek
Míchal Kacej	Mária Šimková
Veronika Kotradyová	Helena Tužinská
Dean Lipovac	Ľubica Voľanská
Nastja Podrekar Loredan	

ILLUSTRATIONS:

Zuzana Čerešňová	Markéta Kučerová
Natália Filová	Lea Rollová
Míchal Kacej	Lenka Suláková
Veronika Kotradyová	Barbora Valábeková

GRAPHIC DESIGN:

Mária Šimková

TABLE OF CONTENTS

UNIT 4 – Towards human-centred design	3
4.1 Diversity of people in the built environment	3
4.1.1 Diversity of people	3
4.1.2 Impact of the environment on human well-being	4
4.2 Empathic and simulation exercises	5
4.2.1 Practical on-site survey and simulation in the built environment	5
4.2.2 Method of simulation as an improvement tool for design process	6
4.3 Human-centred design methods and principles	7
4.3.1 Body conscious design and neuroergonomics	9
4.4 Legislative frameworks and European initiatives	10
References	12

UNIT 4 – TOWARDS HUMAN-CENTRED DESIGN

This unit provides overview of the basic principles and methods focused on human-centred design approach (people at the heart of the design process) related to the built environment, such as the methods of Universal Design / Design for All, legislative frameworks, and European initiatives. It also includes

introduction to the basic principles of complex comfort/well-being based on body-conscious design and neuroergonomics. This unit aims at acknowledgment of human diversity and different needs and requirements of all people in the built environment, including older people and persons with disabilities.

4.1 DIVERSITY OF PEOPLE IN THE BUILT ENVIRONMENT

IN A NUTSHELL

People have various needs, body forms, abilities and preferences. To create a human-centred friendly environment for well-being, architects and designers learn about complex

and diverse human characteristics and needs, e.g. using guides, standards and schemes from ergonomics.

Accepting the diversity of people and the individuality of each person is a basic prerequisite for creating an inclusive environment. The challenge in architectural

design is to create such an environment that is not only responding to the functional needs of the people, but also reflecting their psychosocial, cultural, and other needs.

4.1.1 Diversity of people

To understand the diversity of people, it is essential to know the basic requirements and needs of a wide range of users of the built environment. The International Classification of Functioning, Disability and Health (ICF, WHO 2001) provides a terminological basis, including components and factors, that are important for the creation of an inclusive environment,

products, services and information and communication technologies. The ICF explains “Functioning and Disability” and “Contextual Factors”, thus a person's functional ability is understood as a holistic concept that includes all body functions, activities and participation in the environment and society.

The ISO GUIDE 71: 2014 (E) Guide for addressing accessibility in standards emphasizes the diversity of human abilities and characteristics, which change over a person's life and can be very diverse even among individuals of the same age group. The aim is to achieve universal

accessibility (based on the identification of peoples' needs and requirements), so in the fields of architecture and design, we recognize, for example, the spatial requirements of people with diverse mobility, people with visual impairments and people in wheelchairs.

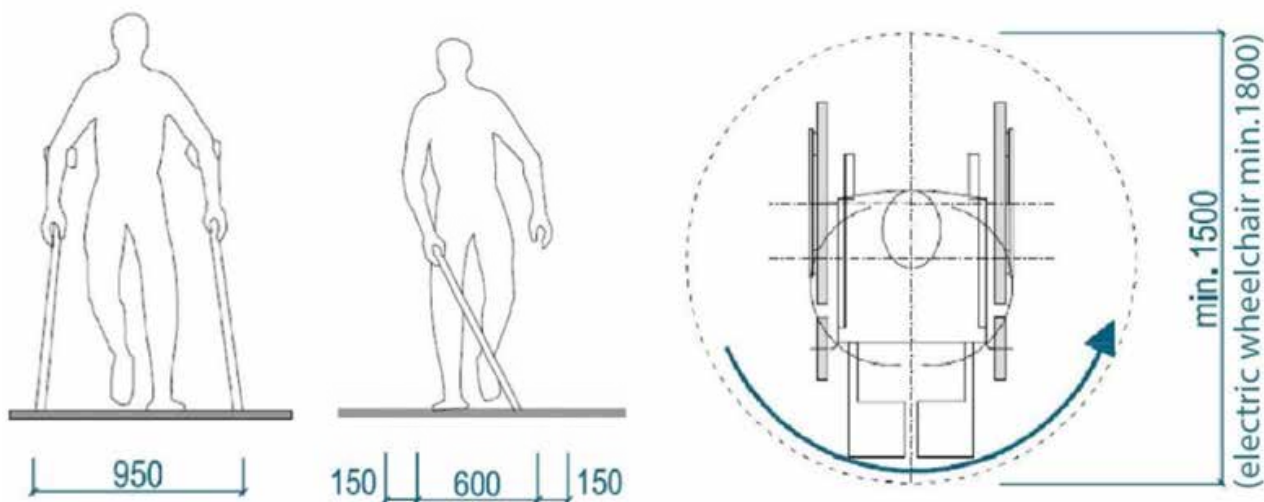


Figure 1.4.1 Examples of spatial requirements of a person (1) with mobility impairment, (2) with visual impairment, (3) in a wheelchair (Suláková)

4.1.2 Impact of the environment on human well-being

Psychology and neuroscience draw attention to the psycho-social aspects of the environment and examines the impact of the environment on people's health and well-being. Dak Kopec (2012) in his book "Environmental Psychology for Design" presents three basic levels of human-environment interactions: physical, social and biological. Eve Edelstein (2016) introduces the new term "neuro-universal approach", as a response to the diversity of human abilities in the cognitive area (sensory perception, memory, orientation skills, emotions, etc.).

An inclusive environment is not just about the physical accessibility of the built environment, but considers several factors, such as the psychological, social and cultural needs of a person in the environment, which are related to how a person perceives and feels (safe, tolerant, friendly).

To learn more about the diversity of people in the built environment and the impact of the environment on human well-being read the MODULE 3: Age-friendly built environment – ARCHITECTURE, Unit 1, Chapter 1.1.

4.2 EMPATHIC AND SIMULATION EXERCISES

IN A NUTSHELL

In order to understand the diversity of people and their requirements in the built environment, there are empathic and simulation exercises that help us to experience different peoples' situations. To cover heterogeneous groups of people, exercises should consist of:

- Simulation of a blind person's movement with a white cane
- On-site survey from the position of person in a wheelchair
- On-site survey by using a stroller with a small child or using heavy luggage.

The human-centred approach in the design process is based on cooperation with various people in participatory planning. Empathic exercises are based on three steps: (1) exploring

people/users, (2) immersing into other people's lives through a simulation experience, and (3) connecting with people/users (Kouprie, Visser, 2009).

4.2.1 Practical on-site survey and simulation in the built environment

Simulation exercises can be conducted in an existing built environment (Figure 1.4.2) or in an artificially created environment for a specific purpose, such as a simulation exhibition (Figure 1.4.3). These exercises can help students/visitors to test the accessibility, safety, perceptibility and usability of different spaces, information and products. Empathic exercises help to understand the interaction between people and the environment/society.

Simulation exercise shifts attention from visual perception of architecture to more multisensory experience of all components of the environment, including sound, tactile and olfactory characteristics of the space.

To learn more about the empathic and simulation exercises in the built environment read **MODULE 3: Age-friendly built environment – ARCHITECTURE**, Unit 1, Chapter 1.2.



Figure 1.4.2 Simulation exercises in the built environment – in cooperation with Slovak Blind and Partially Sighted Union (Čerešňová).



Figure 1.4.3 Simulation exercises in an artificially created environment – exhibition with different types of spaces (Čerešňová)

4.2.2 Method of simulation as an improvement tool for design process

When designers create products for people, it is vital to understand not only the anatomy of the human body but also other human characteristics to design more suitable products. The goal is to ease life and help people in everyday situations. Simulation exercises have proven to be crucial at the beginning of every design process. Especially when designers experience difficulties they have never experienced before. Exercises help designers to understand people's needs and

requirements and even increase the level of empathy. After these experiences, they are ready to propose better design solutions.

During our research project, students were able to try to design products for people with diverse needs prior and after using a simulation method. Most of them were surprised when they experienced new or unexpected situations. Exercises helped them to re-design their initial design ideas and increase their empathy level.

4.3 HUMAN-CENTRED DESIGN METHODS AND PRINCIPLES

IN A NUTSHELL

There are various methods to achieve a Human-centred design:

- Universal Design (origin in the USA, 7 principles)
- Design for All (origin in Scandinavia)
- Inclusive Design (origin in the UK, 5 principles)
- Body conscious design and neuro-ergonomics (design for well-being)

The diversity of people must be considered when creating the built environment, so that equal opportunities are given to a wide range of people in terms of the physical environment, products, services and information. Therefore, it is necessary to use methods such as Universal Design, Design for All, or Inclusive Design, which emphasizes a human-centred approach focused on people and their diverse needs, demands and abilities. Different terminology of methods with human-centred approach is related to the cultural-geographical and historical background.

Human-centred design is defined by the international ISO standard (ISO 9241–210:2010 Ergonomics of human-system interaction. Part 210: Human-centered design for interactive systems). It improves human well-being, user satisfaction, accessibility and sustainability. Human-centred design is moving the focus from the user to the person, it means considering the recipient not only as a user, but as a carrier of needs, desires, emotions that go beyond the most functional aspects, it is characterised as an innovation inspired by people.

THE BASIC FEATURES OF HUMAN-CENTRED DESIGN



Figure 1.4.4 Diagram with basic featured of human-centred design (Suláková according to IDEO, 2011)

DO YOU WANT TO KNOW MORE ABOUT...

Universal Design (Figure 1.4.5) does not provide the same solution for all (“one size fits all”) but emphasizes the need for flexibility and adaptability of the environment so that it can reflect the individual needs of a wide range of people with diverse abilities and constraints. A major milestone in the development of Universal Design was the formulation of Seven principles of Universal Design (NCSU, 1997) developed within the research centre at the North Carolina State University, coordinated by architect, designer and educator Ronald L. Mace. Universal Design, with its principles, defines the resulting characteristics of the product and the built environment usable for a wide range of people.

The **Design for All** (Figure 1.4.6) method was initiated by the European Institute for Design and Disability (EIDD) – Design for All Europe and has its roots in Scandinavian functionalism and ergonomic design. The EIDD Stockholm Declaration (2004) defines Design for All as design for human diversity, social inclusion and equality: “Design for All aims to enable all people to have equal opportunities to participate in every aspect of society.” Design for All method is a holistic and innovative approach in making the built

environment and products accessible and usable to a wide range of people.

The term **Inclusive Design** was used in the United Kingdom (UK) in the early 1990s, initially in connection with the “DesignAge” research project. Currently, the centre also uses the term “people-centred design,” that is, human-centred design. Inclusive Design, unlike Universal Design, is more focused on the overall creative process and user participation in this process. The Commission for Architecture and the Built Environment (CABE, now the Design Council) in the UK defines inclusive design as “the process by which an environment is planned, designed, managed, implemented and used with respect to the human being”. CABE is the creator of five principles and key concepts of inclusive design (CABE, 2006) (see Figure 1.4.7).

To learn more about the human-centred design methods and principles and their implementation in the built environment read **MODULE 3 Age-friendly built environment – ARCHITECTURE**, Unit 1, Chapter 1.3.

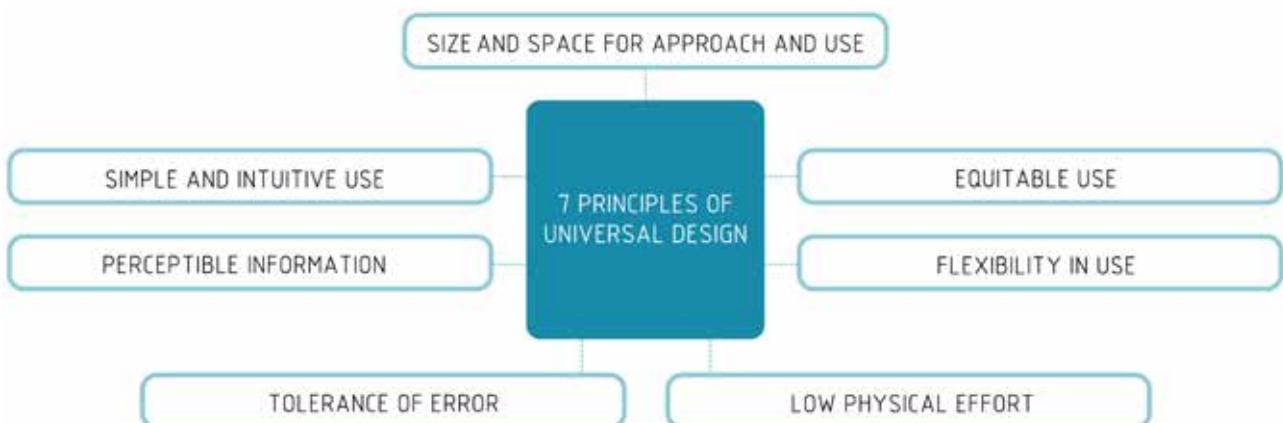


Figure 1.4.5 Diagram with seven principles of Universal Design (Suláková according to Connect Design, 2020)



Figure 1.4.6 Diagram visualising the quote “Good design enables, bad design disables”, Paul Hogan founding member of the EIDD – Design for All Europe (author of the scheme Lenka Suláková)



Figure 1.4.7 Diagram with 5 principles of Inclusive Design (Suláková according to CABE, 2006)

4.3.1 Body conscious design and neuroergonomics

Neuroergonomics is considered a combination of neurosciences and ergonomics where many new tools of quantitative methods to measure human responses arise in fusion with knowledge from social sciences. Thus, it gives complex and vital insights into the problematics of interaction between human beings and its habitat/built environment.

Thus, to handle the topic of ageing properly it is necessary to speak about prevention of civilization diseases already in youth and middle age. By exploring this topic in the previous research projects, we have found out two most important issues concerning built environment and its furnishings related to the most of civilization diseases – an **environmental stress and lack of movement**. The dynamisation of environment and reduction of environmental stress can lead to the prevention and reduction of civilization diseases impacts through aware

spatial solutions and choice of materials to be used. Bringing into living, working and public space, an appropriate measure of natural physical activity, freedom of choosing body positions, and a reduction of stressful environmental stimuli in the long term stay spaces, can contribute to a better public health. Complexity of the research topic is analyzed and summarized in the Module 4: Age-friendly built environment – INTERIOR, specifically in the 11 principles of spatial design for well-being (feeling of safety, prospect and refuge, contact with outdoor, possibility to switch between privacy and socialization, own territory, attachment, appropriate scale and proportion, body consciousness, appropriate environmental stimulation, more natural materials) whereas also sustainability and environmental issues concerning choice of materials and way of constructions are included.

4.4 LEGISLATIVE FRAMEWORKS AND EUROPEAN INITIATIVES

IN A NUTSHELL

Several legislative documents, standards, initiatives and organisations aim to support the creation of a universally accessible environment.

Binding legislative documents:

- UN Convention on the Rights of Persons with Disabilities (CRPD)
- Union of Equality: Strategy for the Rights of Persons with Disabilities

European standards:

- Building construction — Accessibility and usability of the built environment
- Accessibility and usability of the built environment – Functional requirements

European organisations:

- EIDD – Design for All Europe
- EuCAN – The European Concept for Accessibility Network

Inclusion and accessibility for all people with various needs and different ages become increasingly incorporated into various conventions, declarations, standards, and networks.

Many countries and cities are proclaiming to take steps to create an inclusive and friendly environment for all. These intentions are reflected in their legislative frameworks and also in various initiatives (unions, networks).

The UN Convention on the Rights of Persons with Disabilities (CRPD) is a fundamental international human rights treaty of the United Nations intended to protect the rights and dignity of persons with disabilities. It contains definitions including universal design, mentions principles of respect, non-discrimination, participation and inclusion in society, equality, accessibility, and other, characterizes accessibility and other important information. This convention emerged from



Figure 1.4.8 The map exemplifying the participative countries (light: signed the CRPD; dark: signed and ratified the CRPD) (Suláková)

several previous declarations and became widely accepted throughout the world. The European Union signed the CRPD in 2007 and ratified it in 2010. (United Nations, 2006).

Union of Equality: The Strategy for the Rights of Persons with Disabilities 2021–2030 (European Commission, 2021) follows the CRPD and other previous policies. Despite these several prior documents, the European Commission sees a need for improvement in this area because there are still many barriers and risks. In addition to these shortcomings, the Strategy for the Rights of Persons with Disabilities 2021–2030 also examines consequences of the COVID-19 pandemic. Similarly, to the CRPD, it discusses visions for accessibility, rights, autonomy, and equality. It focuses on the support of independent living: accessible, inclusive housing in the community. The document promotes appropriate community-based services instead of institutional services, which show many obstacles, thus they support deinstitutionalization (European Commission, 2021, pp. 10–12). The document further deals with inclusion in work, social protection, access to justice, education, healthcare, and other important areas of life such as culture and leisure activities.

Standards elaborated according to principles of accessibility and universal design are very important sources of information. Standards

consist of texts accompanied with illustrations detailing requirements for inclusive built environment. They are essential, namely, for architects and designers. Important standards often used in this training material are the Building construction — Accessibility and usability of the built environment (ISO 21542:2021), and mainly Accessibility and usability of the built environment – Functional requirements (EN 17210:2021), because this standard has binding character for the European Union.

There are also **European organizational networks** dealing with issues of inclusion, accessibility, and universal design. EIDD – Design for All Europe, established in 1993, defines itself as a unique international platform for different organizations with a common goal: a more inclusive Europe for everyone. This platform spreads information about Design for All, promotes diversity, inclusion, and equality, and organizes events supporting these ideas. Another organisation is EuCAN – The European Concept for Accessibility Network. It states similar values as accessibility, inclusion, and human-centred philosophy, and publishes documents that promote the mentioned ideas in multiple languages.

To learn more about the legislative framework and European initiatives read **MODULE 3: Age-friendly built environment – ARCHITECTURE**, Unit 1, Chapter 1.4.

REFERENCES

- CABE (2006). The principles of inclusive design. (They include you.) London, UK. Retrieved from <https://www.designcouncil.org.uk/sites/default/files/asset/document/the-principles-of-inclusive-design.pdf>
- Čerešňová, Z. (ed.) et al. (2018). Inclusive Higher Education. Prague: Nakladatelství Gasset – Allan Gintel, 2018
- Connect Design. (2020). Retrieved from <https://twitter.com/connectodesign/status/1239552469274853378/photo/1>
- Edelstein, E. (2016). Neuroscience and Architecture. In: Kanaani, M., Kopec, D. (eds). The Routledge Companion for Architecture Design and Practice: Established and Emerging Trends. New York: Routledge.
- EIDD Stockholm Declaration (2004). Retrieved from <http://www.designforall.europa.org/Design-for-All/EIDD-Documents/Stockholm-Declaration/>
- EN 17210:2021. (2021). Accessibility and usability of the built environment – Functional requirements.
- European Commission. (2021). Union of Equality: Strategy for the Rights of Persons with Disabilities 2021-2030. Luxembourg: Publications Office of the European Union. From <https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8376&furtherPubs=yes>
- Inclusive Design Toolkit. University of Cambridge. Retrieved from http://www.inclusivedesigntoolkit.com/GS_overview/overview.html
- International Classification of Functioning, Disability and Health – ICF, WHO (2001). Retrieved from <https://www.who.int/standards/classifications/international-classification-of-functioning-disability-and-health>
- ISO GUIDE 71: 2014 (E) Guide for addressing accessibility in standards
- ISO 21542:2021. Building construction — Accessibility and usability of the built environment.
- ISO 9241-210:2010 Ergonomics of human-system interaction. Part 210: Human-centered design for interactive systems.
- Kopec, Dak (2012). Environmental Psychology for Design. 2nd Edition. New York: Fairchild Books.
- Kotradyová, V. (2015). Komfort v mikroprostredí. [Comfort in a micro-environment.] Bratislava: Premedia, 325 p.
- Kotradyová, V. (2015). Dizajn s ohľadom na človeka / Humanizácia mikroprostredia. [Human-centred design / Humanisation of the micro-environment.] Bratislava: Slovak university of technology, 302 p.
- Kouprie, M., Visser, F. S. (2009). A framework for empathy in design: stepping into and out of the user's life. *Journal of Engineering Design*, 20(5), 437–448. <https://doi.org/10.1080/09544820902875033>
- NCSU (1997). Universal Design Principles. Retrieved from https://www.ahfc.us/files/3513/5753/1158/universal_design_principles.pdf
- Nussbaumer, L. L. (2012). Inclusive Design. A Universal Need. New York: Fairchild Books

Šimková, M. (2017). Simulačné obleky a ich význam pre oblasť dizajnu. [Simulation suits and their relevance to the field of design.] In: Ergonómia 2017: berieme ergonómiu vážne [we take ergonomics seriously]. Žilina: Slovenská ergonómická spoločnosť (SES, o. z.), 59-80. Retrieved from <http://ergonomicka.sk/SES/?p=1276>

Steinfeld, E., Maisel, J. L. (2012). Universal Design: Creating Inclusive Environments. Hoboken, NJ: Wiley & Sons

Tolja, J. (2003). Pensare col corpo, Zellig,

United Nations. (2007). Convention on the Rights of Persons with Disabilities. United Nations. Retrieved from https://treaties.un.org/doc/Publication/CTC/Ch_IV_15.pdf

LIST OF PICTURES

Figure 1.4.1 Suláková, L. (2022). Examples of spatial requirements of a person (1) with mobility impairment, (2) with visual impairment, (3) in a wheelchair.

Figure 1.4.2 Čerešňová, Z. Simulation exercises in the built environment – in cooperation with Slovak Blind and Partially Sighted Union.

Figure 1.4.3 Čerešňová, Z. Simulation exercises in an artificially created environment – exhibition with different types of spaces.

Figure 1.4.4 Suláková, L. (2022) according to IDEO (2011). Diagram with basic features of human-centred design.

Figure 1.4.5 Suláková, L. (2022) according to Connect Design (2020). Diagram with seven principles of Universal Design.

Figure 1.4.6 Suláková, L. (2022). Diagram visualising the quote “Good design enables, bad design disables”, Paul Hogan founding member of the EIDD – Design for All Europe.

Figure 1.4.7 Suláková, L. (2022) according to CABE (2006). Diagram with 5 principles of Inclusive Design.

Figure 1.4.8 Suláková, L. (2022). The map exemplifying the participative countries (light: signed the CRPD; dark: signed and ratified the CRPD.)



MODULE 1

INTRODUCTION TO AGE-FRIENDLY
AND INCLUSIVE ENVIRONMENTS

UNIT

5

COMMUNICATION SKILL AND RESEARCH
DESIGN ON AGE-FRIENDLY ENVIRONMENTS

Carina Dantas • Juliana Louceiro • Soňa G. Lutherová •
Miroslava Hlinčíková • Helena Tužinská • Ľubica Voľanská



DESIRE

DESIGN FOR ALL METHODS TO
CREATE AGE-FRIENDLY HOUSING

DESIRE is a European project funded by the Erasmus+ programme.
Project number 2020-1-SK01-KA202-078245.

ISBN 978-80-227-5286-2



SPEKTRUM
STU

DESIRE will provide professionals in the building industry and home furnishings sector with the tools and skills to apply Design4All methods as an integral part of the design process, with the aim to create or adapt age friendly housing as a solution for the wellbeing, comfort and autonomy of the older adults or dependents at home.

The DESIRE training platform consists of six modules and 21 units.



Co-funded by
the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.



The present work, produced by the DESIRE Consortium, is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

PUBLISHED BY:

© DESIRE, 2023, www.projectdesire.eu

Slovak University of Technology in Bratislava by
Publishing house SPECTRUM STU, Bratislava 2023

AUTHORS:

Miguel Ángel Silvestre Botella
Zuzana Čerešňová
Carina Dantas
Natália Filová
Juan Carlos Bañón Guillén
Miroslava Hlinčíková
Michal Kacej
Veronika Kotradyová
Dean Lipovac
Nastja Podrekar Loredan

Juliana Louceiro
Soňa G. Lutherová
María Sánchez Melero
Marta Martínez Navarro
Lea Rollová
Matic Sašek
Mária Šimková
Helena Tužinská
Ľubica Voľanská

ILLUSTRATIONS:

Zuzana Čerešňová
Natália Filová
Michal Kacej
Veronika Kotradyová

Markéta Kučerová
Lea Rollová
Lenka Suláková
Barbora Valábeková

GRAPHIC DESIGN:

Mária Šimková

TABLE OF CONTENTS

UNIT 5 – Communication skills and research design on age-friendly environments	3
5.1 How to do research on designing age-friendly environments?	3
5.1.1 Ethnology/Social anthropology and their research methods	4
5.1.2 Approaching the views of the clients (seniors and their caregivers)	5
5.2 The basic research methods	7
5.2.1 Participant observation	8
5.2.2 Ethnographic interview	10
5.2.3 Participatory research methods	14
5.2.4 Reflexive research techniques	18
5.3 Communication in plain and non-discriminatory language	19
References	21

UNIT 5 – COMMUNICATION SKILLS AND RESEARCH DESIGN ON AGE-FRIENDLY ENVIRONMENTS

This unit explores the ways of including the clients' perspectives and needs in the designing process. They can be approached through the means of social-scientific research methods. There will be an emphasis on qualitative and participatory research methods such as the interview, participant observation, or other reflexive techniques. The participants will learn how to approach the views of their clients (seniors and their caregivers, relatives

etc.) and communicate with them in plain and non-discriminatory language. The goal of participation methods is more than just obtaining output data that will lead to better design of the environment. Participation leads to empowering, changing the role of older adults from researched subjects to development actors and even to partners in influencing design.

5.1 HOW TO DO RESEARCH ON DESIGNING AGE-FRIENDLY ENVIRONMENTS?

As clients' requirements get more particular and diversified, research becomes a more critical part of the design process. However, designers and architects do not have to find new research methods from scratch, but they can get inspired in other fields of practice, including anthropology. As explained in Unit 2 of this module, anthropology has a particular perspective on human lives, societies, and culture. Hence, it is well acquired to study people and their everyday lives.

Moreover, the specifics of participation, used in planning and designing, can be orientation towards spatial and functional outputs, or the need and at the same time the possibility of visualization. If we need to discuss the spatial aspects of design (both in the case of furniture, its placement, and in solving the layout of internal spaces, but also, for example, the distribution of functions in public space), we need to work with such materials and methods that take this spatial aspect into account (maps, diagrams, photos, walks in specific places...).

5.1.1 Ethnology/Social anthropology and their research methods

IN A NUTSHELL

Social anthropology or ethnology are interdisciplinary social scientific fields based on holistic research (studying research phenomena as whole) focused on explaining the diversity of human cultures. They are rooted in the “bottom-up” perspective, exploring individuals' everyday lives and

identities as members of particular social groups (such as older adults). The research methods of social anthropologists and ethnologists are based on longitudinal qualitative research while using specific research methods such as participant observation or in-depth interviews.

To answer the question of how to do research on designing age-friendly environments, we seek inspiration from the bottom-up perspective as well as the “giving voice” perspective, which means using the research principles of social anthropology or ethnology. Giving voice perspective can range from listening to the voice of the given community to the possibility of co-decision making in different contexts. These principles are a part of anthropology as a holistic, interdisciplinary science combining the knowledge of several natural and social sciences to explain the diversity of human cultures.

Through research on a given community, the researcher ascertains the identity of members of different communities, e.g., village, town, community, company, age group etc. By understanding the specificities of a given group, anthropology can help prevent ethnocentric and hostile expressions, as well as suggest ways in which cultural agreement can be reached. And again, this recognition of identity can happen through inquiry and listening, or even through participation in co-decision making (however difficult it may be).

The research methods of social anthropologists and ethnologists are based on field research, mostly longitudinal qualitative field research: mainly through participant observation and interviewing, they seek to understand a given

culture, in a given time and place. In addition, he relies on historical and archival sources as well as contextual information from the media. The quantitative research methods are just complementary.

Ethnographic research is characterised primarily by the researcher's immersion in the local community and its everyday life, often through participant observation, which allows for a deeper understanding of local culture, customs, and social dynamics. Such research tends to be longitudinal – meaning that the researcher may spend anywhere from several months to several years doing it, allowing them direct access to authentic experiences, practices, and other aspects of the culture under study that would otherwise remain inaccessible.

The particular society is studied in its own environment, and the account of the community is exhaustive, inclusive, and comprehensive – usually including a brief history, a description of the environment or habitat, as well as the social structure and organization of the population under study. It thus aims to provide a rich narrative description, allowing its various aspects to be explored and interpreted. This all happens with an emphasis on its own point of view, especially through the key anthropological methods of participant observation and in-depth interviews.

For designers, it might be very fruitful to engage in social research and combine their intuitive approach with gaining a deeper insight into the social and cultural processes (Clarke, 2011). This will ensure their immersion into the perspectives, needs, and motivations of their clients. According to design anthropologist

Alison J. Clarke: “The shift towards cultural sensitivity through ethnography, while underpinned by a market-driven agenda, could optimistically be construed as a move towards socially responsive design,” as anthropological methods have the capacity to generate effective social innovations (Clarke, 2011, 11).

5.1.2 Approaching the views of the clients (seniors and their caregivers)

IN A NUTSHELL

What is common is never universal. People often decide on the basis of “unwritten rules”. The way all members of any community refer to such rules is always site-specific and contextual. Rarely do speakers have cultural mediators at their disposal in translation of

what remains in between the lines. One of the ways to get a clearer message is to ask ethnographically, as if from the viewpoint of the insider. In the following section, you will find basic rules and principles on how to interview people ethnographically.

The ground principle in approaching the view of the clients is the emic approach. The emic approach consists in interpreting cultural phenomena from the perspective of the person of the subculture under study. This approach examines how people think and categorize in their own culture and is therefore also called natively oriented. It is important for the researcher to have a key cultural consultant(s) from the community studied, who can raise important issues for the community as well as represent the community's ideas¹. This is not relevant only when researching a particular group of people in a “remote place somewhere in the world” but it is also essential when addressing a new group of clients, and trying to understand their needs and adjust to their perspectives.

Giving voice perspective has the aim to adequately capture diversity and at the same time the universality of experiences. The aim is to bring to the forefront the perspectives of persons too often marginalized and silenced within the society (Ashby, 2011). To give an example, in the case of older adults, very inspiring can be the perspective of human becoming (Parse, 1981, 1998). According to this perspective, humans are not reduced to parts. Rather, people are appreciated as unitary wholes who relate in a distinctive manner and are free to choose their way within the circumstances of their lives. Researchers guided by the human becoming theory believe that only the person living the life can describe its quality (Parse, 1994) and that this applies to all persons – even those living with dementia: “concerns about confusion, memory changes, and confabulation are not relevant from the human becoming perspective since the person's experiences and descriptions of reality are honored and accepted” (Parse, 1996). This seems to be very important, because even in the

¹ The opposite principle is the etic approach. It consists of the interpretation of cultural phenomena from the perspective of the anthropologist. In this case, the researcher opens up the topics and creates the categories that they think are important. This approach is also defined as scientifically oriented.

recent past, we still knew more about opinions and attitudes towards older adults than about the diversity of opinions and feelings of older adults themselves.

This approach, governed by ethics and respect for one another, needs to be at the core of design practice. Regarding this, we might find inspirations in basic anthropological fieldwork methods like the following: The basic guidelines when talking to an interview partner seem to relate to introducing yourself, using a comfortable tone, making eye contact, trying to avoid the challenges/traps of hierarchical position caused by the interview situation, and not talking down to the interview partner/client, being comfortable with the so-called “horror vacui” – long pauses and finally, with displays of emotion. Understanding of the perspective is possible only if the actors create a communicative space for clarifying questions. Communicative space is an object of negotiation by all the participants. Open ethnographic questions thus built bridges between previously unknown territories – be it a foreign community or new clients in the design process.

One example of using the ethnographic methods when approaching the views of the clients presents the study focused on exploring ergonomic problems and coping strategies in designing the kitchen space. Its aim was “to develop a holistic approach to understanding person-environment fit (Peace, Wahl, Mollenkopf, & Oswald, 2007) leading to informed design practice” (Maguire et al. 2014, 73). The authors interviewed 48 older



Figure 1.5.1 (Valábeková, 2022)

adults about their current kitchen, how they are satisfied with using it, and possible problems in the kitchen. They also used the observations of activities when older adults performed typical tasks in the kitchen. Another method could rest in asking them to keep a diary of their day-to-day activities. From the bottom-up perspective, the study focuses on coping strategies and solutions addressing the problems related to restriction of sight, hearing and movement, as suggested by older adults.

DO YOU WANT TO KNOW MORE ABOUT...

A special position belongs to people living with dementia. “The view that persons living with dementia are empty shells may account for the failure of many researchers to include the person's perspective.” (Moore & Hollett, 2003) The idea that might be inspirational when designing and creating the space for this particular group of people is that persons living with dementia are able to actively participate in qualitative studies, responding to open-ended questions in a meaningful way.

Thus, the critical social gerontologist and the practitioners in the care area have begun to challenge the idea of losing personality and to recognize the importance of the person's perspective of quality of life. However, the assumption is still widespread: the person's inability to understand and make choices in one area is often generalized and also includes decisions in all areas (Post et al., 1995). Marson et al. (1994) note that rather than asking “is he/she competent?”, it is appropriate to ask “is he/she competent to do X in Y context” (p. 8).

5.2 THE BASIC RESEARCH METHODS

IN A NUTSHELL

The designing process as a creative endeavour very much relies on designers' ability to look, listen, notice, learn and immerse into the experiences and challenges of people (Suri, 2011). Today, it has become a well-established practice to ask anthropologists or psychologists to take part in the designing teams. If this is not the case, designers still can

acquire their methodologies, approaches, and research techniques to inform and inspire the designing process. These are mainly oriented on qualitative research methods as they might easily become a viable part of the design process, such as participant observation, ethnographic interviews, or participatory research methods.

Qualitative research involves the collection and analysis of data that are descriptive and relate to phenomena that can be observed but not necessarily expressed numerically (quantitatively). In anthropology and other social sciences, this mainly involves data collected through participant observation, videos, photographs, participant interviews, or other texts. Through these methods and techniques, qualitative researchers explore and interpret how individuals within a particular society understand their social reality.

Ethnography, grounded theory, or discursive or narrative analysis are some of the frequently used qualitative methodologies in anthropology.

As opposed to qualitative research, quantitative research involves the collection and analysis of data that can be expressed numerically. It is generally used to look for patterns, averages, predictions, as well as cause and effect relationships between the variables under study. The goal of quantitative research in anthropology is to develop and use mathematical models, theories, and hypotheses to investigate certain social phenomena. The process of measurement is central to quantitative research because it provides the essential link between empirical observation and the mathematical expression of quantitative relationships.

In the following section, we will dive into anthropological research tools and methods, that might be included in design process.

5.2.1 Participant observation

IN A NUTSHELL

Participant observation is a key anthropological research method aimed at collecting qualitative data. It is a major component of field research and, in a broader sense, synonymous with it, as it represents an attempt to directly experience the sociocultural life under study. It thus involves not only observing the various activities,

events and interactions of the communities under study, but also actively participating in their course. Participant observation – as a method providing deep insight into the everyday life of the subjects – might easily become a fruitful approach in the design process.

Doing participant observation does not just mean watching people work, but also trying it out with them – participating in that work. In this way, anthropologists leave the position of distant “spectators” and try to take on the role of local inhabitants. Ultimately, such practice allows one to get closer to the perspective of the populations under study, their practices, and ideas in action.

The immediate product of participant observation is detailed notes or (audio)visual records, such as photographs, films, maps, or drawings, that capture elements of the observed phenomena.

The first is to set the objective: are we exploring a topic or way of being (social)? Are we looking for data collection, or the perspective of the observed? What contexts are we identifying? What variables do we refer to in our reasoning? If we focus not on the meaning but the use of a cultural phenomenon in its time and space – we don't need to ask directly why. If the goal is to capture the so-called commonplace, we focus on the everyday routines that we do more automatically than reflexively. The rules we need to discover are unwritten and for the participants may seem obvious. The question about utility leads us to implicit knowledge of the respondents.

Orientation in space forms the cornerstone of a general sense of security. Space itself structures the predispositions of the one who expresses himself, both the issues and the modes in which he expresses himself. Although space does not guarantee anything, it has a significant impact on the creation of a symbolic room for communication, i.e., the establishment of connection. People move through a space, but it is only when they go through an experience together in that space that they attach meaning to the place, and it becomes a place of memory for them. Repeated shared experience is the basis for genius loci. Humans, like many other animals, renew their territoriality and inscribe it in their bodies, going through an embodied experience. In every culture, people define both the axis of the places they inhabit and the places whose meaning is both contested and perhaps transformative. The referential axis can be the site of encounters, rituals or even places of silence. It is often impossible to return to the places that people have visited. One technique is to listen attentively to the recollection over a hand-drawn map. We can begin with the global level of areas that the conversation partner considers as appropriated. In countries they indicate their spots, perhaps towns, villages, parks. They may designate language areas. They zoom in the maps gradually through the levels of the routes taken, until they reach the level of local social groups and finally their own dwellings.

After you describe the sites – how the social group uses them, what meaning they attach to them, how their functions change in the course of the activity, focus more on observing time and temporal dimension of spaces used. Optimally, you would write down the observation every day of the week. We are interested in experiencing time, especially the processes of getting to a routine. Just as certain boundaries are fixed in space, they are also fixed in time.



Figure 1.5.2 (Pauliniová, 2022a)

If we can't be with the people observed for a long time and take part in their own time and place, we let ourselves be guided by specific examples. (Could you please describe to me your daughter's place? Could you describe to me the last party?)

By asking about typical events we get frequently used generalizations of the interview partners. (Would you describe to me a typical party here in your house?)

Ideally, we get a tour of the place and lead a tour-type conversation. (Could you please give me a tour of your place? If I were here with you last time you had a visit, tell me please what it looked like?)

We can also ask for a guided tour of the place/ area map. (Could you please draw me a map of the village as you know it and specify what usually happens where? Could you tell me more about these places? How did it look like last year?)

Finally, we can ask about the quality of the relationship to the place. (What is it like to live/work in this place?)

The concept of “grand tour” (Spradley, 1980, 77–78) comes from the common experience of having someone show us around their house, place of business, or school. We can expand the idea of a grand tour to include almost every aspect of the experience in addition to spatial location. We can identify features that will help you in formulating initial grand tour questions and making the observations. This will give a total of nine major dimensions to every social situation.

When observing physical activities, there are several methodologies that work with categories of behaviour in space. We can use such methods, for example, in the initial phase of participatory surveys, the goal of which is to evaluate the rate of use of space, occupation of space by different groups, their number, intermingling, spatial conflicts, visibility in space, etc. It is possible to capture, for example, different age categories and different ways of moving (on foot, on a scooter, with a bicycle, with support, e. g. with crutches, in a wheelchair, with a stroller, etc. In this case, it is a quantitative survey, where the output is maps or spatial graphs. It is more than appropriate to combine such survey with qualitative research (questionnaires, on-site interviews). The combination of methods can serve as a basis for concrete planning with the involvement of people (see part 5.2.3).

EXCERCISE

Make a figure. For example, go to neighborhood near the senior house and observe the public spaces. The following dimensions can serve as guides for the participant observer.

1. Space: the physical place or places
 2. Actor: the people involved
 3. Activity: a set of related acts people do
 4. Object: the physical things that are present
 5. Act: single actions that people do
 6. Event: a set of related activities that people carry out
 7. Time: the sequencing that takes place over time
 8. Goal: the things people are trying to accomplish
 9. Feeling: the emotions felt and expressed
- Make notes and combine them with short videos or photographs.

5.2.2 Ethnographic interview

IN A NUTSHELL

Semi-structured (in-depth) interviews are the basis of qualitative anthropological research. They are characterized by a pre-prepared set of thematic questions (therefore the term semi-structured) that are asked to respondents in the field. Their flexibility is also an important characteristic—the outlined headings roughly guide the flow of the interviews, but also allow for the discovery of new aspects of the topics under investigation or entirely new topics through freer narratives

by the male and female respondents as well as through sub-questions by the researchers. The conversation usually takes place at the research site and face-to-face. Some form of interview is usually an intrinsic part of building up a client/designer relationship in various stages of design process. However, its form and structure can be easily improved by including the principles of ethnographic interview.

When doing the semi-structured interviews, when we go more into depth the subject of the conversation might be practically anything that is close to the respondents' and interviewees' hearts. For example, the interview can be focused on various socio-cultural practices, ideas, attitudes, or experiences... Descriptions of the details of social life and the connections

within it, which are at first largely hidden, obscure or unspoken, can be brought to the surface through this method. This way, not only do we enrich ethnographic-anthropological knowledge, but we also might get useful information which can guide us in the design process.



Figure 1.5.3 (Vořanská, 2021)

To know how to ask questions ethnographically is to unlearn the common way of asking questions. The following exercise serves as a way of realizing what kinds of questions people usually ask and then helps to make the shift to an ethnographic way of asking. Workshop participants are divided into groups of three, with one asking (A), the second answering (B), and the third (C) writing down the questions verbatim. A asks B different questions to find out more about his eating habits. C writes down each question on a separate sticker note. After about 10 minutes they are asked to group together questions which are formally similar. They can also describe how they felt with each question. The exercise appears trivial at first glance, but has several non-trivial implications. Typically, participants see how often they ask closed questions that confirm or refute the questioner's opinion, form a "firing of questions", generating lots of brief answers. The most important shift happens when each group discusses how to transform closed questions into open questions. They observe how the reformulation of a question can change its typological classification (e.g., from unpleasant to pleasant, from personal to general, from clueless to targeted, from helpful to open).

By practicing to open the questions, people usually step out of affirming their own biases. At first, each group usually creates its own type classification of the questions asked such as closed, open, probing, leading, controlling, direct, indirect, either/or. Another type of classifier could be based on emotion the question evokes: joyful, painful, pleasant, unpleasant, targeted on "the best", justified using "why", or enumerative. Usually, the question types lead to the underlying narrative or to a stereotype of the interviewee:

a) Closed: "Do you like cooking? Do you count your calories? Do you like sweets? Do you eat bread? Do you have any intolerances?" Such questions refer to a particular food stereotype rather than to the person's actual diet. Moreover, whether in the case of yes

or no answer, responding requires follow-up questions.

b) Either/or: "Do you prefer wine or beer?" This type of question is usually referred to by participants as black and white. It excludes a whole spectrum of other answer choices in advance. Nevertheless, this polarity type is often asked, giving false freedom. Instead, an ethnographer would ask, "what kinds of drinks are usually served in your home"?

c) WH questions (who, what, when, where, with whom, i.e.): "Where do you eat? What do you cook for dinner?" which at first glance appear open-ended, but nevertheless provide a partially predefined answer and also do not do without a follow-up question for context.

d) "Why" question is mostly perceived by the participants as reproachful and may take a defensive stance towards it. People do not routinely give reasons for their actions and in answering "why" they will always give only a partial answer anyway. Conversely, when asked openly about a given area, they give a broader explanation.

e) "The most" questions tend to self-confirm a bias. Instead of asking what is your most preferable vegetable, it is more effective to ask an open question: What kinds of vegetables do you usually get?

f) Open questions give room for detailed open-ended answers seeking understanding. The philosophy of open questions stems from "techné maieutiké" – midwife's art. Socrates followed his mother's – the midwife – way of bringing out the ideas that are intrinsic to the person with whom he is in dialogue. In the dialogical type of questioning, people increase their mutual sensitivity, which develops understanding of different concepts. The aim of this type of conversation is to reveal the broader contexts and assumptions of the speakers, and to get to the language of a particular "tribe" (group of people).

The topic of diet is so common that it allows people to play around with formatting questions freely. They first need to experience the absurdity of commonly asked questions to realise that they are not really asking, but merely confirming or verifying their own assumptions. Because of the openness of the questions, the ethnographic interview is called an in-depth interview. After anchoring the need for open-ended questions, the group can create questions about other domestic or local routines.

Different types of questions are appropriate at different stages of the interview. Very effective and suitable for the introduction (non-threatening and initially easy) are, for example, questions about procedures (What does your day look like? Where do you go to the store? What do you do when you arrive at the clubhouse? How do you choose your route?). Such questions are a suitable starting point for more demanding questions.

DO YOU WANT TO KNOW MORE ABOUT...

Chris Voss and Tahl Raz (2016) effectively summarize the procedure in this vein, that is commonly used in qualitative interviews:

- **effective silence:** silence may encourage the counterpart to open up;
- **short encouraging** “yes, um, aha” may signal attentive listening;
- **mirroring:** echoing of the other party's phrases deepens communication;
- **naming:** describing the concerns of the other party leads to their understanding;
- **paraphrasing:** repeating in one's own words is a validation of comprehension;
- **summarizing:** pronouncing the meaning nourishes partnership in conversation.

Participation by asking is effective when people calibrate the questions, i.e., tailor them. The real beauty of calibrated questions is that unlike clear statements, they do not make anyone a target for counterattack.

They do not create a potential conflict by giving the person on the other side a strict announcement of a problem. Rather, they expand the knowledge of the nature of the problem (Voss & Raz, 2016, 147). In fact, even while being questioned, people constantly reflect three basic feelings: security, control and autonomy. Instead of closed questions “Do you like it?” the more open-ended question “How do you see it?” instead of “Why have you done it?” the calibrated question “Please tell me about what made you do it?” If the conversation partner exerts pressure, a question is effective: “What do you think I should do?”, “How could we solve this problem?”, “What is our goal?”, “How can I contribute to this?” Such short, calibrated questions not only calm the situation, but also help participants to find solutions.



Figure 1.5.4 (Pauliniová, 2022b)

5.2.2.1 ORAL HISTORY

The oral history method is a particular kind of ethnographic interview that works with human memory and personal memories. Although it is often characterised as method of conducting historical research through recorded interviews between a narrator with personal experience of historically significant events and a well-informed interviewer, the German historian Alexander von Plató explains that: „One of the main points in the discussions about oral history is the misunderstanding that oral history is mainly a method of looking for special events, a method to reconstruct facts and figures. However, I think oral history has its main strengths in analyzing the subjective dimension, the experienced, the “digested” history by individuals, groups, generations, sexes, and so on...” (Vaněk, 2013, 118).

Unlike classical history, oral history does not try to find out the facts so that researchers can then construct how something really happened. It is focused on the interpretation of the person who tells the story, his opinions, comments and the ways in which he decided what to say and what to leave out of the story. What is important is the uniqueness of what the narrator experiences and how he describes the remembered events (Nosková & Kreislová, 2019).

It is thus clear that the primary goal of researchers working with this method is to obtain individual / subjective statements about a certain historical period, phenomenon, or event from the people who survived it. The increased quantity makes it possible to indicate certain tendencies in the studied phenomena or historical events (Vrzgulová, 2016, 23; Benovska-Sabkova & Vrzgulová, 2021).



Figure 1.5.5 (Veselský, 2021)

5.2.2.2 BIOGRAPHICAL INTERVIEWS

Biographical interviews as part of ethnographic interview research methods are focused on the life story or a narrative as told by the individual person. The narratives stand between the macro-, meso- and micro-levels of society: it reflects the experiences of those who are part of the macro- or meso-structures and indicates how they can deal with them. It allows an insight into the stability of these structures from a long-term perspective. In this way, it can indirectly draw attention to susceptibility to social change. Thus, they represent human experiences as captured in memories, and especially in experiences from the recent past retold in the form of a story.

To collect the life stories, we use different methods: fixed guidelines (similar to semi-structured interview); flexible guidelines and narrative stimuli. Situations may occur when in-depth questions that were only planned for a later point in the interview can also be brought forward. Using flexible guidelines means higher concentration of the interviewer, so interviewer training is usually necessary. Targeted discussion stimuli on individual life are based on the decisions of the interviewer. However, the task of the interviewer is primarily to get the narrator to tell the story as a coherent narrative. The course of the interview is largely open and the interviewee is given enough time to talk about particularly crucial points in his or her life.

Biographical narratives contain two basic levels: on the one hand, they reflect the historical and social reality, on the other hand, the subjectivity of their creators. In this case, however, the question of whether the memories of older adults are “correct” or “true” is not considered relevant in the sense of biographical research. What is important is what they express about the state and what they mean for the situation of the old person in the present (Jamieson, 2002, 24).

5.2.3 Participatory research methods

IN A NUTSHELL

The idea behind the participatory research methods is that a researcher can gain insight into community-specific issues through actively working with the people – the community. In other words, participatory research (PR) engages those who belong to the people who are the focus of the research. Instead of the objects of traditional research, PR collaborates with stakeholders, the community, constituents, and end-users

in the research process (Vaughn & Jacques, 2020). They become our partners and collaborators in ethnographic projects and through the lens of these methods, we can engage people in design processes in different ways and at different scales. Thus, it allows us to involve the community in defining user needs through the whole process of the research.

Knowledge is power and it should be equally delegated to all of the participants during the whole process of research (Arnstein, 1969). Hence, we can consider research as an emancipatory and empowering tool. The process of the research can activate participants of the research and therefore bring them the ability to carry change shaped by themselves – by the community. They gain the opportunity to shape their future, embrace the changes, and together empower the community. The method of Participatory action research reacts to the problems of real life and is realized by the community, with the community, or for the community. Projects of the participatory action research are designed to raise requests and critiques from the “marginalized”, from the bottom (Fine & Torre, 2006, 255).

There are several methods using the participatory approach like various kinds of walking interview, sensory walks, soundscape walks, transect walks etc.

Walking interview or go-along (Kusenbach, 2003) is a method of interviewing where walking is explicitly the focus. The method can be very helpful if you work exploratively at the start of a project, but can also be used if you want to test some preliminary results in the middle or end of a project.

Both the surroundings and the actions of our interview partner(s) are actively involved in the process. Thus, the method is a mixture of interview and participant observation, as we are talking to our interview partner(s) and at the same time we are observing their actions and asking about their actions and ideas associated with them. Being present in a certain environment offering relevant context enables us to uncover series of thoughts contributing to deep insights associated with the environment. For this reason, the walking interview is particularly useful if you want insight into people's relationship to an environment or an object, e.g., at workplaces, at home and in public spaces.

You can also create a semi-structured interview guide or questions based on the place where you will conduct the walking interview or even after the walking interview, if you plan to gain deeper insights in a following semi-structured interview.

“Transect walks are a participatory exercise, where members of the community, planners and other municipality representatives walk through different areas of the neighbourhood, interviewing passers-by and drawing a map with observations of characteristics, risks and existing solutions after the walk.”

(<https://parcitypatory.org/2017/10/29/transect-walks/>) The walks usually take the route from point A to point B and their intention is to transect or cross a community space/place. Their aim is to describe the location and distribution of landscape, its resources, infrastructure, different activities taking place within a community, including social interaction etc.



Figure 1.5.6 (Pauliniová, 2022c) – alebo prechádzka z Krížnej?

Sensory walking is a technique inspired by various sources. Rajko Muršič (2019) describes the process: “A group of people follows the leader of the walk and concentrate on any sound they might perceive, walking or standing, obeying strict rule not to talk, write, take photographs or do anything else than listening and moving.” One example presents the soundscape walk, based on a walk with a focus on listening to the environment. Its main source is soundscape experience in soundwalk. Another example that might be interesting when working with older adults is the sensobiographic walk. “It is another essentially very simple research technique: a pair of a younger and an older walker walk a path meaningful for a leader of the walk. In contrast to sensory walk, by walking, or occasionally standing at spots important

for them, they talk to each other. Before the walk, the researcher who accompany them, asks them to pay attention and use all senses during the walk, and reflects them on the spot. In these cases, the sense of smell, another typically neglected sense, very often becomes the trigger of memories. Whichever senses are employed in specific moments, they connect individuals, no matter of their age, with they own bodily memories, which are basically holistic memories of specific places and environments” (Muršič, 2019).



Figure 1.5.7 (Pauliniová, 2022d)

Despite their seeming simplicity, the participatory methods might be challenging: the problems occur when trying to find representatives from all parts of a community, sometimes they might have contradictory perceptions of the same subject. The participatory methods require a lot of motivation and willingness, as they are rather time-consuming.

Citizen science is a broad term, covering that part of Open Science in which citizens can participate in the scientific research process in different possible ways: as observers, as funders, in identifying images or analysing data, or providing data themselves. This allows for the democratisation of science and is also linked to stakeholders’ engagement and public participation².

² <https://ec.europa.eu/digital-single-market/en/citizen-science>

Community-based participatory research is applied across multiple disciplines and its structure can be used by citizen science to upscale local approaches of problem solving, “because citizen science emerged through individual environmental activism that is not limited by geography”³.

Frerichs et al.⁴ identified 5 areas of synergy between systems science and community-based participatory research—paradigmatic, socioecological, capacity building, co-learning, and translational. These synergies provide a rationale for integrating systems science and community-based participatory research, with the central concept revolving around qualitative problem-structuring and systems mapping – a process that prioritizes research questions for computational modelling to delineate the complex pathways.

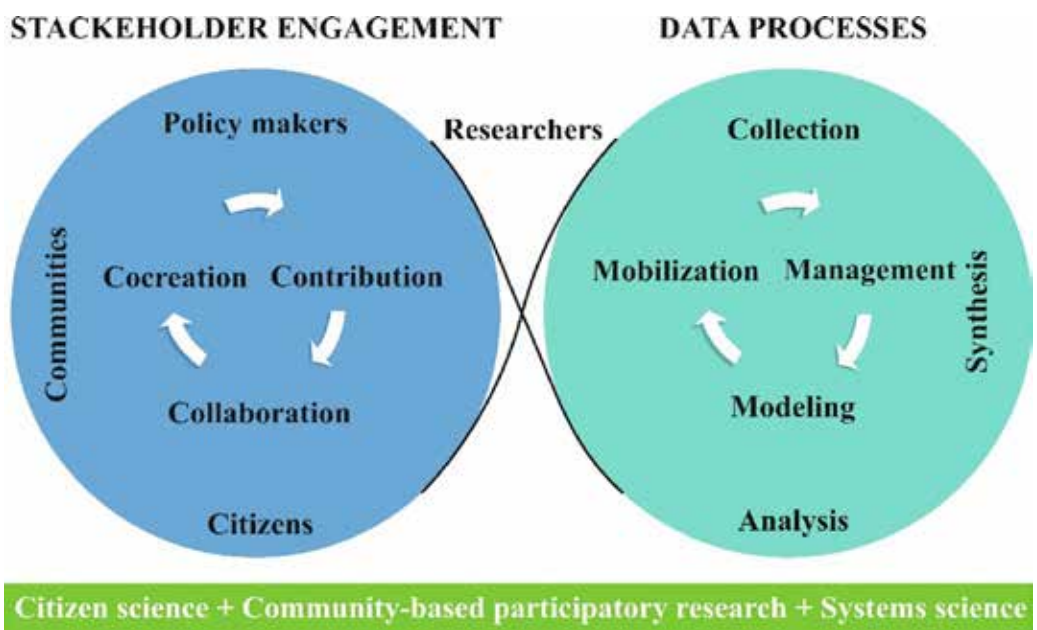


Figure 1.5.8 SMART Framework (SHINE2Europe)

³ Katapally TR. The SMART Framework: Integration of Citizen Science, Community-Based Participatory Research, and Systems Science for Population Health Science in the Digital Age. *JMIR Mhealth Uhealth*. 2019 Aug 30;7(8):e14056. doi: 10.2196/14056.

⁴ Frerichs L, Lich KH, Dave G, Corbie-Smith G. Integrating systems science and community-based participatory research to achieve health equity. *Am J Public Health*. 2016 Feb;106(2):215–22. doi: 10.2105/AJPH.2015.302944.

The contribution, collaboration, and co-creation cycle is central to citizen science and community-based participatory research, and the engagement of stakeholders becomes essential for qualitative systems mapping to determine research questions. The evidence translated enables the evaluation of existing research goals in collaboration with the stakeholders, to inform future data generation. The infinity symbol in the framework represents the continuous interplay between stakeholders, as well as the constant flow of data and evidence. Intervention mapping,

in its original shape⁵, was developed to address questions about how and when to use (i) Theory; (ii) Empirical findings from the literature; (iii) Data collected from a population, to create an effective behavior or systems change intervention. Theories of Change (To C)⁶ are recommended for pursuing and evaluating community engagement in implementation of innovation projects and programs, for their ability to make explicit intended outcomes and understandings of how engagement activities contribute to these outcomes.

⁵ Bartholomew-Eldredge LK, et al. (2016), *Planning Health Promotion Programs: An Intervention Mapping Approach*. 4th ed. San Francisco, CA: Jossey Bass.
⁶ P. Brest (2010). "The Power of Theories of Change". *Stanford Social Innovation Review*. Spring. <http://sc4ccm.jsi.com/wp-content/uploads/2016/07/The-Power-Of-Theories-Of-Change.pdf>.



Figure 1.5.9 (Pauliniová, 2022e)

5.2.4 Reflexive research techniques

IN A NUTSHELL

Whenever we study a social phenomenon, be it for the purpose of ground research or as part of an applied project such as designing the environment or a particular design product, we relate to the object of our analysis. We are never completely isolated from it; we are always part of our research

to some degree. This is even more valid when studying the social world, which we are intrinsically part of. For these reasons, consideration of reflexivity should be part of all forms of research (Aull Davies, 2007), also (and maybe even more so) in the case of the applied one.

Designers are used to rely on their own living experiences in the design process. However, there might be situations when their intuitiveness stumbles upon their own preconceptions and biases. At the same time, they need to relate to the perspectives of their clients who might have (and they often have) different living experiences from their own. Therefore, reflexivity is a necessary part of the design process to create a high-quality and innovative product.

First, what we need to do is to contemplate our biases, meaning trying to understand our motivations for working in a particular area of design, or affection for specific design practice. Then, we should consider the influence of our presence in the “research field”, which might also limit our immersion in the perspectives, needs, and motivations of our clients. Finally, we can acquire reflexive research tools and techniques to our advantage. Without any doubt, designers do use some of these techniques intuitively. By utilizing anthropological reflexive methodological tools, designers might systematize their creative process and find new inspirations for how to dip into the perspectives of their clients and – moreover – themselves as the designers.

In terms of the methods and techniques, the reflexive approach draws on the traditional anthropological methods, such as observation,

interviewing, or visual-anthropological methods (photography, using audio-visual media, and others). However, it tends to include and put at the forefront the focus on the researchers, who might be themselves subjected to the analysis through autoethnography. Being reflexive does not mean the ambition of rejecting one's specific perspective and erasing it, but rather understanding it and putting it to use. Furthermore, designers' empathy can be also increased by the emphatic exercises, as proposed in the Module 1, Unit 4.



Figure 1.5.10 (Pauliniová, 2021)

5.3 COMMUNICATION IN PLAIN AND NON-DISCRIMINATORY LANGUAGE

IN A NUTSHELL

There are two main areas related to the urgent necessity of communication in plain and non-discriminatory language – one is the public discourse, the second one is when communicating with the clients and their families. With public discourse we understand “forms and rules of public thinking, arguing and action that need to be explained and defended as the fundamental principle of social life. It is an agreement and the clarification of notions and knowledge

within cognition systems which decide about what is important and what is not, what is correct and what is not, within the horizons of values in which common or different aims and interests are created within the ways of argumentation that justify the objective or the path toward it by being authentic, the most acceptable and explaining to all within the competences determining who can participate in the discourse.” (Kaschuba 2003: 236).

In the public discourse, old age does not exist in the material sense, old age is a generalizing term for complex attributes that manifest in images and codes of old age (Göckenjan, 2000, 102). The discourse on old age does not thematize the multiplicity and differentiation of life forms and social milieu, rather it focuses on common features. “Old age” then knows no statuses or classes, nor chronological boundaries. The goals of expert but also public discourse on old age is more normative, they try to give older adults instructions on how to live, they are less descriptive or explanatory, the discourse on old age is more or less a moral discourse.

In the media we can often find representations of ageism. In the past, if at all, the media used to portray older adults as decrepit, frail, the portrayals tended to focus on the negative traits associated with old age. Nowadays, representations of older adults are more driven by the spirit of successful and active aging. And while this new perspective represents an attempt to move away from depicting the pathology of aging and old age, its message is clear. Responsibility for their own condition,

decline and possible bad situation in old age is placed on the shoulders of older adults, and therefore this approach can be considered as supporting a form of ageism. Unwarranted and excessive expectations of active living in old age, usually propagated by the media, are likely to reinforce ageism and may increase social isolation and loneliness among older people who “failed” to age successfully.

The second area where plain and non-discriminatory language seems to be crucial is communication with the clients and their family members.

What may often occur in health and social services, which have in their scope the care of patients with chronic diseases, as well as in the long-term care environment, is the tendency on the part of those professionals/staff who have adopted ageist attitudes during their adolescence and education, often to use in communication with older people protective language that can turn into condescending language. This also happens in the case of communication with family members, they speak to older people too loudly, use

diminutives and other means of expression, similar to when communicating with children. Communication skills involve more than just speaking the language. Active listening and presentation in plain language are one of the main prerequisites of success. One highly sought-after communication skill is the ability to explain technical concepts to partners or clients who aren't technically proficient.

There are several characteristics of successful communication from the side of the person asking questions, there is the ability to approach the whole process of research or designing with openness to understand what the interview partner or client is trying to share. More aspects are, for example, accepting people as they are (it is easier said than it is done) and the ability to pay close attention and listen.

When speaking about the ethical issues – there is an obligation to keep in mind the verbal and nonverbal responses for signs of distress of

the communication partner throughout the interview. However, there is a thin line between the respect towards the participants'/clients' wishes and states and the paternalism from the side of the person asking questions/doing the research. Moreover, the interviewer's own discomfort with his partner's or client's distress plays an important role in assessing the situation (see more in the subchapter about reflexive research).

A big challenge presents not trying to avoid strong emotions when communicating with the client. In qualitative research, it is more respectful from the side of the researcher to pause in the interview and be with the partner/client in a supportive manner, not necessarily talking. Then, the interviewer may offer the partner/client to choose whether to continue the interview or not. If they choose to stop the interview, the next step is for both sides to decide whether they wish to participate in further interviews in the future.

CONCLUSION

Social anthropology and ethnology are sciences based on the fieldwork research. Because of this, anthropologists and ethnologists have developed many different ways how to approach their subjects and get a deep insight into their everyday lives and perspectives. These research methods and tools can be easily acquired by designers and other design practitioners during the design process and hence ensure better their understanding of the clients' needs.



Figure 1.5.11 (Pauliniová, 2022f)

REFERENCES

- Arnstein, S. R. (1969). A Ladder of Citizen Participation. *Journal of the American Institute of Planners*, 35(4), 216-224. <https://doi.org/10.1080/01944366908977225>
- Ashby, C. (2011). Whose “Voice” is it Anyway?: Giving Voice and Qualitative Research Involving Individuals that Type to Communicate. *Disability Studies Quarterly. Mediated Communication* 31(4), <https://doi.org/10.18061/dsq.v31i4>
- Aull Davies, Ch. (2007). *Reflexive Ethnography*. Routledge.
- Benovska-Sabkova, M., & Vrzgulová, M. (2021). Memory of the Communist Past as a Research Field. In *Slovenský národopis*, 69(2), 194-204. <https://doi.org/10.2478/se-2021-0010>
- Butler, M., & Derrett, S. (2014). The Walking Interview: An Ethnographic Approach to Understanding Disability. In *The Internet Journal of Allied Health Sciences and Practice*, 12(3), 1-8. <https://nsuworks.nova.edu/cgi/viewcontent.cgi?article=1491&context=ijahsp/>
- Clarke, A. J. (2011). *Design Anthropology*. Springer.
- Fine, M., & Torre E. M. (2006). Intimate Details: Participatory Action Research in Prison. *Action Research*, 4(3), 253-269. <https://doi.org/10.1177/1476750306066801>
- Göckenjan, G. (2000). Altersbilder und die Regulierung der Generationenbeziehungen. Einige systematische Überlegungen. In Ehmer, J., & Gutschner, P. *Das Alter im Spiel der Generationen*. Böhlau, 93-108.
- H. Russell, B. (2012). *Social Research Methods: Qualitative and Quantitative Approaches*. Sage Publications.
- Jamieson, A. (2002). Strategies and methods in researching ageing and later life. In Jamieson, A., & Victor, Ch. *Researching Ageing and Later Life. The practice in social gerontology*. Open University Press, 21-32.
- Kaschuba, W. (2003). *Einführung in die Europäische Ethnologie*. Verlag C. H. Beck.
- Kusenbach, M. (2003). Street Phenomenology: The Go-Along as Ethnographic Research. *Tool. Ethnography*, 4(3), 455-485. <https://doi.org/10.1177/146613810343007>
- Laurel, B. (Ed.). (2003). *Design research. Methods and perspectives*. MIT Press.
- Lee, J., & Ingold, T. (2006). Fieldwork on foot: perceiving, routing, socializing. In P. Collins, & S. Coleman (Eds.), *Locating the Field. Space, Place and Context in Anthropology*, 67-86. Routledge.
- Low, S., & Lawrence-Zúñiga, D. (Eds.). (2003). *The anthropology of space and place*. Malden: Blackwell.
- Maguire, M.C., Peace, S., Nicolle, C., Marshall, R., Sims, R.E., Percival, J., & Lawton, C. (2014). Kitchen living in later life: Exploring ergonomic problems, coping strategies and design solutions. *International Journal of Design*, 73-91.
- Marson, D. C., Schmitt, F., Ingram, K., & Harrell, L. E. (1994). Determining the competency of Alzheimer patients to consent to treatment and research. *Alzheimer Disease & Associated Disorders*, 8(4), 5-18. <https://doi.org/10.1097/00002093-199400000-00002>
- Moore, T. F., & Hollett, J. (2003). Giving Voice to Persons Living with Dementia: The Researcher's Opportunities and Challenges. *Nursing Science Quarterly*, 16, 163-167.

- Muršič, R. (2019). Sensory walking: teaching methods in motion. Blog of the Teaching anthropology. A Journal of the Royal Anthropological Institute from January 31, 2019
<https://teachinganthropology.org/2019/01/31/sensory-walking-teaching-methods-in-motion/>
- Nosková, J., & Kreislová, S. (2019). "Family Silver" or Artefacts (in) Memories of Forcibly Displaced Germans. *Slovenský národopis/Slovak Ethnology*, 67(2), 165-184. <https://doi.org/10.2478/se-2019-0009>
- Parse, R. R. (1981). *Man-living-health: A theory of nursing*. Wiley.
- Parse, R. R. (1994). Quality of life: Sciencing and living the art of human becoming. *Nursing Science Quarterly*, 7, 16-21. <https://doi.org/10.1177/08943184940070010>
- Parse, R. R. (1996). Quality of life for persons living with Alzheimer's disease: The human becoming perspective. *Nursing Science Quarterly*, 9, 126-133. <https://doi.org/10.1177/089431849600900312>
- Parse, R. R. (1998). *The human becoming school of thought: A perspective for nurses and other health professionals*. Sage.
- Peace, S., Wahl, H-W., Mollenkopf, H., & Oswald, F. (2007). Environment and Ageing. In J. Bond, S. Peace, F. Dittman-Kohli, & G. Westerhof (Eds.), *Ageing in society: European perspectives in gerontology*, Sage Publications, 209-234.
- Post, S., Grafstrom, M., Winblad, B., Homma, A., & Rossor, M. N. (1995). International commentaries on guidelines for addressing ethical and legal issues in Alzheimer disease research. *Alzheimer Disease and Associated Disorders*, 9, 188-192.
- Rosenthal, G. (2018). *Interpretative Social Research*. University Press. (in German 2015).
- Rosenthal, G. (2019). Interview. In M. Wagner-Engelhaaf (Ed.), *Handbook of Autobiography/ Autofiction*. De Gruyter, 611-616.
- Spradley, J.P., (1979). *The Ethnographic Interview*. Holt, Rinehart and Winston.
- Spradley, J.P., (1980). *Participant Observation*. Holt, Rinehart and Winston.
- Suri, J.F. (2011). Poetic Observation: What Designers Make of What They See. In A. J. Clarke (Ed.), *Design Anthropology*. Springer. https://doi.org/10.1007/978-3-7091-0234-3_2
- Vaněk, M. (2013). *Around the Globe: Rethinking Oral History with Its Protagonists*. Karolinum.
- Vaughn, L. M., & Jacquez, F. (2020). Participatory Research Methods – Choice Points in the Research Process. *Journal of Participatory Research Methods*, 1(1), 1-13. <https://doi.org/10.35844/001c.13244>
- Voss, Ch., & Raz, T. (2016). *Never Split the Difference: Negotiating as If Your Life Depended on it*. RH Business Books.
- Vrzgulová, M. (2016). *Nevyrozprávané susedské histórie: holokaust na Slovensku z dvoch perspektív [Untold Neighbours' Histories: The Holocaust in Slovakia from Two Perspectives]*. VEDA, Ústav etnológie SAV.

WEB RESOURCES

<https://www.oralhistory.org/about/do-oral-history/>

<https://www.plainlanguage.gov/>

<https://www.plainlanguage.gov/guidelines/audience/>

<https://plainlanguagenetwork.org/plain-language/plain-language-around-the-world/>

<https://parcitypatory.org/2017/10/29/transect-walks/>

LIST OF PICTURES

Figure 1.5.1 Valábeková, B. 2022 Desire kitchen ergonomics.

Figure 1.5.2 Pauliniová, Z. 2022a. Untitled.

Figure 1.5.3 Vořanská, I. 2021. Untitled.

Figure 1.5.4 Pauliniová, Z. 2022b. Untitled.

Figure 1.5.5 Veselský, M. 2021. Untitled.

Figure 1.5.6 Pauliniová, Z. 2022c. Untitled.

Figure 1.5.7 Pauliniová, Z. 2022d. Untitled.

Figure 1.5.8 SHINE2Europe. Based on <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6743262/>

Figure 1.5.9 Pauliniová, Z. 2022e. Untitled.

Figure 1.5.10 Pauliniová, Z. 2021 Untitled.

Figure 1.5.11 Pauliniová, Z. 2022f. Untitled.