

AMPS Proceedings Series 30

Cultures, Communities and Design



AMPS PROCEEDINGS SERIES 30

AMPS, University of Calgary. 28-30 June, 2022

Cultures, Communities and Design: Connecting Planning, Landscapes, Architecture and People

ARCHITECTURE_MEDIA_POLITICS_SOCIETY
Amps

EDITOR:

Fabian Neuhaus

EXECUTIVE PRODUCTION EDITOR:

Amany Marey

© AMPS

AMPS PROCEEDINGS SERIES 30. ISSN 2398-9467

INTRODUCTION

Cultures, Communities and Design: Connecting Planning, Landscapes, Architecture and People

'The Countryside' – a polemically generic term Rem Koolhaas has recently used to reposition debates about our cities to those of rural areas. While posited as 'new', it is, in reality, a well established mode of thinking. Through notions such as the peri-urban for example, geographers, sociologists, architects, urban designers and regional economists have all debated the urban-rural relationship for several decades. Under this framework we are obliged to consider the city and its architecture on its own terms, but also address the 'rural' in its particular context and, importantly, explore the parallels and mutual influences at play.

According to this logic, the social, cultural, planning and design issues relevant in our cities find parallels outside the city fringe. The Right to the City echoes concerns about land rights. Gentrification resembles the pressures on arable lands through urban expansion. The sustainability of our buildings and neighbourhoods is connected to debates on the sustainability of rural areas.

Calgary, the host city of the conference from which this publication stems, is a perfect example of all of this. It has heavy industry, a thriving business economy and a growing tourist sector. However, pockets of the city contend with poverty and gentrification. Others suffer disinvestment and require regeneration. Its architecture and public spaces are a combination of the 'spectacular' and the mundane. As a city, Calgary also 'pressures' its surrounding lands. These include the Rockies, the Banff nature reserve, and the First Nations lands of the Blackfoot, the Stoney Nakoda and the Tsuut'ina. As such, it is both a site of opportunity and development in its own right, and the cause of environmental concerns and social pressures, beyond its conceptual and geographic borders.

In responding to these questions the papers contained in this publication demonstrate the range of ways in which the relationship between the city and its surrounding areas impact people and environments in a multitude of ways, each one of which can be seen as an integrated interdisciplinary issue.

TABLE OF CONTENTS

Chapter 1		
MEMORY, EMOTIONS AND EVERYDAY HERITAGE IN GOOD ARCHITECTURAL DESIGN PRACTICES		1
Adrián Rodríguez Segura, Mar Loren-Méndez		
Chapter 2		
ALTERNATIVE HOUSING MODELS IN ACTION. PUBLIC-COMMUNITY ECOSYSTEMS FOR TERRITORIAL AND BUILDING STOCK REGENERATION FOR LIVING.		15
Silvia Cafora		
Chapter 3		
TOWARDS ETHICS-MAKING OUTSIDE THE PACIFIC		23
Foong Patrick Chan		
Chapter 4		
EXPLORATION FOR AN INCLUSIVE APPROACH FOR HISTORICAL SETTLEMENT CONSERVATION - A CASE OF AGRAHARAS, KERALA, INDIA		33
Suja Kartha, Binumol Tom		
Chapter 5		
NARRATIVE AND SUSTAINABILITY: AN INTERPRETATION AND A CASE STUDY		42
Danilo Di Mascio, Helen Darnell		
Chapter 6		
REVEALING IOWA 80: HOW EXPERIENCE ECONOMY SHAPES THE WORLD'S LARGEST TRUCKSTOP		51
David Karle, Dana Mcintyre		
Chapter 7		
MICRO PROJECT - MACRO SUBJECTS: WASTE AND REUSE AS STRATEGY FOR RENEWAL AT THE URBAN EDGE.		62
Ilona Hay		
Chapter 8		
NEW COMMUNITIES AND NEW VALUES? EXPLORING THE ROLE OF GREEN SPACES IN LOW CARBON NEIGHBOURHOODS		77
Kate O'sullivan, Fiona Shirani, Rachel Hale, Nick Pidgeon, Karen Henwood		
Chapter 9		
THE STREET, THE PLACE WHERE THE LIFE IS. A RUDOFSKIAN THOUGHT ABOUT THE MEDITERRANEAN INFLUENCE ON THE CITY, THE STREET AND THE SOCIETY		87
Marcos Merino		
Chapter 10		
A TOUR OF THE MONUMENTS OF THE JINWEN TRAIN LINE: INFRASTRUCTURAL TRANSFORMATIONS AND ENTROPOLOGY IN WENZHOU URBAN FRINGES		99
Vincent Peu Duvallon, Xiaotong Shi, Jiayin Yang, Lihong Xing		

Chapter 11		
THE IMPACT A 'K' SHAPED COVID 19 RECOVERY ON SOCIAL HOUSING IN NEW ZEALAND.	111	
Lyn Murphy, Terry Quilty		
Chapter 12		
WHY AND HOW TO TEACH DESIGN TO NON-DESIGNERS	120	
Mariusz Wszolek, Krzysztof Moszczyński, Thomas Lewe		
Chapter 13		
ARCHITECTURE, TECHNOLOGY AND THE ENVIRONMENT: PROPOSALS FOR THE REGENERATION OF THE URBAN CONTEXT	131	
Covadonga Lorenzo		
Chapter 14		
VIRTUAL TOURISM RELOCATION (VTR) - TO EXPERIENCE THE LOST, TO SEE FOR THE FUTURE	140	
Ingela Pålsson Skarin		
Chapter 15		
FROM ALTERNATE REALITIES, TO THE URBAN IMPOSSIBLE: DRAWING ON THE INCOMPLETE CITY IN CENTRAL SYDNEY, AUSTRALIA	159	
Jeffrey Tighe		
Chapter 16		
THE REACH OF A MORPHO-TOPICAL ARCHITECTURE	172	
Karim W. F. Youssef		
Chapter 17		
SPATIO-TEMPORAL ALTERITIES: MULTICULTURALISM IN TRANSPORT HUBS	180	
Kelum Palipane And Iderlina Mateo-Babiano		
Chapter 18		
POIPOIA TE KĀKANO, KIA PUĀWAI: ENABLING MĀORI COMMUNITY RESEARCHERS TO EXAMINE THE MEANING OF HOME	192	
Fiona Cram, Tepora Emery, Morehu Munro, Violet Aydon-Pou, Zack Makoare, Kathleen Morrison, Lisa Pohatu, Beverly Te Huia		
Chapter 19		
REVISITING THE NOTION OF LANDSCAPE IN LANDSCAPE ARCHITECTURE	202	
Jonna Majgaard Krarup		
Chapter 20		
THE INFLUENCE AND IMPORTANCE OF SACRED PLACES IN COMMUNITY ACTIVITIES AND THE COEXISTENCE BETWEEN LOCALS AND THEIR ENVIRONMENT	209	
Mihori Yamamura		
Chapter 21		
FACTORS SUSTAINING CITY'S DISTINCTIVENESS. CASE STUDY SURABAYA, INDONESIA	219	
Lilianny Siegit Arifin		

Chapter 22		
CO-CREATING WITH DESIGN URBAN-RURAL FOOD SYSTEMS FOR SUSTAINABILITY		230
Susan Evans		
Chapter 23		
FLEXIBILITY AND DIVERSITY IN MAKING AGE-FRIENDLY CHINESE PARK IN SOCIAL DIMENSION.		241
Ying Liao		
Chapter 24		
RESEARCH METHODOLOGIES FOR CHANGING LANDSCAPES AND PLACES IN FLUX		257
Alex Ioannou		
Chapter 25		
INDIGENOUS WEAVING TECHNIQUES IN SHAPING BUILDING SKINS		268
Kyle Spence, Mahsan Mohsenin		
Chapter 26		
URBAN DESIGN PROJECTS FOR UNIVERSITY CAMPUS		274
Thomas C. Sammons		
Chapter 27		
MAPPING EVERYDAY COMMUNITY LIFE IN EXURBAN AREAS AROUND TOKYO: CASE STUDY OF MINAMIASHIGARA, KANAGAWA PREFECTURE.		282
Alejandro Pineda, Maroya Harigaya, Tomoki Hidenaga, Jorge Almazán		
Chapter 28		
TRANSFORMING THE HARBOUR – THE ROLE OF ARCHITECTURE IN CREATING URBAN LIFE		296
Eszter Sántha		
Chapter 29		
ECOTOPIA: ARCHITECTURAL ECOTOPES AS AN APPROACH TO COMBAT BIODIVERSITY LOSS		308
Heidi Boulanger		
Chapter 30		
NEURO-PARTICIPATORY URBANISM: SENSING SENTIMENTS AND TRACKING PERCEPTIONS WITH MACHINE LEARNING.		321
Immanuel Koh, Elissa Gowika Hartanto		
Chapter 31		
CITIES WITHOUT COUNTRY: HIGH DENSITY URBAN AGRICULTURE AND THE CITIES OF THE FUTURE		333
John Doyle, Laura Mártires		
Chapter 32		
RURBAN TERRITORIES AND SOME NOTES ABOUT REPOPULATION		344
Jordi Franquesa Sánchez, Inés Aquilué Junyent		

Chapter 33		
CONVIVIAL DESIGN: CIVIL ENGINEERING CASE STUDIES.		355
Joshua A. Schultz		
Chapter 34		
BIOMIMICRY THINKING: FOSTERING QUALITY OF LIFE AND SUSTAINABILITY BY DESIGN		365
Alice Araujo Marques De Sá, Dianne Magalhães Viana		
Chapter 35		
REFLECTING ON THE URBAN AND THE REGIONAL: DESIGNING FOR A POST-COVID FUTURE		378
Naomi Hay, Petra Perolini		
Chapter 36		
CONCEPTS FOR LINKING THE CITY WITH THE REGION . THE IDEA OF A GARDEN CITY IN WROCŁAW (BRESLAU).		385
Edyta Naworska		
Chapter 37		
DESIGNING FOR SUSTAINABLE COMMUNITY TRANSFORMATION: AGE-FRIENDLY COMMUNITIES FOR THE FUTURE		395
Lijun Chen, Vladimír Kočí		
Chapter 38		
THE SUSTAINABILITY OF URBAN RUINS—SHOUGANG GROUP INDUSTRIAL PARK		408
Linli Zhang, Yu Jin, Liang Xiao, Bingqing Tian, Linnan Zhang		
Chapter 39		
MAPPING OF SOCIAL INITIATIVES AS A MODEL OF LOCAL DEVELOPMENT AGAINST DEPOPULATION IN RURAL AREAS. THE VALLE DEL GENAL CASE (ANDALUSIA, SPAIN)		416
Carlos Jesús Rosa-Jiménez, María José Márquez-Ballesteros, Alberto Enrique García-Moreno, María Aurora Arjones-Fernández, Francisco José Chamizo-Nieto, Federico Benjamín Galacho-Jiménez, Sergio Reyes-Corredera, Nuria Nebot-Gómez De Salazar, Francisco Conejo-Arrabal, Rubén Pérez-Belmonte, Salvador Salgado-Alcaraz		
Chapter 40		
PARTICIPATORY METHODOLOGY FOR THE INVENTORY OF INTANGIBLE CULTURAL HERITAGE IN URBAN NEIGHBOURHOODS. CASE STUDY IN MALAGA CITY		425
Francisco Conejo-Arrabal, Francisco José Chamizo-Nieto, Nuria Nebot-Gómez De Salazar, Carlos Rosa-Jiménez		
Chapter 41		
ARCHITECTURAL INVESTIGATION OF URBAN VILLAGES IN SHENZHEN AND WUHAN IN RELATION TO RURAL-URBAN CHINESE MIGRATION		432
Francisco Conejo-Arrabal, Francisco José Chamizo-Nieto, Nuria Nebot-Gómez De Salazar, Carlos Yulei Wang, Gul Kacmaz Erk		

DESIGNING FOR SUSTAINABLE COMMUNITY TRANSFORMATION: AGE-FRIENDLY COMMUNITIES FOR THE FUTURE

Author:

LIJUN CHEN¹, VLADIMÍR KOČÍ^{1,2}

Affiliation:

¹CZECH TECHNICAL UNIVERSITY IN PRAGUE, CZECH REPUBLIC, ²UNIVERSITY OF CHEMISTRY AND TECHNOLOGY PRAGUE, CZECH REPUBLIC

INTRODUCTION

With the accelerated ageing of the world's population, countries are focusing on solving various life issues of seniors through the power of diverse communities to spend their twilight years in quality. In the context of active ageing and community transformation, this study explores sustainable design strategies for age-friendly communities based on the theory of Design for Sustainability (DfS). The Sustainable Transformation of Age-Friendly Communities (STAFc) indicator is the analysis criterion. Case studies of ageing communities in four countries of China, the USA, Spain, and Italy are analyzed in the following four areas: Outdoor space and buildings, Transport, Social participation, Civic participation, and employment. The positive role and impact of the theory in design planning strategies for ageing communities are demonstrated, illustrating future trends in sustainable ageing community design planning, and providing references for future research.

The world's population is ageing. The number and proportion of seniors are growing in almost every country.¹ According to data from *World Population Prospects: the 2019 Revision*, by 2050, one in six people in the world will be over age 65 (16%), up from one in 11 in 2019 (9%). By 2050, one in four persons living in Europe and Northern America could be aged 65 or over. New measures and concepts of population ageing are of great significance in assessing the living conditions and living arrangements of seniors, their productive and other contributions to society, and their need for social protection and healthcare.²

Cities and communities are currently facing enormous challenges of ageing. In the context of the increasing number of seniors and the ensuing demands on infrastructure and service policies, existing community environments are no longer able to meet the daily needs of seniors. Many old communities lack inclusive environments, accessible infrastructure and humanized community services, making life difficult for seniors.³ Therefore, there is an urgent need for a new way of thinking and approach to emerging in communities today, transforming them into more age-friendly environments to enhance the quality of life and experience of seniors in their later years.

Age-Friendly Community

Population ageing is poised to become one of the most significant social transformations of the twenty-first century, with implications for almost all sectors of society, including labor and financial markets, as well as demand for goods and services such as housing, transport and social security, and family structures and intergenerational relations.⁴ Increasing urbanization and policy discourse to support ageing in place raises the urgency of creating and planning for an age-friendly environment.⁵ National policies and measures to safeguard the lives of the ageing population will directly bear the quality of life of seniors in their later years. Seniors' standards and requirements for the environment, facilities, policies, and services in which they live need to be adjusted due to their physical and psychological changes, and designers are paying more attention to their experience and adopting a more inclusive approach based on the principle of fairness and respect to include them in mainstream daily life.

The discussion of “age-friendly” communities is based on the World Health Organization's definition of an age-friendly community as one where “policies, services, environments and structures support and enable active ageing”.⁶ Policymakers and service providers are increasingly aware of the importance of providing “age-friendly” services or products to seniors, and this trend has spread globally. The concept of “age-friendly communities” is the latest manifestation of this trend in policy and discourse on ageing. The creation and maintenance of age-friendly environments are widely recognized as core components of a positive approach to the challenges of population ageing.⁷

DESIGN FOR SUSTAINABILITY (DfS) IN GLOBAL AGE-FRIENDLY COMMUNITY TRANSFORMATION

Design interventions play an increasingly significant role in today's social problem solving and social transformation. In recent years, disciplines such as Green Design, Systems Design and Social Innovation Design have become better known and developed a wide range of applications. It is easy to see that the current trends in the design field are becoming more focused on the harmony and balance between people, the environment, and society, as well as integrating other disciplines and taking a longer-term view on how to improve people's lives in the future. Sustainable age-friendly community transformation is building on the concept of “community” and integrating the multiple attributes of a community with a longer-term vision of development, providing opportunities for the residents living in the community, especially seniors, to continue to grow and develop, as well as a harmonious, balanced and equitable place to live, so that seniors can age healthily, with dignity and autonomy.

An Overview of Community Planning and Management Models in Different Countries

There are significant differences in community planning and models across countries. In China, the government and companies build gated communities with a combination of buildings, with multiple gated communities forming a more extensive community, to achieve a model where ageing at home is the mainstay, with community-based care as an adjunct.⁸ In the United States, the “solar system” is the best-known form of community spatial layout: a community where senior housing, food and shops, recreation centers and health care facilities form a unified whole, where seniors have access to a full range of services⁹ and can mobilize the spontaneity of residents to protect their “bottom-up” model of community governance.¹⁰ In Spain, the *Community Development Plan* implemented by the Autonomous Community of Catalonia in 1996 uses participatory processes to meet the needs of communities and improve their quality of life,¹¹ emphasizing the importance of a process of political decentralization will allow communities to “*achieve real and sustainable social change by promoting neighborhoods, municipalities, regions, community organizations, and citizens*”.¹² The long history of

Italian civil society has led to the development of a diverse network of organized reciprocity and civic solidarity, resulting in several active community organizations. These “civic communities” have embraced the spirit of citizenship, promoting solidarity, civic participation and integration, working in partnership with regional governments to manage communities and building on a strong base of civic participation.¹³ Sustainable transformation should be based on local political, economic, and cultural contexts and characteristics, with locally adapted strategies and pathways for maximum impact.

DfS in Transformation

DfS is a design approach that aims at sustainable management of economic, social, and ecological aspects. It emphasizes system planning and holistic design.¹⁴ The transformation of sustainable development requires structural changes in society, and the way it interacts with nature and the built environment.¹⁵ For the transformation of communities, it is also necessary to consider how the economic, social, and ecological transition of communities can be sustainable in a holistic manner. According to German sociologist Ferdinand Toennies, the meaning of community for people is not limited to space but also includes the satisfaction of emotional needs that are essential to life.¹⁶ DfS follows two aspects of community transformation design: the design of the physical environment of living space and the design of the human-emotional environment of community life. Thus, the sustainable transformation of age-friendly communities is the application of DfS concepts, taking the community as a whole to address systemic issues faced by communities in the process of transformation in the context of active ageing by design.

Methods

Based on the framework *Global Age-Friendly Cities: A Guide*,⁶ the Sustainable Transformation of Age-Friendly Communities (STAFC) indicators were developed by combining the Age-Friendly Communities domains and suggested spatial indicators⁵ with Sustainable Development Theory¹⁷ (see Table 1). To analyze the role and impact of DfS in the planning strategies of age-friendly community design in China, the USA, Spain, and Italy, the STAFC indicator was used as a criterion for analysis. One representative case study in each domain of the indicator was selected for analysis as a basis for demonstrating the widespread application and positive impact of DfS on a global scale. Each case is a systematic and holistic design, encompassing multiple areas of planning and strategy design. This study focuses only on the domains of STAFC indicators.

STAFC Environment	STAFC Domains	Suggested Indicators for STAFC Assessment and Monitoring
Physical Environment	Outdoor Spaces and Buildings	<ul style="list-style-type: none"> ● Walkability for transport ● Systematic landscaping ● Accessible buildings and design
	Transport	<ul style="list-style-type: none"> ● 400 m radius of the settlement ● Access to public transport with Disability Standards for Accessible Public Transport ● Humanized transport service system
Human and Emotional Environment	Social Participation	<ul style="list-style-type: none"> ● Access to and use of shared spaces ● Access to community services ● Access to interaction with people in the community
	Civic Participation and Employment	<ul style="list-style-type: none"> ● The proportion of the population aged 60+ years regularly volunteering or working for pay in the community ● The proportion of the population working beyond the official retirement age ● Opportunities to be paid as a stakeholder through community activities or work ● Opportunities to contribute to society as a stakeholder through community activities or work

Table 1. Sustainable Transformation of Age-Friendly Communities (STAFC) Indicators

Outdoor Spaces and Buildings

Walkable communities are significant for seniors because they enable people to reach destinations with commercial and social opportunities.¹⁸ Walking is also associated with maintaining functional independence¹⁹ and better cognitive function.²⁰ It is also essential to have open spaces that are easily accessible on foot and Accessible Design facilities that allow seniors to move independently, have access to the common space, and use the facilities, which helps to promote daily exercise and social interaction activities for seniors.

Sustainable landscape planning in communities also plays a role, taking into account water resources, energy use, building materials, waste, the “inner environment” and health, whether it is “designed to last,” the “quality of space,” and the mobility of transport, etc., to assess the environment as a whole.²¹ Such mechanisms that balance socio-cultural, ecological and economic values with the built environment can lead to more sustainable community development.

Beijing Oriental Sun City, China, is a new type of senior community that builds an ecologically green, eco-friendly, and energy-saving community (Figure 1). The site is located on a riverbank and woodland, with a natural base of flat terrain, rich vegetation and diverse ecological landscapes, and a

closed ecosphere with large green areas, lakes and vegetation. The community comprises seven components that follow the principle of open space: the community is divided into neighborhood units, which are arranged around a sub-level green landscape system, creating a spatial system that transitions from the public realm to the private space in a gradual manner.²² Meanwhile, the topography is used for its advantage, with sewage flowing through special pipes into a nearby low-lying green space, leading to a treatment station, where it can be treated and recycled.

In addition, the community transport system was graded to consider the safety of the seniors on foot. Primary roads link communities from south to north, secondary roads link main roads to communities, and bicycle lanes have been created to promote the use of bicycles. The pedestrian system provides a comprehensive, safe and convenient link between residential units, public spaces and various green spaces in the landscape. At the same time, accessible lifts and ramps for the disabled are provided in the community flats and public spaces, and ample seating is provided in the communal areas of the community for seniors to rest. The open space system enables the community to open up the living space to the landscape space from the whole to the local spatial form at all levels, making the operation of the entire community sustainable and humane.



Figure 1. Oriental Sun City, Beijing, China²³

Transport

Community transport is an essential link between seniors and their social networks and activities²⁴ and is one of the critical determinants of health.²⁵ It has a significant impact on seniors' access to local services, participation in paid and unpaid productive activities, maintenance and development of social networks and support, and participation in social and recreational activities.

Mobility is essential for the social participation and well-being of seniors.²⁶ Public transport is essential for seniors with reduced driving abilities. In addition, the establishment of a complete transport service system also influences the community experience and frequency of travel for seniors. A good service experience will increase the mobility of seniors and promote safer mobility while reducing the stress of travelling and providing a sense of dignity.

In the United States, road standards have been changed in some areas to encourage connections between blocks up to approximately 150m in length to enhance walkability and accessibility by public transport.²⁷ "Complete Streets" designs have also been introduced for safety reasons.²⁸ In addition to

emphasizing “Accessible Design Changes”²⁹ in the construction of public, commercial, and government facilities in strict compliance with the Americans with Disabilities Act standards, it focuses on roadway design improvements for older drivers and pedestrians (Figure 2), including at least five areas:

- ① Networks designed for proximity better accommodate older drivers and pedestrians.
- ② The combined pedestrian crossing uses zebra stripes to attract the attention of drivers but keeps the walking surface free of paint to reduce falls by seniors during rainy weather when the paint is slippery.
- ③ Given the lower vision and increased reaction time of elderly drivers, continuous mid-turn lanes increase the chance of vehicle conflicts and measures such as raised grass medians are used to restrict vehicle turning to a defined position.
- ④ Generally, intersections are located outside the sight of drivers, making it easier for older drivers with stiff necks to integrate into traffic by adding bicycle and pedestrian facilities and reducing turning radius.
- ⑤ Other transport infrastructure improvements such as signals, pavement lighting, streetscaping facilities, and fixed interval placement of benches and rest areas to better meet the needs of seniors, who often have visual or physical challenges.

As can be seen from these five areas, US measures have increased the comfort and safety of older residents and enhanced the travel experience through visual guidance, material features, changes to the physical environment and overall planning.

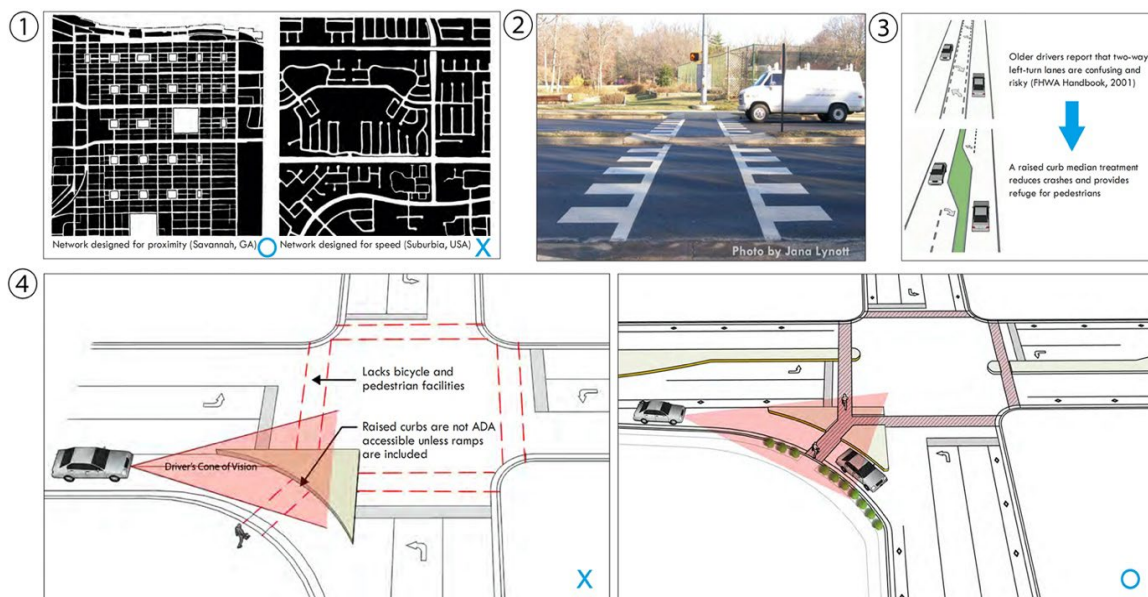


Figure 2. Complete Streets Road Design Improvements for Older Drivers and Pedestrians²⁸

Social Participation

Previous research has shown that social participation can contribute to the health and well-being of seniors.³⁰ Meaningful social relationships and participation are essential for good health, which is defined as a social phenomenon among the social determinants of health.³¹ For seniors, social participation provides greater life satisfaction,³² protects against cognitive decline³³ and contributes to resilience.³⁴

It is vital that seniors have independent access to and use of shared community spaces without barriers, and that they can access the services independently. Shared spaces are essential social infrastructure.³⁵ They are critical to seniors' access to appropriate community services and experiences and a public platform to connect with others, share emotions, and access information, which significantly affects seniors' social participation and physical and mental health.

An eco-friendly retirement home and day center located on a wedge-shaped plot in the village of Blancafort in northern Spain (Figure 3), designed by architect Guillem Carrera.³⁶ The passive building is intended to allow retired residents of Blancafort and its neighboring towns to come and socialize. Considering that older adults may have difficulty walking or even use wheelchairs, internal walkways are gently sloped with very few steps, reducing the possibility of falls and injuries. Architects have used solar panels and thick layered walls to ensure year-round thermal regulation to minimize the ecological impact of buildings. The materials used were locally sourced stones wherever possible. The larger courtyard is surrounded by the social spaces used by the day center, while the smaller courtyard is used by the care home.

This eco-friendly retirement home is not only considered to be in harmony with its surroundings, energy-efficient, and environmentally friendly, but also has good accessibility facilities, making it possible for seniors to access the services and better experiences of the community. Meanwhile, it provides shared and equal space for seniors in the neighborhood, the opportunity to make new friends, helps with information exchange and reflection. It has an emotional impact on participants and provides an excellent reference in terms of increasing the active social participation of seniors and maintaining their physical and mental health.



Figure 3. Guillem Carrera's Care Home, Blancafort, Spain³⁷

Civic Participation and Employment

Empowerment, autonomy and control,³⁸ and employment conditions³⁹ have been important influences on actual and self-reported health. The idea of controlling one's own destiny has also been proposed, consistent with the understanding that health is influenced simultaneously by the individual, the local and community context, and the larger social context.⁴⁰

Civic participation and employment are important influences on agency and autonomy in society. Therefore, it is important to know how many seniors in the community are engaged in paid and

unpaid productive activities. Based on previous research, it has been found that the importance of seniors' participation in problem-solving processes as stakeholders in age-friendly communities is well known, especially in areas such as policy and governance, environmental issues, retrospection and conflict resolution⁴¹ but it has not been incorporated into most traditional design-led approaches.⁴²

A Restorative Garden Project in Milan, Italy, working sustainably with seniors, provides a vivid case study. The research team selected a green area in the Ortica district that was included in a Community Garden (CG). Based on three essential items that can improve the quality of life of seniors: Prosthetic environment, Regenerative place and Ecosystem value as design criteria. Using co-design as a means to include seniors as stakeholders directly in the decision-making process, the project is dedicated to designing a sustainable and restorative garden for seniors.

The focus groups were analyzed using text-based codes for the general content of the neighborhood and Attention Restoration Theory (ART) for the specific content of the garden: Compatibility, Being away, Extent, and Fascination. Analysis of the data revealed that the familiarity of the three groups with CG was partially heterogeneous, but the debate around Flora, Fauna, Human artefacts and General issues was effectively conducted in all focus groups. ART results obtained from the focus groups are presented in Table 2. Compatibility received the most attention from respondents.

ART Factors	Total	Focus 1 District Inhabitants	Focus 2 Local Associations	Focus 3 Nursing Homes Hosts
Being away	25.00%	7.14%	25.00%	45.83%
Compatibility	36.25%	50.00%	35.71%	20.83%
Extent	8.75%	14.29%	7.14%	4.17%
Fascination	30.00%	28.57%	32.14%	29.17%

Table 2. ART Factors Emerging from Focus Groups⁴³

Subsequently, the researchers developed a conceptual plan for the design based on the previous results (see Figure 4). (1) A multifunctional garden, matching the needs and attitudes of the identified objectives, in line with the compatibility factor of ART. (2) A garden capable of creating contact with nature, consistent with ART's distance, extent, and charm factors. The master plan was defined next, detailing the works as a whole, including the entrances to the gardens, the wildlife path, and other areas (see Figure 5).

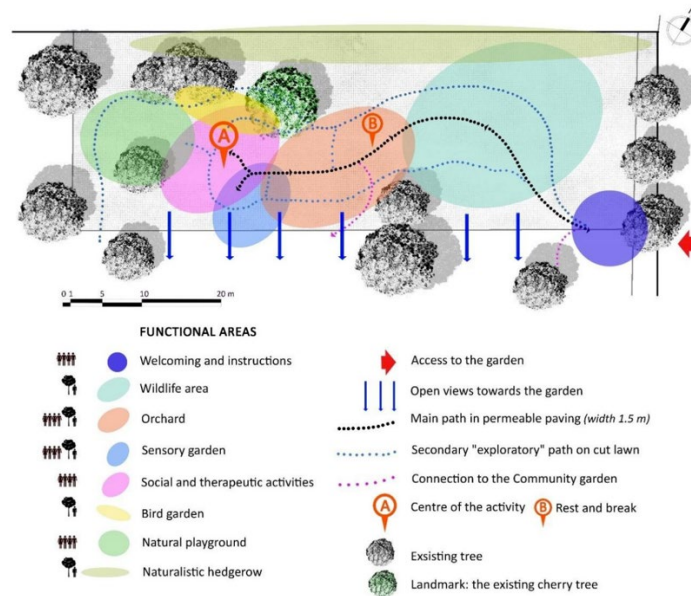


Figure 4. Concept Plan

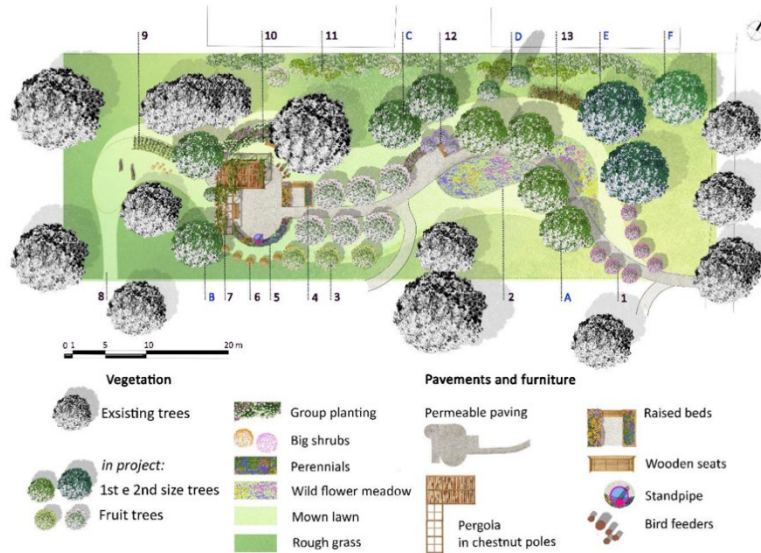


Figure 5. Project plan

This study outlines the specific features and functions that restorative gardens should meet based on the results of potential users and focus groups involved in the design process. Seniors highlighted the need for regenerative space. The project shows us how seniors are involved in the sustainable planning of communities and have transformed and influenced the community environment, demonstrating the active and important role they play in the design process. Seniors can create a more significant contribution to the ecological and human environment of their communities and gain physical and psychological well-being.

CONCLUSION

Planning strategies for age-friendly communities involving DfS provide a pathway for future community transformations. The STAFIC indicators need to be further expanded and deepened in the future to suit different national contexts and environments, and the current indicator elements could be applied and tested in a range of locations. This may include, but is not limited to, international

comparisons and cultural differences, regional characteristics, climatic conditions, policy influences, economic impacts, geography, etc. to explore additional factors that could be added to the indicators. The main objective of this study is to demonstrate the importance and positive impact of the DfS theory in planning strategies for future age-friendly communities by proposing a set of basic, objective STAFc indicators that can be applied on a wide scale and can be used for design interventions. The importance of DfS in a design-oriented sustainable future society is illustrated by highlighting sustainable trends in community transformation concerning specific cases in four countries.

NOTES

- ¹ "Ageing," *United Nations*, accessed 16 May, 2022, <https://www.un.org/en/global-issues/ageing>.
- ² United Nations, *World Population Prospects 2019: Highlights* (2019).
- ³ Chenxi Wang, and Xiaoyu He, "The Transformation and Development of a Typical Enterprise Community in Xi'an Textile City in the Context of Ageing," *Urbanism and Architecture* 18, no. 8 (2021): 115-17; Xiaonan Fan, Chong Feng, and Weihua Yang, "Transforming Needs and Countermeasures of Old Communities-a Case Study of Dalian in Liaoning Province," Paper presented at the International Conference on Management, Education and Social Science (ICMESS), Qingdao, PEOPLES R CHINA, Jun 23-25 2017; Jing Hu, "Research on Ageing Adaptation of the Outer Residential Environment in Laoshan Street Based on Behavioural Characteristics," Master, Beijing University of Architecture, 2020; Ziwei Guo, and Yi Pan, "A Study on the Transformation of Corporate Communities into Urban "Age-Friendly Communities" in the Context of Ageing - an Example of the 116th Neighbourhood of Wuhan Iron and Steel Works," Paper presented at the Urban Age, Collaborative Planning - 2013 China Urban Planning Conference, Qingdao, Shandong Province, China, 2013.
- ⁴ "Ageing," *United Nations*.
- ⁵ Melanie Davern, Rachel Winterton, Kathleen Brasher, and Geoff Woolcock, "How Can the Lived Environment Support Healthy Ageing? A Spatial Indicators Framework for the Assessment of Age-Friendly Communities," *International Journal of Environmental Research and Public Health* 17, no. 20 (2020): 7685, <https://doi.org/10.3390/ijerph17207685>. <https://dx.doi.org/10.3390/ijerph17207685>.
- ⁶ World Health Organization, *Global Age-Friendly Cities: A Guide* (Geneva, Switzerland: 2007).
- ⁷ Chi-Wai Lui, Jo-Anne Everingham, Jeni Warburton, Michael Cuthill, and Helen Bartlett, "What Makes a Community Age-Friendly: A Review of International Literature." *Australas J Ageing* 28, no. 3 (Sep 2009): 116-21, <https://doi.org/10.1111/j.1741-6612.2009.00355.x>. <https://www.ncbi.nlm.nih.gov/pubmed/19845650>.
- ⁸ Shouhong Xie, and Shuangxi Xie, "Comparison and Reference of Foreign Urban Community Management Models," *Social Scientist* 01 (2004): 47-50.
- ⁹ Nanqian He, "The Plan and Design of the Elderly Community in China," Master Architecture (Urban Planning and Design), Central South University, 2012.
- ¹⁰ Xianglin Meng, "Community Governance Model: The Experience of Developed Countries and the Choice of China's Development," *Journal of Guiyang College (Social Science Edition)* 14, no. 05 (2019): 63-69.
- ¹¹ Xavier Ucar, Ana Planas, Hector Nunez, and Asun Llena Berne, "Participatory Evaluation and Community Development: A Spanish Case Study," *REVISTA DE CERCETARE SI INTERVENTIE SOCIALA* 52 (2016): 294-310.
- ¹² Generalitat de Catalunya, *Document Marc: Plans De Desenvolupament Comunitari*, Secretaria d'Acció Ciutadana; Departament de Governació i Administracions Públiques (2008).
- ¹³ Yongjing Yao, "Italian Community Management Research Paradigm Options," *China Urban Economy* 10 (2010): 298-99.
- ¹⁴ Dongjiu Yu and Rong Fan, "The Bamboo Furniture Design Based on D4s Theory," *Packaging Engineering* 35, no. 4 (2014): 67.
- ¹⁵ Derk Loorbach, "Transition Management for Sustainable Development: A Prescriptive, Complexity-Based Governance Framework," *Governance* 23, no. 1 (2010): 161-83.
- ¹⁶ Ferdinand Toennies, *Gemeinschaft Und Gesellschaft*, Translated by Rongyuan Lin (Beijing: Beijing University Press, 2010).
- ¹⁷ World Commission on Environment and Development, *Our Common Future* (Oxford University Press, 1987).
- ¹⁸ Ester Cerin, Andrea Nathan, Jelle Van Cauwenberg, David W. Barnett, and Anthony Barnett, "The Neighbourhood Physical Environment and Active Travel in Older Adults: A Systematic Review and Meta-Analysis," *International Journal of Behavioral Nutrition and Physical Activity* 14, no. 1 (2017), <https://doi.org/10.1186/s12966-017-0471-5>. <https://dx.doi.org/10.1186/s12966-017-0471-5>; Meghan Winters, Christine Voss, Maureen C. Ashe, Kaitlyn Gutteridge, Heather McKay, and Joanie Sims-Gould, "Where Do They Go and How Do They Get There? Older Adults' Travel Behaviour in a Highly Walkable Environment," *Soc Sci Med* 133 (May 2015): 304-12, <https://doi.org/10.1016/j.socscimed.2014.07.006>. <https://www.ncbi.nlm.nih.gov/pubmed/25017579>.
- ¹⁹ Roger A. Fielding, W. Jack Rejeski, Steven Blair, Tim Church, Mark A. Espeland, Thomas M. Gill, Jack M. Guralnik, *et al.*, "The Lifestyle Interventions and Independence for Elders Study: Design and Methods," *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences* 66A, no. 11 (2011): 1226-37, <https://doi.org/10.1093/gerona/66A.11.1226>. <https://dx.doi.org/10.1093/gerona/66A.11.1226>.

- ²⁰ Jennifer Weuve, Jae Hee Kang, JoAnn E. Manson, Monique M. B. Breteler, James H. Ware, and Francine Grodstein, "Physical Activity, Including Walking, and Cognitive Function in Older Women," *JAMA* 292, no. 12 (2004): 1454, <https://doi.org/10.1001/jama.292.12.1454>. <https://dx.doi.org/10.1001/jama.292.12.1454>.
- ²¹ Guangpei Ren and Yang Wang, "Elderly Green Community Based on Sustainable Design Theory," *Packaging Engineering* 37, no. 8 (2016): 122-125.
- ²² Jing Wang and Kuang Sheng, "Countermeasures and Suggestions for the Construction of Aging-Friendly Residential Areas -Beijing Oriental Sun City Residential Area as an Example," *Urban and Rural Development* 12 (2020).
- ²³ "Oriental Sun City," *Zcool*, 2018, accessed 26, May, 2022, <https://m.zcool.com.cn/article/ZNzc4Mzg4.html>.
- ²⁴ Muxin Zhang and Younghwan Pan, "Design of Sustainable Senior-Friendly Community Transportation Services." *Sustainability* 13, no. 23 (2021): 13078, <https://doi.org/10.3390/su132313078>. <https://dx.doi.org/10.3390/su132313078>.
- ²⁵ Alexa Delbosc, "The Role of Well-Being in Transport Policy," *Transport Policy* 23 (2012): 25-33, <https://doi.org/https://doi.org/10.1016/j.tranpol.2012.06.005>; Michael Marmot and Richard Wilkinson, *Social Determinants of Health* (Oxford, UK: OUP Oxford, 2005).
- ²⁶ Mélanie Levasseur, Mélissa Généreux, Jean-François Bruneau, Alain Vanasse, Éric Chabot, Claude Beaulac, and Marie-Michèle Bédard, "Importance of Proximity to Resources, Social Support, Transportation and Neighborhood Security for Mobility and Social Participation in Older Adults: Results from a Scoping Study," *BMC Public Health* 15, no. 1 (2015), <https://doi.org/10.1186/s12889-015-1824-0>. <https://dx.doi.org/10.1186/s12889-015-1824-0>.
- ²⁷ Ling Huang, "Community Planning Strategies and Insights for Active Ageing in the USA - Based on the AARP Livable Communities Experience," Paper presented at the 2020/2021 China Urban Planning Annual Conference and 2021 China Urban Planning Academic Season, Chengdu, Sichuan Province, China, 2021.
- ²⁸ American Association of Retired Persons, *Planning Complete Streets for an Aging America* (Washington, DC: 2009).
- ²⁹ "Ada Standards for Accessible Design," *U.S. Department of Justice Civil Rights Division*, 2010, https://www.ada.gov/2010ADASTandards_index.htm.
- ³⁰ Lynne Andonian and Anne Macrae, "Well Older Adults within an Urban Context: Strategies to Create and Maintain Social Participation," *British Journal of Occupational Therapy* 74, no. 1 (2011): 2-11, <https://doi.org/10.4276/030802211x12947686093486>. <https://dx.doi.org/10.4276/030802211x12947686093486>.
- ³¹ World Health Organization, *A Conceptual Framework for Action on the Social Determinants of Health: Social Determinants of Health Discussion Paper 2* (Geneva, Switzerland: 2010).
- ³² Alma Au, Daniel W. L. Lai, Ho-ming Yip, Stephen Chan, Simon Lai, Habib Chaudhury, Andrew Scharlach, and George Leeson, "Sense of Community Mediating between Age-Friendly Characteristics and Life Satisfaction of Community-Dwelling Older Adults," *Front Psychol* 11 (2020): 86, <https://doi.org/10.3389/fpsyg.2020.00086>. <https://www.ncbi.nlm.nih.gov/pubmed/32194465>.
- ³³ María-Victoria Zunzunegui, Beatriz E. Alvarado, Teodoro Del Ser, and Angel Otero, "Social Networks, Social Integration, and Social Engagement Determine Cognitive Decline in Community-Dwelling Spanish Older Adults," *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 58, no. 2 (2003): S93-S100, <https://doi.org/10.1093/geronb/58.2.s93>. <https://dx.doi.org/10.1093/geronb/58.2.s93>.
- ³⁴ Roger A. Fielding, W. Jack Rejeski, Steven Blair, Tim Church, Mark A. Espeland, Thomas M. Gill, Jack M. Guralnik, *et al.*, "The Lifestyle Interventions and Independence for Elders Study: Design and Methods," *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences* 66A, no. 11 (2011): 1226-37, <https://doi.org/10.1093/gerona/glr123>. <https://dx.doi.org/10.1093/gerona/glr123>.
- ³⁵ Melanie Davern, Lucy Gunn, Carolyn Whitzman, Carl Higgs, Billie Giles-Corti, Koen Simons, Karen Villanueva, *et al.* "Using Spatial Measures to Test a Conceptual Model of Social Infrastructure That Supports Health and Wellbeing," *Cities & Health* 1, no. 2 (2017): 194-209, <https://doi.org/10.1080/23748834.2018.1443620>. <https://dx.doi.org/10.1080/23748834.2018.1443620>.
- ³⁶ "Guillem Carrera's Care Home in Northern Spain Encourages Residents to Socialise," *dezeen*, 2018, accessed 26, May, 2022, <https://www.dezeen.com/2018/09/14/guillem-carrera-elderly-care-home-spain-blancafort-architecture/>.
- ³⁷ "Centre De Dia I Casal De Gent Gran De Blancafort / Guillem Carrera," *ArchDaily*, 2016, accessed 26, May, 2022, <https://www.archdaily.com/783918/centre-de-dia-i-casal-de-gent-gran-de-blancafort-guillem-carrera>.
- ³⁸ Margaret Whitehead, Andy Pennington, Lois Orton, Shilpa Nayak, Mark Petticrew, Amanda Sowden, and Martin White, "How Could Differences in 'Control over Destiny' Lead to Socio-Economic Inequalities in Health? A Synthesis of Theories and Pathways in the Living Environment," *Health Place* 39 (May 2016): 51-61,

<https://doi.org/10.1016/j.healthplace.2016.02.002>. <https://www.ncbi.nlm.nih.gov/pubmed/26986982>.

³⁹ M. G. Marmot, G. D. Smith, S. Stansfeld, C. Patel, F. North, J. Head, I. White, E. Brunner, and A. Feeney, "Health Inequalities among British Civil Servants: The Whitehall II Study," *Lancet* 337, no. 8754 (Jun 8 1991): 1387-93, [https://doi.org/10.1016/0140-6736\(91\)93068-k](https://doi.org/10.1016/0140-6736(91)93068-k). <https://www.ncbi.nlm.nih.gov/pubmed/1674771>.

⁴⁰ Göran Dahlgren and Margaret Whitehead, *European Strategies for Tackling Social Inequities in Health: Levelling up Part 2. Studies on Social and Economic Determinants of Population Health, No. 3*, World Health Organization Regional Office for Europe Copenhagen (Copenhagen, Denmark: 2007).

⁴¹ Kathrin Böhling, "The Multi-Stakeholder Approach in the United Nations: Unprecedented Perhaps, but Not Unexpected," *Transnational private regulation in the areas of health, environment, social and labor rights*, (2011), https://www.ep.mgt.tum.de/fileadmin/w00cgd/wup/Files/Boehling_TransReg_2011.pdf; Annika Carlsson-Kanyama, Karl Henrik Dreborg, H.C. MollDario, and Padovan Dario, "Participative Backcasting: A Tool for Involving Stakeholders in Local Sustainability Planning," *Futures* 40 (2007): 34-46; Global Partnership for the Prevention of Armed Conflict (GPPAC), *Multi-Stakeholder Processes for Conflict Prevention & Peacebuilding: A Manual* (2015); Robin Grimble and Kate Wellard, "Stakeholder Methodologies in Natural Resource Management: A Review of Principles, Contexts, Experiences and Opportunities," *Agricultural Systems* 55, no. 2 (1997): 173-93; Jaco Quista and Philip Vergragt, "Past and Future of Backcasting: The Shift to Stakeholder Participation and a Proposal for a Methodological Framework," *Futures* 38, no. 9 (2006): 1027-45.

⁴² Terry Irwin, "The Emerging Transition Design Approach," DRS2018: Catalyst, 2018.

⁴³ Natalia Fumagalli, Elisabetta Fermani, Giulio Senes, Marco Boffi, Linda Pola, and Paolo Inghilleri, "Sustainable Co-Design with Older People: The Case of a Public Restorative Garden in Milan (Italy)," *Sustainability* 12, no. 3166 (2020).

BIBLIOGRAPHY

American Association of Retired Persons. *Planning Complete Streets for an Aging America*. Washington, DC: 2009.

Dahlgren, Göran, and Margaret Whitehead. *European Strategies for Tackling Social Inequities in Health: Levelling up Part 2. Studies on Social and Economic Determinants of Population Health, No. 3*. World Health Organization Regional Office for Europe Copenhagen. Copenhagen, Denmark: 2007.

Davern, Melanie, Rachel Winterton, Kathleen Brasher, and Geoff Woolcock. "How Can the Lived Environment Support Healthy Ageing? A Spatial Indicators Framework for the Assessment of Age-Friendly Communities." *International Journal of Environmental Research and Public Health* 17, no. 20 (2020): 7685. <https://doi.org/10.3390/ijerph17207685>. <https://dx.doi.org/10.3390/ijerph17207685>.

Fan, Xiaonan, Chong Feng, and Weihua Yang. "Transforming Needs and Countermeasures of Old Communities—a Case Study of Dalian in Liaoning Province." Paper presented at the International Conference on Management, Education and Social Science (ICMESS), Qingdao, PEOPLES R CHINA, Jun 23-25 2017.

Fumagalli, Natalia, Elisabetta Fermani, Giulio Senes, Marco Boffi, Linda Pola, and Paolo Inghilleri. "Sustainable Co-Design with Older People: The Case of a Public Restorative Garden in Milan (Italy)." *Sustainability* 12, no. 3166 (2020).

Guo, Ziwei, and Yi Pan. "A Study on the Transformation of Corporate Communities into Urban "Age-Friendly Communities" in the Context of Ageing - an Example of the 116th Neighbourhood of Wuhan Iron and Steel Works." Paper presented at the Urban Age, Collaborative Planning - 2013 China Urban Planning Conference, Qingdao, Shandong Province, China, 2013.

Irwin, Terry. "Design for a Sustainable Future." In *The Business of Sustainability: Trends, Policies, Practices and Stories of Success*, edited by Scott G. McNall, James C. Hershauer and George Basile: Praeger Press, 2011.

Irwin, Terry. "Transforming the Design Process to Create Better Solutions." *Solutions Journal* (2012).

Lawton, M. Powell, and Lucille Nahemow. "Ecology and the Aging Process." In *The Psychology of Adult Development and Aging.*, 619-74. Washington, DC, US: American Psychological Association, 1973.

United Nations. *World Population Prospects 2019: Highlights*. 2019.

Vavik, Tom. *Inclusive Buildings, Products & Services Challenges in Universal Design*. Trondheim: Tapir Academic Press, 2009.

World Health Organization. *A Conceptual Framework for Action on the Social Determinants of Health: Social Determinants of Health Discussion Paper 2*. Geneva, Switzerland: 2010.

World Health Organization. *Global Age-Friendly Cities: A Guide*. Geneva, Switzerland: 2007.