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

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

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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. Increasing urbanization and policy discourse to support ageing in place raises the urgency of creating and planning for an age-friendly environment. 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”. 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.

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. 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 services and can mobilize the spontaneity of residents to protect their “bottom-up” model of community governance. 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, 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”. 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.\textsuperscript{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.\textsuperscript{14} The transformation of sustainable development requires structural changes in society, and the way it interacts with nature and the built environment.\textsuperscript{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.\textsuperscript{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*,\textsuperscript{6} the Sustainable Transformation of Age-Friendly Communities (STAFC) indicators were developed by combining the Age-Friendly Communities domains and suggested spatial indicators\textsuperscript{5} with Sustainable Development Theory\textsuperscript{17} (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.
<table>
<thead>
<tr>
<th>STAFC Environment</th>
<th>STAFC Domains</th>
<th>Suggested Indicators for STAFC Assessment and Monitoring</th>
</tr>
</thead>
</table>
| Outdoor Spaces and Buildings | • Walkability for transport  
• Systematic landscaping  
• Accessible buildings and design | |
| Transport | • 400 m radius of the settlement  
• Access to public transport with Disability Standards for Accessible Public Transport  
• Humanized transport service system | |
| Social Participation | • Access to and use of shared spaces  
• Access to community services  
• Access to interaction with people in the community | |
| Civic Participation and Employment | • 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. Walking is also associated with maintaining functional independence and better cognitive function. 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. 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. 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, China](image)

**Transport**

Community transport is an essential link between seniors and their social networks and activities and is one of the critical determinants of health. 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. 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. “Complete Streets” designs have also been introduced for safety reasons. In addition to
emphasizing “Accessible Design Changes” 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.

Social Participation

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

**Civic Participation and Employment**

Empowerment, autonomy and control, and employment conditions 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.

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 resolution but it has not been incorporated into most traditional design-led approaches.

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.

<table>
<thead>
<tr>
<th>ART Factors</th>
<th>Total</th>
<th>Focus 1 District Inhabitants</th>
<th>Focus 2 Local Associations</th>
<th>Focus 3 Nursing Homes Hosts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being away</td>
<td>25.00%</td>
<td>7.14%</td>
<td>25.00%</td>
<td>45.83%</td>
</tr>
<tr>
<td>Compatibility</td>
<td>36.25%</td>
<td>50.00%</td>
<td>35.71%</td>
<td>20.83%</td>
</tr>
<tr>
<td>Extent</td>
<td>8.75%</td>
<td>14.29%</td>
<td>7.14%</td>
<td>4.17%</td>
</tr>
<tr>
<td>Fascination</td>
<td>30.00%</td>
<td>28.57%</td>
<td>32.14%</td>
<td>29.17%</td>
</tr>
</tbody>
</table>

Table 2. ART Factors Emerging from Focus Groups

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).
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 STAFC 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


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