

A NEW METHODOLOGY FOR ANALYSIS OF SPATIAL INTERVENTIONS TOWARDS SUSTAINABILITY IN SOCIAL HOUSING REGENERATION – THE CASE OF GYLDENRISPARKEN IN COPENHAGEN (1)

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1. The study is partly derived from the author's PhD thesis (Bican, 2016) submitted to Middle East Technical University. The study gets use of the research data of the thesis, but it thoroughly expands the methodology, clarifies, and revises its logical setup and provides additional visual material and graphics. An earlier version of the current research work was presented in ENHR 2017 Conference in Tirana.

2. Vaulx-En-Velin and Chateau Rouge in France, Bijlmermeer in Netherlands, Cabrini Green and Robert Taylor Homes in the USA, The Brunswick in UK, Hovsjö in Stockholm, and Gardsten in Goteborg are some of the examples which were regenerated under extensive schemes and examined for their physical transformation (Bjørn, 2008).

INTRODUCTION

Since the 1980s, there has been almost a trend to regenerate large housing settlements under decay, particularly those built after the world wars in Europe. Much research has gone into housing regeneration under the disciplines of planning, design, sociology, and other branches of humanities. These studies focus primarily on mass housing settlements, constructed as social housing venues through industrialized production methods. As the large scale of such settlements significantly affect the urban life and citizens, many studies have been directed towards addressing the issues of sustainability and liveability, either explicitly or implicitly. Designed under the similar principles of modern architecture, many post-war housing estates differ a lot due to their changing localities (Van Kempen, et al., 2005). Rowlands et al. (2009) underline this criticality of differentiation among the estates built across the world, particularly in Europe, Asia, and America, specifically pointing to the need for understanding the individualities of each estate to discover potential solutions for accumulating problems. In this way, it makes sense to examine individual cases and draw experiences from them to develop new tools and tactics for later renewals.

Recently, several regeneration cases of varying scales have been studied worldwide with different research focuses. To illustrate, a series of international cases were examined by a group of experienced researchers to figure out how architectural interventions contribute to the resilience of ghettos by providing them with new functions (Bjørn, 2008). The study revealed that a variety of macro-scale strategies for renovation, re-programming, and densification were implemented to address specific issues, such as social-mix, walkability, and mix-use (2). In another collaborative research work, a selection of European best practices was examined to develop new knowledge for some local cases in Denmark and Sweden (Mortensen, 2014). The researchers made use of a "toolbox"

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consisting of thematic concepts - identity, landscape, resources, density and diversity- and scales of examination -district, settlement, and building- to elaborate and discuss their findings. Later, Architects' Journal dedicated an entire supplementary issue named "exemplary housing estate regeneration in Europe" to searching ways of adaptation to change and the humane needs of belonging and identity in housing environments, all required for sustainable housing environments according to Ivor Smith (2015). The issue uncovered both settlement and building scale interventions and provided several illustrations with limited details. Though the representations were not based on academic research, a variety of approaches was featured including urban scale interventions, infills for densification, and remodelling for the sake of sustainability. Simultaneously, single building renewals have also been under focus as multiple implementations cause extensive defects and legal frameworks lead to wide-scale repeat of problematic implementations (Kısar Koramaz et al., 2018).

Among the post-war housing studies which concentrate on the transformation of physical space, the study carried out for German Federal Ministry of Transport, Building and Urban Affairs (BMVBS /BBR, 2007) appears to be the most comprehensive one. In detail, it reveals a set of common physical strategies and measures in reply to major problematic issues applied in 50 "good practices" across the EU at deprived urban areas, and publishes them in the form of a report which has later become a basis for an academic paper (Van Kempen et al., 2007). Due to the holistic approach of the work, the researchers devoted considerable effort and space to the organizational principles followed across the cases. Among the solid physical strategies determined and discussed in the paper are improvement and creation of public spaces, introduction of parking facilities, and establishment of linkages with rest of the city.

Besides, there are systematic and integrated international indexing schemes, such as LEED Neighbourhood (USGBC, 2020) and BREEAM Communities (BREEAM, 2020), which evaluate housing venues under construction or at the design stage and, somehow, direct the implementers to design sustainable environments. The predecessors of those systems fundamentally addressed environmental sustainability, focus on energy and material/resource consumption, and gave less priority to social issues and liveability. Nevertheless, these rating systems only describe minimum conditions and set targets for buildings or neighbourhoods to be eligible for certain points under specified themes and/or certification. They neither set direct design guidelines, nor offer specific solutions for issues that require treatment on a case-basis. However, in many regeneration scenarios, local professionals and community members need solid information on future interventions to make concrete, permanent, and relevant transformation which require tangible investments.

Though, there are several studies in this respect, to the best of the author's knowledge, there is a persistent lack of research bridging the physical efforts at architectural and urban design scales with the theoretical discussion of sustainability, urban regeneration, and mass housing. To address this relatively neglected research area, the present work concentrates on on-site spatial interventions (SI) to regenerate social housing venues which directly transform the built environment for sustainability. This research is based on a study of a best practice in social housing regeneration – Gyldenrisparken estate – in Denmark, where the urban scene draws attention due to strict attachment to quality of space

and architecture and integrated spatial policies in place since 1990s (Bican, 2016). The case is examined in detail through a developable framework of classification to categorize, relate, assess, and compare individual SIs utilizing a matrix and graphical illustrations.

In doing so, in Chapter 2, the paper provides background information on the interrelations among the aforementioned theoretical issues and elaborates an integrated discussion, particularly concerning social sustainability, place-making, and liveability. Then, Chapter 3 briefly describes the role of social housing in Denmark's housing stock and the recent regeneration attempts to overcome accumulated social and physical problems within the framework of national welfare approach. This contextual information is followed by an introduction on the regeneration of Gyldenrisparken supported with a short history, reasons paving the way for a physical transformation, major transformative implementations, and the results leading to satisfaction of all parties. The methodology of this study is elaborated to be potentially adapted for later spatial analyses in Chapter 4. Based on the findings of the research work revealed within three scales in Chapter 5, a thorough discussion is provided revealing the connections between the SIs and their implicit/explicit reasons to address different components of sustainability. Finally, the study concludes with suggestions to future researchers and decision-makers by making use of the Gyldenrisparken's experience and regarding the potentials of the methodological matrix developed here.

THEORETICAL FRAMEWORK

Sustainability and sustainable development have been the among major topics of discussion within recent academic research for nearly a half century. The 1972 United Nations Conference held in Stockholm was a critical milestone as 'the Human Environment Manifest' put forward principles for the use of earth's resources concerning inter-generational equity, and for bridging economic and social development with the environment (Bozlaşan, 2010). In 1987 Brundtland - Our Common Future Report, the concept was defined as a vital phenomenon for connecting environmental protection and economic development. Moreover, the term "sustainable development" was defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations, 1987). Nevertheless, for many years, interventions regarding the built environment primarily targeted economic and environmental issues, leading the social dimension of sustainability ignored, until it was first and openly declared in the Habitat II Conference of UN in 1996.

Sustainability is basically classified under three main categories in the literature: social, economic, and environmental (McKenzie, 2004; Kural, 2009; Vallance et al., 2011). In some studies, it is defined as the three "E"s, where the social component is represented with equity –determination of rights in accordance with individual-specific needs (Godschalk, 2004; Dempsey et al., 2011). Nevertheless, urban researchers tend to prioritize the 'social' dimension over the other two. For Gehl (2010), "lively city" and "social sustainability" are two corresponding phenomena contributing to each other positively. Specifically, accessibility and inclusivity are also of critical importance, though they resonate much with the sense of equity. In this respect, Kural (2009) differentiates the issues under the social dimension of sustainability as those related to the quality of life –

liveability – and those related to social justice – equity. Resonating both issues, interaction, participation, pride and sense of place, community stability, and security are all critical themes providing a community with social sustainability (Bramley et al. 2006 cited in Kural, 2009). Furthermore, assuming that a city should provide room for everyone, Gehl (2010) signals the importance of culture as its codes affect the way a society perceives and utilizes the physical environment. Communities co-create, and are fed by, their common culture which manifests their social existence, keep them united, and paves the way for belonging, strengthening social capital, and contributing to place attachment. Culture is accumulated within the spaces of collective memory and, indeed, some housing researchers tend to regard cultural sustainability as the fourth component of sustainability (Chiu, 2004). Due to its critical importance for interventions of preservation and regeneration, and also in order to be in line with the general three-component approach, the present study places cultural sustainability under the umbrella of social sustainability.

“Building immortal neighbourhoods” is another seminal description for social sustainability (Rudlin and Falk, 2000). In another sense, the description implies the liveability of neighbourhoods. For Godschalk (2004), this feature underpins the intangible dimensions of sustainability - economy, ecology, and equity- using more tangible dimensions related to the space of everyday life -public space, movement systems, and building design. According to Bohl (2002, cited in Godschalk, 2004), liveability has more to do with everyday physical environment and takes “place-making” at the centre. The roots of place-making are attributed to Lynch (1960), Jacobs (1961), Whyte (1980), Rapoport (1982), Gehl (1987), Norberg-Schulz (1996), and Montgomery (1998) though none of them explicitly used the term as such. Thus, it is meaningful that the rise of major concerns for social sustainability corresponds to the beginning of search for liveability of neighbourhoods through urban regeneration and place-making strategies.

Setting their critical stance to spatial decisions made at the meeting board, Rudlin and Falk (2000) consider the concept of design as an effective parameter for the life of a community. For them, this factor depends not only on the decisions made by professionals outside, but also on the wishes of the residents inside, who occupy the space in question today and tomorrow. Resonating this view, the community-based design approach to place-making came forward by the late 1990s. In 1995, Schneekloth and Shibley (cited in Ghavampour and Vale, 2019) defined place-making as a means to create a relationship between people and places. Place-making is an act of creating which pursues cultural and social objectives by collectively making physical improvements (Project for Public Spaces, 2018). Thus, it contributes to “the promotion of public discourse, civic pride, neighbourhood connections, community health and safety, social justice, economic development, and environmental sustainability” (Ellery and Ellery, 2019). Here, it is crucial to avoid surrendering to global trends, ignorance of local knowledge, and disregard for contextual realities which may lead the effort-demanding regeneration attempts to “a decline in the sense of place and social capital” (Ghavampour and Vale, 2019, 199). Community engagement and empowerment counteract such a decline and lead the actions to synchronization of economic, ecological, and social efforts for sustainable development. To organize stakeholders and eliminate potential problems, place-making is utilized as a contemporary means of collaborative design.

Social housing, despite having multiple contextual definitions, is a form of “government regulated housing” and “based on degree of need, made available at below market price” ... “on a short- or long-term basis” (Oyebanji, 2014, 36). Specifically, welfare states have been utilizing social housing to provide equity of access to the housing market since the end of the world wars. As governments have more power over the sector more than that over other types of housing, it is still a major political tool of spatial intervention and of regulation for sustainable urbanization and against urban deterioration. In the post-war period, settlements were usually built in the form of large mass housing following modernistic architectural principles to provide dwelling for all. Nevertheless, the rising urban deterioration faced by many cities after the 1970s resulted in extensive physical and social problems particularly in the mass-produced social housing settlements. The concentration of many vulnerable residents in physically deteriorating neighbourhoods led to social segregation, polarization, ghettoization, and stigmatization worldwide. Particularly in Europe, regeneration programs were widely embraced as a response to such problems, as many post-war housing settlements required transformation due to accumulated physical, social, and economic upheavals (Whitehead and Scanlon, 2007; Dekker et al., 2005).

Today, several social settlements worldwide are still aged, stigmatized, and subject to high turnover rates; and social dwellings, which primarily consist of rental units, serve for many socially disintegrated and vulnerable urban citizens. Therefore, currently national and local governments are still seeking the means to renovate, transform, and integrate these estates. In line with these efforts, large-scale urban regenerations have been utilized to attract people back to cities and to persuade others not to leave. The common goal is to sustain the existence of people in the built environment and, thus, to effectively use the urban resources through integrated programmes (Roberts and Sykes, 2000; Pak, 2014; Mehdipour and Nia, 2013). The urban regeneration projects cover different combinations of several spatial strategies, including densification through brownfield development, regeneration of historic complexes/buildings, rehabilitation of public spaces, promotion of cultural activities and mixed-use developments, and embracing ecological sensitivity (Oktay, 2012). Indeed, decent, affordable, and safe houses for all should be the bottom-line for a contemporary social housing system (Pittini et al., 2015) Such a system is required to create solutions for, and defend the existence of, diversity, opportunity, inclusiveness, affordability, sustainability, and security (Burke, 2005).

For Tosics (2004), there exists a critical mutuality between sustainable urban development and housing as housing comprises the largest portion of the building stock. For Winston (2010), however, several barriers exist ahead of sustainable housing and regeneration, such as lack of a legal framework, limited expertise of professionals, disregard of the need for social regeneration, limited resources, and the poor quality of design. Contrary to the vicious circle of many negative experiences brought about by disregarding social aspects of the built environment, the aforementioned proactive place-making strategies are recently embraced for long-term visions and promoted upon the contribution of various stakeholders, users’ participation in decision making, and maximizing the connection between people and the space of habitat (Ellery and Ellery, 2019). Such strategies provide the residents with a method to agree on the future of their common

habitats and contribute to various aspects of sustainability (Healey, 1997; Ellery and Ellery, 2019).

To summarize, the components of sustainability are intertwined and complement each other. Mass-produced social housing is a critical component of the housing stock. Recent housing regenerations put the liveability of communities and settlements under the spotlight, apply place-making strategies as a means of democratic decision-making, and display a deeper interest in social sustainability. As a result of the theoretical discussion, the analytical framework of the present study embraces the widely accepted three-fold categorization of sustainability (social, economic, environment), while displaying liveability, equity, and cultural concerns under the category of social sustainability to provide a deeper understanding for SIs made in social housing regenerations. The methodology of analysis of the SIs presented in Chapter 4 is in line with the theoretical discussion provided. The case study of the current research work accords with the above-mentioned place-making definitions. The following chapter briefly describes the context and highlights the primary approaches, leading the case in focus to sustainability.

CONTEXTUAL INFORMATION AND THE CASE OF GYLDENRISPARKEN

The Danish welfare system dates back to the second half of the 19th century (3), but it was developed and institutionalized after the world wars at the third quarter of the 20th century (4). Currently, both national and local governments in Denmark support the social housing system in line with universalistic welfare state principles (Ministry of Social Affairs and Integration, 2011) since providing all citizens with quality affordable housing is regarded as a primary duty (Danish Ministry of Culture, 2014).

The Danish social housing (*almene boliger*), which can be directly translated into English as common housing, is defined as “housing for rent provided at at-cost prices by not-for-profit housing associations” (Housing Europe, 2010). It is both a political tool of the welfare system and an instrument to materialize such welfare in the built environment. According to the Federation of Social Housing Organizations in Denmark (2014), the sector aims to be “financially, physically, and socially sustainable and well-functioning” to provide “affordable and decent housing for all in need ..., and to give tenants a legal and decisive right to influence their own living conditions”. Moreover, the Danish social housing represents a solidification of the welfare state and its identity, thereby, constituting a means for social and cultural sustainability by itself. Today, the social housing estates in Denmark have a share of slightly more than 20% of the total housing stock. The shares of the other three major housing categories based on ownership models are: 55% (owner-occupied), ~20% (private rental), and ~5% (cooperative) (Kristensen, 2007).

The *almene* stock saw the highest speed of increase by means of industrialized construction methods in the 60s and 70s, when the major political aim was to encourage the working class to move to the suburbs and, thus, to take them out of the slums while providing them with modern living conditions (Bech-Danielsen et al., 2011). However, many of these estates evolved into ghettos (5), *-udsætte boligområder* (vulnerable housing settlements) in political jargon- due to the concentration of many socially and financially weak residents as well as immigrants (Kristensen, 2007).

3. For more detail please see (Pedersen, 2017).

4. For more detail please see (Rasmussen and Brunbech, 2009).

5. Legally, every-year Danish ministerial authorities publishes a list of vulnerable housing settlements (*udsætte boligområder*). The list is colloquially pronounced as the ghetto list.

According to a report by the Ministry of Social Affairs, 85% of all ghettos in Denmark were built in the stated period (Ministeriet for Flygtninge, Indvandrere og Integration, 2004).

Over the last three decades, these estates have become the focus of transformative efforts. The national government has utilized various instruments to resolve the problematic conditions (Ministry of Social Affairs and Integration, 2011). Several estates have been regenerated by collaboration of housing organizations, municipalities, and other stakeholders. Recent regenerations have been undertaken with a full view of social, economic, and physical components, along with detailed design and planning. Being one of the vulnerable settlements, Gyldenrisparken was regenerated by means of the first holistic project established through a master plan and collaboration of various stakeholders.

Gyldenrisparken is a social housing estate located in a central neighbourhood of Copenhagen, *Amager*. The settlement sits on 86,000 m² of ground with 46,000 m² of total floor area, and it consists of ten housing blocks of four-floors with 432 apartments in total. The blocks were designed in line with typical post-war modernist principles and shaped into brutalist concrete structures with horizontal emphasis on building layouts and facades. The dwellings primarily consisted of family apartments and a limited set of one- or two-room apartments. Thus, the estate houses about 900 residents, nearly half of which are immigrants or their descendants. Until the 2000s, there were prefabricated barracks for a kindergarten, a nursery, and communal facilities; a separate block for small shops, services, and some municipal institutions; parking areas for cars; and a congested green area of trees and bushes. At the end of the 1990s, the housing blocks lacked proper insulation and had many other worn-out elements as the structural concrete of the facades had been exposed to open air and damaged. The settlement, in this way, had many neglected and abandoned spots, which became meeting points for gangs, the socially unintegrated, and people with substance/alcohol dependency. The estate was mostly populated by the low-income, elderly, and/or immigrant residents many of whom were dependent on public benefits. The estate, the unemployment rate of which was 40%, was officially listed among the ghettos due to the lasting accumulated problems. It was close to being demolished at the end of the 1990s. Fortunately, demolition turned out to be economically infeasible as it required displacement of the residents and provision of alternative shelter for them until the end of a potential construction. Eventually, the regeneration project was started in the beginning of the 2000s and lasted more than a decade (**Figure 1**) (**Figure 2**).

A nursing home, a childcare centre, playgrounds, and other low-rise facilities for communal activities were built in line with physical and social goals of the regeneration. Reorganization of green areas, renovation of the housing blocks and unification of selected smaller apartment units to create larger dwellings were the major transformative changes. The physical and social results of the project were appreciated by its residents, public and private stakeholders, and third parties. Interviews with key actors revealed existence of a meticulous co-working of a variety of actors along the transformation process. According to the head of residents' board, criminal activities and vandalism gradually disappeared following the regeneration, and the efforts contributed to social integration of many residents who had lived isolated for years. After the regeneration, waiting times to take up a



Figure 1. The old Gyldenrisparken beginning of 2000s (Lejerbo, 2003)



Figure 2. Aerial View Gyldenrisparken after regeneration (Lejerbo, 2015)

residence in Gyldenrisparken rose sharply, from 3-5 years to 10-20 years, as a result of a rising external demand (Lejerbo, 2015).

For Bech-Danielsen et al. (2011), the renovation in Gyldenrisparken maintained the qualities of architectural heritage, while providing the settlement with a contemporary appearance and ease of use in various scales. For them, the quality and the successful result of the renovation project would fundamentally be attributed to the conscious management of the architecture. In 2014, the project was among the seven selected best practices of social housing regenerations across Europe in the aforementioned interdisciplinary and international study of Mortensen. At the same year, the estate was nominated for the international Mies Van der Rohe Award for architecture and the national *Renover* Prize for renovation. Today, it is regarded as a national pioneer for similar interventions.

METHODOLOGY

Aiming to merge theory with practice, this study made use of a literature review to develop a theoretical framework on social housing, regeneration, and sustainability. The review provided the philosophical background to develop a framework of analysis to categorize the findings of the

research work. Furthermore, the study involved an in-depth research into the Gyldenrisparken’s regeneration. Semi-structured open-ended interviews were conducted, with primary decision-makers involved in the regeneration process. Snowball sampling is embraced and the actors who had critical roles were interviewed (**Table 1**). The interviews aimed to discover the SIs and the reasons behind them. This helped to clarify the goals of each individual SI and categorize them; thus, the problems and the related spatial solutions they addressed provided guidance to fill in the matrix appropriately. Crosschecks were conducted across the separate statements in the light of the original documents including local plans, architectural projects, and publications of the involved parties.

As the primary goal is to analytically examine a social housing regeneration practice by getting use of appropriate theory and provide a deeper comprehension of the transformation actions, a framework of analysis is developed to register all possible SIs. The framework solidifies in form of a matrix involving three major axes. The three hypothetical axes of the matrix depict sustainability, scale, and the selected spatial concepts. The matrix also comprises several cells for individual SIs to develop a coding system for application to the descriptive images of the case area (**Figure 3**).

The first axis of the matrix involves the three major categories of sustainability as widely discussed at the theory section. The category of social sustainability covers aspects of liveability, equity, and culture. The second axis of the matrix helps to categorize the SIs according to the scales

NO	GROUP	RESPONSIBILITY
1	RB	Chairman
2	HA	Social Worker / Project Leader
3	HA	Business Director
4	HA	Social works in Copenhagen Dep
5	HA	Employee
6	HA	Project Manager
7	AEC	Partner
8	Advisor to MU	City Architect (2000-2010)
9	CC	Secretary to “Task force”
10	CC	Director
11	CC	Assistant
12	CC	Consultant
13	RB	Member of the Board
14	SFI	Researcher/Sociologist
15	AEC	Partner
16	LBF	Consultant
17	Advisor to MU	City Architect (2010-2019)
RB: Residents’ Board HA: Housing Association AEC: Architect-Engineer Consortium MU: The Municipality (of Copenhagen) CC: Consultant Company to the HA SFI: Danish National Institute for Social Research LBF: National Building Fund		

Table 1. List of interviewees

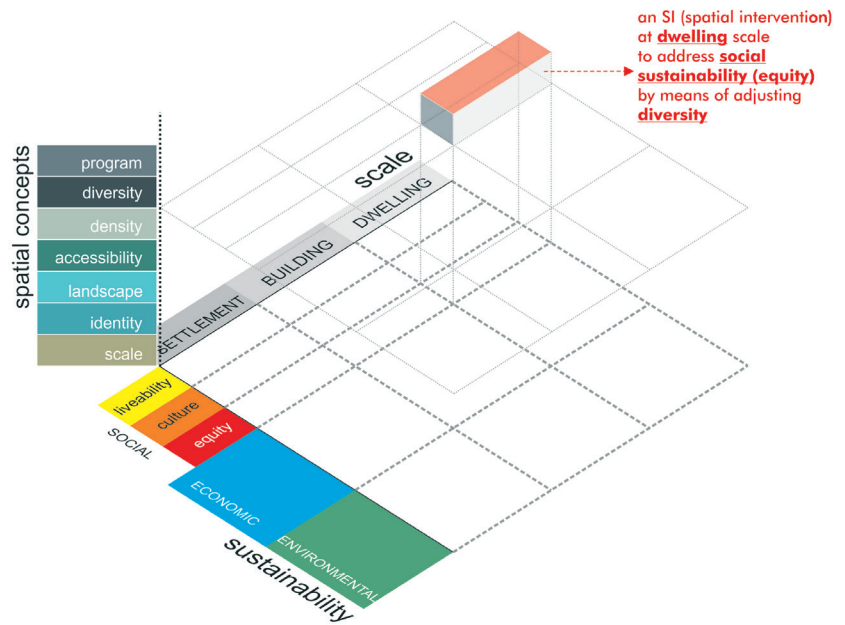


Figure 3. Conceptual representation of the matrix for SIs.

they were effective at. Similar studies focus on neighbourhood, district, settlement, building, and dwelling scales. This study focuses on the local interventions of urban design restricted by the borders of the settlement and those of architectural design which affect the building blocks and interior layouts of the dwellings. Therefore, the study examines the case at the following scales: settlement, building, and dwelling units.

The third axis involves spatial concepts for a deeper understanding of the individual interventions. Three studies on housing settlements (Kural, 2009; Arch 714 Housing Research and Design Studio, 2012 (6); Mortensen, 2014) were benefited to determine appropriate sub-categories constituting this dimension. In all, seven spatial concepts were determined to define the variety of the interventions and their discursive statements in the regeneration. The spatial concepts included in the matrix are as follows: program, diversity, density, access, landscape, identity, and human scale. In this categorization, the program refers to physical arrangements of different functions by providing the built elements with genericity, adaptability, and multi-functionality. Diversity refers to availability of multiple options of spaces/spatial arrangements for different needs and users. Density is a correlative factor measured by a variable, such as person per definite area/volume in planning studies. In this study, the concept refers to spatial density of built elements which further defines that of inhabitants. Access refers to availability of alternative options to move around freely and securely for the residents and visitors. Landscape refers to appropriate topographical and botanical arrangements across the built environment. Identity refers to the factors providing a spatial element with its unique character and is usually connected to cultural codes of a society. Finally, human-scale refers to relative sizes of built elements with respect to other built elements and human-beings.

The matrix has several cells, each of which are defined by a tripartite categorization: a scale of intervention, a sustainability component, and a spatial concept. Each cell houses a certain definition of an SI. In other

6. Arch 714 is a course offered for graduate students under the name of Housing Research and Design Studio by Prof. Dr. Ali Cengizkan at METU, Ankara, Turkey, in 2012. The course is based on theoretical discussions and comprehensive re-interpretation of selected housing practices.

words, each SI is defined by three components. On the other hand, cells do not necessarily house an SI. It depends on the existence of an intervention in that given scale, contributing to that certain aspect of sustainability, through a given spatial concept.

The framework can be filled in by asking a series of questions, either by deduction or induction. To illustrate, one can inquire by using one of the variables within the brackets as shown below:

What was [done: changed/implemented/renovated/introduced]
in terms of [program/diversity/density/accessibility/landscape/
identity/human-scale]
in the [settlement/building/dwelling] scale
to secure [social/economic/environmental] sustainability?

Thus, several combinations can be derived to ask different questions to match the many SIs to the afore-mentioned tripartite categories. One can also find the tripartite category of a certain SI by asking three respective inductive questions:

An exemplary intervention:

Elevators were renovated (to provide equity of access for those living at different floors) (B12)

1.Question: Which scale intervention is it?

Answer: Building

2.Question: Which component of sustainability does it contribute to most?

Answer: Social Sustainability (Equity)

3.Question: Which spatial concept does it depict it most?

Answer: Accessibility

In case, an SI is thought to match more than one tripartite category, one can either select the most appropriate category in order not to repeat the individual SI more than once in the matrix; or, the SI can be written in different cells. Here, consistency is critical. In the current study, SIs are repeated if only the reasons behind address a different category.

The following section offers the findings of the research work with their codes in the matrix chart filled for the case of Gyldenrisparken. Furthermore, figures are provided for each scale of intervention. A common graphic language is adapted in the figures to represent the numerous SIs and their place of adaptation. The representative of an SI consists of four elements –of scale, sustainability, spatial concept, and a coding number- with consistent abbreviations and background colours.

FINDINGS

This section is based on the written and verbal information collected from the interviewees, site visits, and soft information shared in the web sources. Below, the SIs are described by scale based on the reasons behind as expressed by the stakeholders. Please see **Table 2** below and **Figure 4**, **Figure 5**, and **Figure 6** for each subheading, respectively.

		S	SETTLEMENT	B	BUILDING	D	DWELLING	
SOCIAL S.	liveability	PRG	<ul style="list-style-type: none"> (1) The site plan was revised with a set of programmatic arrangements. (2) Parking lots were provided with night-lighting. (3) New facilities were smartly aligned. 	PRG	<ul style="list-style-type: none"> (1) New communal facilities were built. (2) Positive outdoor spaces were defined by smart alignment of the new facilities. (3) Block entrances were provided with multi-functional canopies. (4) Bay windows were added to facades with no openings. 	PRG	<ul style="list-style-type: none"> (1) Overall interior material quality of apartments was enhanced. (2) Depths of balconies were increased. (3) Apartments were renovated. 	
		DIV	<ul style="list-style-type: none"> (4) Open spaces were diversified. 	DIV	<ul style="list-style-type: none"> (5) Bay windows were added to façades to break the dullness; to diversify vistas from interior. 	DIV	<ul style="list-style-type: none"> (4) Housing units were renovated / re-arranged, and alternative layouts were created. 	
		SCA	<ul style="list-style-type: none"> (5) The new nursing and childcare facilities were designed so as not to exceed 2-floors. 	SCA	<ul style="list-style-type: none"> (6) The horizontality of window strips of the housing blocks was preserved. 	SCA		
		ACC	<ul style="list-style-type: none"> (6) New pedestrian paths were introduced. 	ACC		ACC		
		LAN	<ul style="list-style-type: none"> (7) Lower branches of trees were pruned. (8) The landscape among the southern housing blocks was re-designed. 	LAN	<ul style="list-style-type: none"> (7) The new public facilities were equipped with roof gardens. 	LAN	<ul style="list-style-type: none"> (5) New types of private gardens (4 options) were designed at the ground floors. 	
		DEN	<ul style="list-style-type: none"> (9) The overall layout was densified by smart arrangement of new public facilities. 	DEN		DEN		
		equity	IDE	<ul style="list-style-type: none"> (10) Basic layout of the settlement was preserved as heritage of the 1960's modernistic planning understanding. 	IDE	<ul style="list-style-type: none"> (8) Horizontality and light colour of the housing blocks were preserved as architectural heritage. (9) Plastic or artificial materials were avoided. 	IDE	<ul style="list-style-type: none"> (6) Wooden flooring of apartments was preserved.
			PRG	<ul style="list-style-type: none"> (11) Open spaces were re-formulated to welcome the excluded groups -children, handicapped, the elderly. 	PRG	<ul style="list-style-type: none"> (10) New public facilities were built to ease access of the tenants and local residents. 	PRG	<ul style="list-style-type: none"> (7) Apartments with new layouts were introduced by unifying/dividing some selected apartments.
			DIV	<ul style="list-style-type: none"> (12) Social facilities and open public spaces in between were diversified for social mixing. 	DIV	<ul style="list-style-type: none"> (11) A group of small residences for single young tenants were converted to larger apartments for families. 	DIV	<ul style="list-style-type: none"> (8) The new façade design for housing blocks were organized to provide a sense of equity for all dwellings.
	ACC		<ul style="list-style-type: none"> (13) Access to transport, shopping, and healthcare were enhanced. (14) The new nursing house and kindergarten were located centrally for accessibility of all. 	ACC	<ul style="list-style-type: none"> (12) Elevators were renovated. (13) Ramps were designed to provide access to the elevated ground floors. 	ACC	<ul style="list-style-type: none"> (9) Doorways, balconies, kitchens, and bathrooms were re-designed/ optimized according to universal design principles. 	
	LAN		<ul style="list-style-type: none"> (15) New landscaping solution was introduced between southern units for equity of direct access to green. 	LAN		LAN	<ul style="list-style-type: none"> (10) Private gardens were re-designed in four different concepts and renovated. 	
	ECONOMIC S.		PRG	<ul style="list-style-type: none"> (16) The new facilities and new programmatic organization were designed to secure demand. 	PRG	<ul style="list-style-type: none"> (14) Renovation was embraced as the basic method of spatial intervention. 	PRG	<ul style="list-style-type: none"> (11) Interiors were renovated to elongate service life of apartments.
		DIV	<ul style="list-style-type: none"> (17) Alternative housing types and public facilities diversified the spatial offers. 	DIV	<ul style="list-style-type: none"> (15) Rooftop of the old childcare centre were re-organized. 	DIV	<ul style="list-style-type: none"> (12) Apartments with new layouts were designed. 	
	ENVIRONMENTAL S.	PRG	<ul style="list-style-type: none"> (18) Block layout was preserved to ensure optimum daylight-use for interiors and open spaces. 	PRG	<ul style="list-style-type: none"> (16) The new childcare institution was designed to be a 'zero-energy' building. (17) Building blocks were renovated, which enabled the 're-use' of existing infra- and superstructure. 	PRG	<ul style="list-style-type: none"> (13) Depth of balconies were increased, and the glazed partitions were enlarged. (14) Natural materials were preferred for interiors. (15) Window glazing were changed with those with higher thermal insulation capacity. 	
		LAN	<ul style="list-style-type: none"> (19) Old trees were preserved for climatic reasons. 	LAN	<ul style="list-style-type: none"> (18) Green roofs were used to avoid heat loss and capture rainwater. 	LAN		

ABBREVIATIONS: PRG: Program; DIV: Diversity; DEN: Density; ACC: Access; LAN: Landscape; IDE: Identity; SCA: Human scale

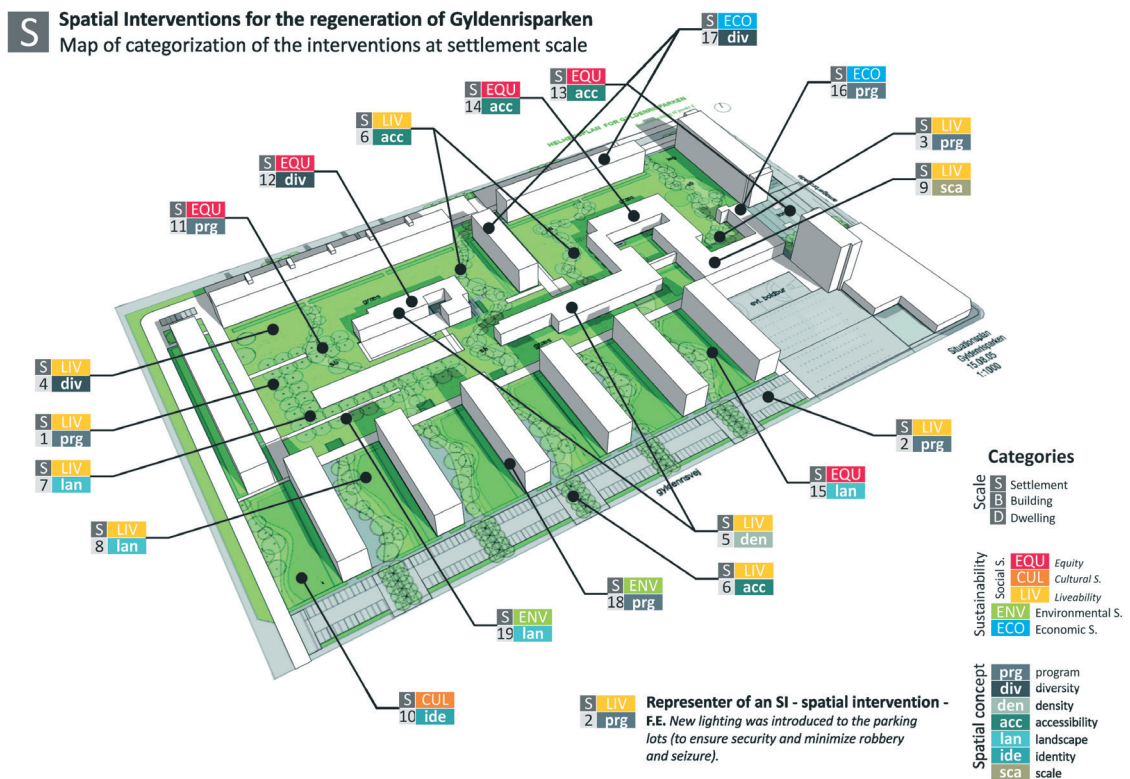
Table 2. Analysis Matrix of SIs for regeneration in Gyldenrisparken

Settlement scale (S)

The site plan of Gyldenrisparken was (re)designed by experienced architects through a competition. Accordingly, the major layout was preserved to a large extent, to uphold the functional modernistic planning from the 1960's (S10). This was also kept as a key preference for allowing optimum daylight for interiors and open spaces (S18). Programmatic arrangements and smart alignment of the new public facilities contributed to achieve a better quality of outdoor space, maintain a day & night secure environment (S1), and better define public and private zones (S3). In addition, access to transport, shopping, and healthcare were enhanced to maximize urban-scale equity of residents (S13). Social facilities and open public spaces were (re)organized to facilitate communal and re-creative activities for a diverse group of residents (S4), to welcome the previously excluded groups –children, handicapped, elderly (S11), and to create a set of spaces for social mixing of tenants from diverse backgrounds (S12). Overall densification of the settlement came with the smart arrangement of public facilities, especially a double-floor “snake-shaped” institution for the elderly (S9). The winning architectural proposal for the facility introduced a linear alignment creating zigzags across the site and, thus, defined the positive open spaces of human scale outside (S5). The new nursing house and the kindergarten were located centrally to allow equity of access to open public space for different generations and facilitate social inclusion through spatial arrangement (S14). Furthermore, the settlement was provided with alternative housing types to attract new tenants, in this way diversifying the demand structure (S17).

A series of SIs into the landscape were also made across Gyldenrisparken. Old trees in the middle of the settlement were preserved to maintain the

Figure 4. SIs in Gyldenrisparken. Scale: Settlement (S)



microclimate eliminating the heat island effect and block heavy winds in cold days (S19). However, their lower branches which created a physical and visual barrier were pruned to enable unrestricted visibility across the site and a wider sense of space and security (S7). This was coupled by new landscape features and urban furniture between the southern housing blocks which provided equity among the tenants to directly access to green areas (S15) and new opportunities to inhabit the space (S8). Additionally, nodal SIs, such as, supplying the parking lot with night-lighting (S2) and design of new pedestrian paths (S6) addressed specific problems as security and walkability respectively.

Building scale (B)

In Gyldenrisparken regeneration, the built elements were transformed either by constructing new public facilities or renovation of existing buildings, including several structural changes in line with the master plan. Renovation was embraced as the basic method of SI to engage in cheaper investment than demolishing and new construction (B14) by means of re-use of the existing infra- and superstructure (B17). One of the major SIs was the conversion of a group of small residences for young tenants to larger apartments for families to diversify the dwelling stock and ensure a wider social mix (B11).

New communal facilities were built to provide alternative ways of interaction for social mixing (B1) and to provide the tenants and local people with direct access to public service and activity (B10). The new facilities were smartly aligned to define positive outdoor space (B2). Furthermore, they were equipped with roof gardens to provide an alternative open space. This was, primarily, a means to prevent heat loss and capture rainwater (B18), but it also provided a visually aesthetic vista for the residents living at the upper floors (B7). The rooftop of the old childcare centre was also (re)organized to utilize the abandoned space without much investment and diversify public opportunities (B15). Whereas, the new building was designed to be a zero-energy building to minimize energy costs (B16).

Renovating the apartment blocks, horizontality and light colour of the facades were preserved to keep the architectural heritage of the 1960s alive (B8); as prioritized in the winning architectural renovation project. Being in line with this, plastic or artificial materials were avoided particularly at façade and balcony renovations to preserve the historic identity (B9). As declared by the design-architect, the horizontal emphasis of window strips was also kept as a modernistic expression to uphold the human scale (B6). However, bay windows were added to the façades to break the monotony of the building exterior and provide the households with a diversity of view angles (B5) to maximize natural surveillance for security reasons (B4). Moreover, block entrances were provided with multi-functional canopies to defines places protected against sun, wind, and precipitation, to stop by and check mails; by this means, to highlight the access points by architectural element (B3). The elevators in the northern blocks were renovated to provide equity of access for all living at different floors (B12). To the apartment blocks at south edge, ramps were added to provide access to the elevated ground floors from the street level for the handicapped, elderly, and children (B13).

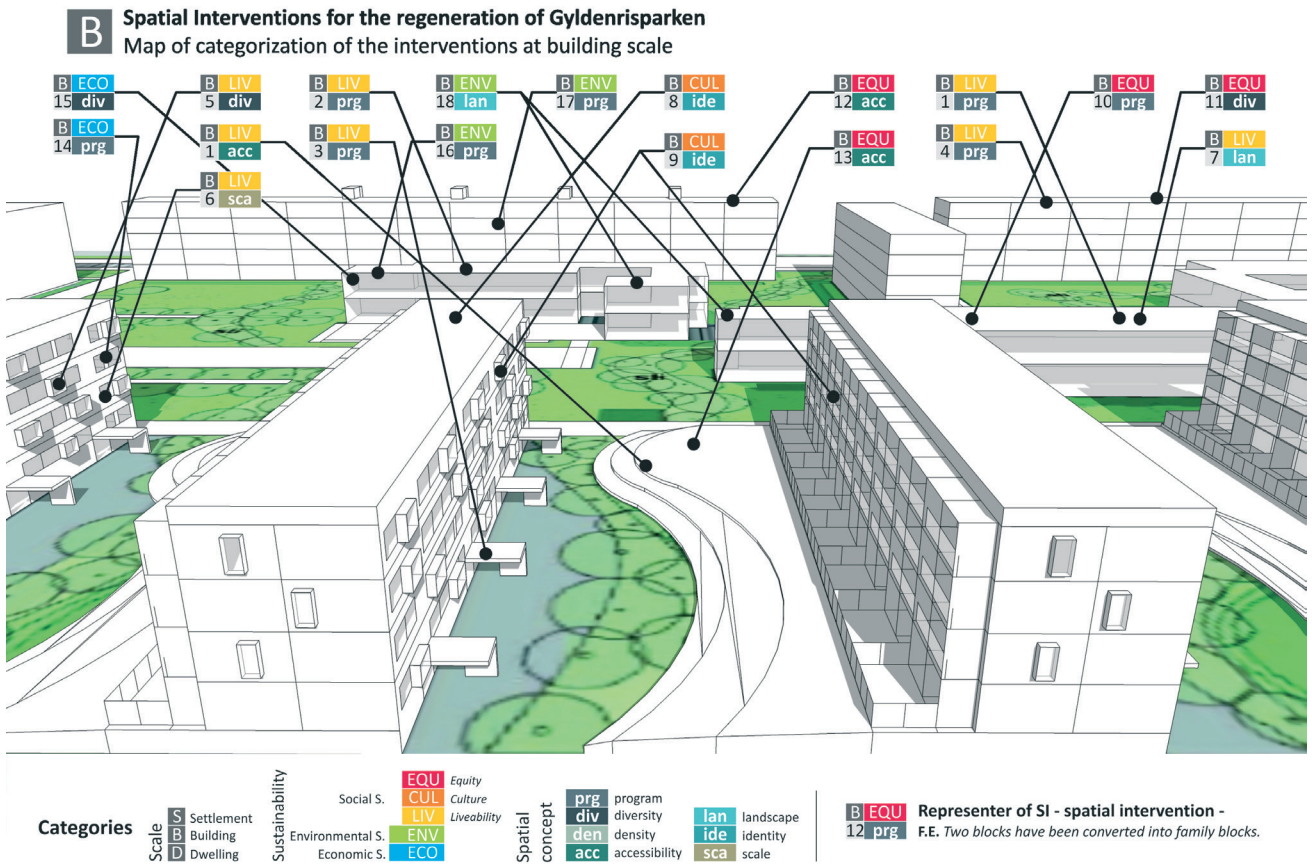


Figure 5. SIs in Gyldenrisparken. Scale: Building (B)

Dwelling scale (D)

During the regeneration, renovation of the apartment blocks was carried out in response to the residents' needs (D3) and preferred as an economic means to accommodate flexible purposes of daily life/work (D4), to elongate service life of apartments, and to secure long-term demand, as a result (D11). Additionally, dwellings with new layouts were provided by unifying/dividing some selected apartments to present alternatives of selection for a variety of household types (D7), thus, to elaborate the demand structure (D12). The overall interior material quality of apartments was enhanced to secure a liveable interior space and to maximize individuals' satisfaction and place attachment (D1). Natural materials were preferred for interiors (D14). The wooden flooring was preserved to sustain the households' affinity to timber, a widely used material in Danish housing (D6). Doorways, balconies, kitchens, and bathrooms were (re) designed through universal design principles to provide equity of access for all households –elderly, handicapped etc.(D9). The glazings were replaced with those of higher thermal insulation capacity to minimize heat loss (D15). When organizing the new façade layout, a democratic means was followed to provide all possible apartments with bay windows giving equity of the right for all (D8).

Outside of the apartments, balconies, which had been narrow and mostly abandoned, were increased in depth to enable multi-purpose utilization (D2). Together with this and enlargement of glazed partitions, better

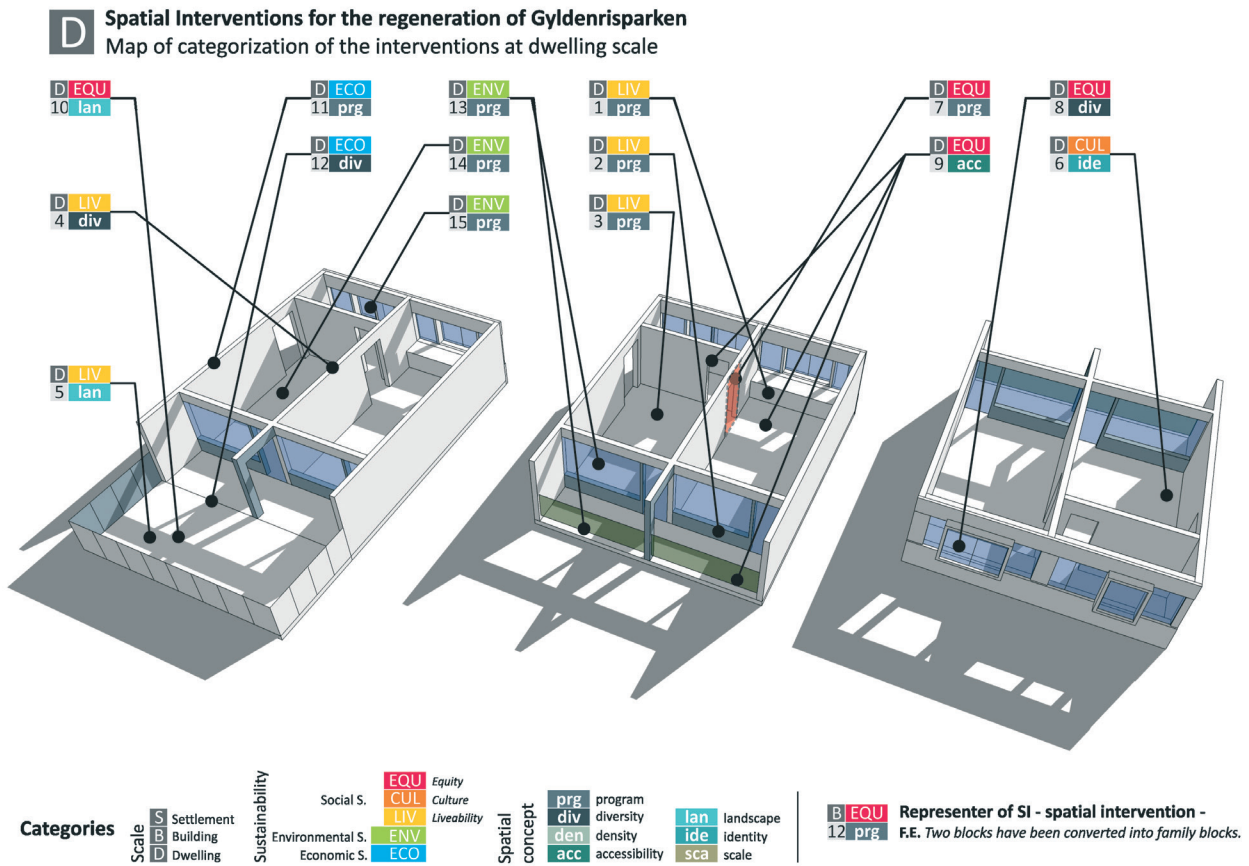


Figure 6. SIs in Gyldenrisparken. Scale: Dwelling (D)

natural lighting and less dependence to unnatural sources of light were secured (D13). Besides, private gardens were re-designed and renovated based on four different concepts to better match the resident-demand (D5) and to provide the elderly or families with small children with more green area (D10).

DISCUSSION

In this section, the commonalities and differences of the SIs for regeneration, described in the previous section, are discussed to highlight the implicit connections between their intended goals and contributions to the components of sustainability. In doing so, the analytical matrix described in the methodology is utilized. The discussion is elaborated around the seven specific spatial concepts, comprising the third axis of the matrix, to reveal the common spatial grounds of the SIs.

To regenerate Gyldenrisparken, minor and major SIs at different scales were made for functional changes (PRO) including construction of new facilities, alignment of built/natural elements, targeted design of architectonic elements of the facilities and housing blocks, and renovation of existing structures. A series of programmatic/architectonic interventions were made, particularly targeting to ease and facilitate the daily requirement of the residents, maximize visual control, and maintain security to enhance the liveability of the settlement. Some of those SIs simultaneously contributed to the inclusion of previously excluded residents and regenerated the sense of equity by the introduction

of opportunities for spontaneous encounters between neighbours to encourage social mixing and provision of dwellings for a variety of households. Moreover, the same SIs were accompanied by other fine-detailed SIs for mere environmental targets to reduce the need for external resources and optimize a balance between energy gain and loss. These series of SIs also served for the economic sustainability of the efforts to elongate the service life of the estate and reinforce the demand of occupancy for current and future residents.

Further, the SIs to diversify (DIV) spatial quality at all scales addressed both liveability of the estate and equity of residents, leading to social sustainability of the regeneration. To illustrate, the addition of new bay windows on housing block facades was essentially a means of increasing the angle of vision for residents inside and to maximize natural surveillance of the public open space of the settlement. Moreover, determining the locations of the bay windows along facades, the architects worked carefully to ensure that every dwelling has at least one bay window either at the front or side facades to secure a sense of equity. The provision of alternatives by means of such careful diversification targeted economic sustainability by creation of multiple means of supply for existing and potential demand.

Density (DEN) is affected by the alignment of blocks within a settlement, placement of apartments within blocks, or changing the capacity of individual dwellings to house a certain number of people based on layouts. The conversion of some youth dwellings to large family dwellings led to an increase at the population capacity of the settlement to a certain extent. This was a primary SI for the estate's social and economic sustainability. Furthermore, the settlement was densified through a formal articulation of the new public facilities to avoid large public voids with a limited sense of place, and thus, to create a more liveable outdoor space. However, the heights of the new nursing home and childcare facilities were kept at double-floor layout to maintain a human-scale environment. This was an intentional choice by the architects to sustain the horizontal emphasis of the settlements. The same concern became effective for the housing blocks. Renovating the facades, they preserved the buildings' height and framed all the windows at same floors together.

Besides, SIs for accessibility (ACC) promoted walkability and ease of move by means of new pedestrian paths, ramps integrated into the topography and/or universally designed interiors. These SIs created alternatives for not only the handicapped, but also for the elderly, parents with children –as a means of maintaining equity among residents–, or even for a better quality of life as encouraging more physical action for all.

The landscaping (LAN) arrangements in Gyldenrisparken regeneration, including the preservation of old trees, selection of new species, or use of green elements to avoid heat loss and capture rainwater, all together materialized the general vision for an environmentally sustainable settlement. Moreover, the psychological wellness of the residents and a sense of security were targeted by re-designing greeneries between blocks, at rooftops, or in the front gardens. The SIs on the landscape were also undertaken as a method of distributing equal chances to access the outdoor greenery or green vista for public and private users.

When the matrix is examined, it appears that the SIs addressing identity (IDE) in all three scales essentially serve for the cultural accumulation of

the society and the desire for being unique, thus contributing to social sustainability. A settlement's site plan, building features, or material-use, artistic values/ objects, or spaces of daily rituals define its spatial identity, which later shapes the collective memory of the community and comprise its major cultural components. Therefore, preservation of the functionalistic site plan decisions, the modernist architectural principles of the housing blocks with their brutalist details, and avoidance of artificial materials inside/outside dwellings all aimed to provide a continuum with the heritage of the 1960s and, consequently, to sustain the cultural accumulation as an embedded code of the settlement.

CONCLUSION

This study attempted to build a basis for information and comparison of spatial interventions (SIs) in regeneration projects by describing a methodology to bridge the theory and practice. Place-making implementations continue to create new participatory mechanisms across the globe. Nonetheless, the physical practice cannot be fully supported by accumulated theoretical knowledge alone. The current study develops a framework for SIs in social housing regeneration consisting of a variety of intervention scales, selected spatial concepts, and the three components of sustainability by focusing on the social dimension while, at the same time, exploring real-life applications in a European best practice. The simultaneous social support provided by both the housing association and the local government remains outside the scope of this study, though it has a non-negligible role in terms of total regeneration.

During the Gyldenrisparken regeneration, a variety of SIs reflecting all selected spatial concepts was accommodated to address the diverse needs of the target society. Examining the matrix applied for the case, it can be concluded that the SIs in the regeneration mainly addressed social sustainability, yet they also addressed the economic and environmental concerns. The new programmatic arrangements to maximize the diversity of options for a vast range of users went as far as meeting their contemporary demands as well, thereby extending the economic life of the settlement. Similarly, renovations to elongate the service life of the existing buildings, introduction of new facilities, and making use of the abandoned spaces of the site allowed for securing long-run economic sustainability. The SIs to preserve the built environment and its accumulated values to rehabilitate the existing urban infrastructure additionally contributed to environmental sustainability alongside optimizing energy consumption, use of natural sources, and adopting green and zero-energy solutions.

The suggested methodology presents an analytical and developable framework, raising awareness among practitioners regarding previous experiences to discover potential SIs. By this means, regeneration projects which involve several decision-makers and stakeholders can achieve further success and higher satisfaction levels, and keep up with socially-oriented goals including liveability, culture, and equity – all of which could, otherwise, be neglected or underestimated. The matrix does not prescribe the specific SIs addressed in the case study; rather, it provides both theorists and practitioners with an open framework to analyse what is already done in different settings, to discover relative sufficiency or deficiencies by comparing different projects on a single ground, and to discuss new potentials. The method of SI categorization, as proposed here, allows for making connections between the theoretical targets and

the real-life attempts of physical transformation. Thus, it provides a basis to comprehend, criticize, and/or acknowledge the actions. Long-term monitoring of the SIs has a potential to test the accuracy of the assumptions made at the time of planning/intervening. Furthermore, with an accumulation of common knowledge on such a similar ground of analysis, the methodology can be potentially utilized in new regeneration initiatives to guide sustainable and liveable developments by controlling the interventions at different scales. Obviously, the proposed matrix is open to further development in time and in line with new requirements.

Currently, local and central governments worldwide tend to utilize their available social housing stocks as an urban scale utility to provide affordable alternatives for a variety of residents, particularly across central urban districts. Recent place-making attempts to regenerate such settings integrate physical efforts with social ones, centralize cooperation with all possible stakeholders, and embrace the individualistic character of localities. The comprehensive regeneration of the housing stock enhances the liveability of settlements while keeping the existing residents and encouraging others to move in as well; whereas unplanned urban growth in cities, coupled with the potential risks of disasters, requires large-scale urban transformation to affect the lives of many citizens in developing countries, such as in Turkey. The respective authorities anywhere can make use of the results attained here to develop new ways of regenerative practices and urban policies for current and future transformations. In this regard, considering the aging housing stock and previous conflict-triggering attempts of transformation the Turkish urban geography in particular seems to need a database and information on how housing areas are regenerated by means of various SIs (Bican, 2020). There, even the largest and most comprehensive regeneration projects still tend to ignore the major concerns of sustainability, and only achieve some limited short-run goals. Therefore, the result with the problems would be the poor quality of space, displacement of the urban poor, and lack of accessibility due to lack of sustainable guidance, to mention a few (Korkmaz and Balaban, 2020). In this sense, the authorities in charge should develop practical mechanisms for such projects to avoid complexity and, instead focus more on social and environmental features. This can be achieved by applying a similar set of SIs as mentioned in the current study. By this means, the economic targets prioritized could be met more easily, even promoted. What's more, alternative ways should be considered to further community involvement at different localities as a means of a sustainable place-making to better understand the needs, opportunities, problems, and potentials involved; thus, avoid conflicts, develop social consensus, and establish sustainable communities. All in all, the current study could provide a developable guide for many similar future initiatives or serve as a basis to evaluate any completed project.

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BIBLIOGRAPHY

- BECH-DANIELSEN, C., JENSEN, J. O., KIRKEBY, I. M., GINNERUP, S., CLEMENTSEN, A., & HANSEN, M. Ø. (2011) *Renovering af efterkrigstidens almene bebyggelser: Evaluering af ti renoveringer med fokus på arkitektur, kulturarv, bæredygtighed og tilgængelighed*, Statens Byggeforskningsinstitut, Hørsholm.
- BICAN, N. B. (2016) *Securing Future of Social Housing: Learning from an Alternative Regeneration/ Gyldenrisparken in Denmark*, unpublished Ph.D. Dissertation, METU, Ankara.
- BICAN, N. B. (2020) Public Mass Housing Practices in Turkey: the Urgent Need for Research-based Spatial Decision-making, *Journal of Housing and the Built Environment* 35(2) 461-479.
- BJØRN, N. (Ed.). (2008) *Arkitektur Der Forandrer - Fra Ghetto til Velfungerende Byområde*, Gads Forlag, Copenhagen.
- BOZLAĞAN, R. (2010) Sürdürülebilir Gelişme Düşüncesinin Tarihsel Arka Planı. *Sosyal Siyaset Konferansları Dergisi*, 0(50) 1011-1028.
- BREEAM (2020) *BREEAM Communities International Technical Standard*. [<https://www.breeam.com/discover/technical-standards/communities/>] Access Date (03.01.2020).
- BMVBS/BBR, eds.. (2007) Strategies for upgrading the physical environment in deprived urban areas. [https://www.bbsr.bund.de/BBSR/EN/publications/OnlinePublications/2007/DL_EU_06_07.pdf?__blob=publicationFile&v=1] Access Date (03.01.2020).
- BURKE, T. (2005) Social Housing over the Horizon: Creating a Contemporary Social Housing System, *Building for Diversity: National Housing Conference*, Refereed Conference Proceedings (26-28 October 2005) eds. S. Darby, P. Flatau, I. Hafekost, Western Australia, Perth; 1-15.
- CHIU, R. L. (2004) Socio-cultural Sustainability of Housing: a Conceptual Exploration, *Housing, Theory and Society*, 21(2), 65-76.
- DANISH MINISTRY OF CULTURE (2014) *Danish Architectural Policy: Putting People First*, Copenhagen.
- DEKKER, K., HALL, S., VAN KEMPEN, R., TOSICS, I. (2005) Restructuring Large Housing Estates in European Cities: An Introduction, *Restructuring Large Housing Estates in Europe*, eds. R. Van Kempen, K. Dekker, S. Hall, I. Tosics, The Policy Press, Bristol; 19-45.
- DEMPSEY, N., BRAMLEY, G., POWER, S., BROWN, C. (2011) The Social Dimension of Sustainable Development: Defining Urban Social Sustainability, *Sustainable Development*, (19) 289-300.
- ELLERY, P. J., ELLERY, J. (2019) Strengthening Community Sense of Place through Placemaking, *Urban Planning*, 4(2) 237-48.
- GEHL, J. (1987) *Life Between Buildings*, Arkitektens Forlag, Copenhagen.
- GEHL, J. (2010) *Cities for People*, Island Press, Washington.
- GHAVAMPOUR, E., VALE, B. (2019) Revisiting the Model of Place: A Comparative Study of Placemaking and Sustainability, *Urban Planning* 4(2) 196-206.

- GODSCHALK, D. R. (2004) Land Use Planning Challenges: Coping with Conflicts in Visions of Sustainable Development and Livable Communities. *Journal of the American Planning Association* 70(1) 5-13.
- HEALEY, P. (1997) *Collaborative Planning: Shaping Places in Fragmented Societies*, MacMillan, London.
- HOUSING EUROPE (2010) *Social Housing in Europe / Denmark* [<https://www.housingeurope.eu/resource-102/social-housing-in-europe>] Access Date (01.06.2015).
- JACOBS, J. (1961) *The Death and Life of Great American Cities*, Vintage Books, New York.
- KISAR KORAMAZ, E., KORAMAZ, T., ÖZER, Ö. (2018) Urban Transformation through Property-led Regeneration: A Case of Building Renewals in Istanbul, *ITU A|Z* 15(2) 183-96.
- KORKMAZ, C., BALABAN, O. (2020) Sustainability of Urban Regeneration in Turkey: Assessing the Performance of the North Ankara Urban Regeneration Project, *Habitat International* (95).
- KRISTENSEN, H. (2007) *Housing in Denmark*, Centre for Housing and Welfare, Realdania Research.
- LEJERBO (2015) *Gyldenrisparken - Erfaringer og Perspektiver fra Danmarks Første Helhedsplan*. (S. S. Hansen, V. Hvid, & A. L. Bækgaard, Eds.). [https://kubenman.dk/media/2760681/Gyldenrisparken-Evaluerig_200115.pdf] Access Date (01.01.2018).
- LEJERBO (2003) *Idékatalog - Visioner og ideer til renoveringsprocessen*, Copenhagen.
- KURAL, N. (2009) *Parameters of Sustainability in Urban Residential Areas: A Critique of Temelli in Ankara*, unpublished PhD Thesis, METU, Ankara.
- LYNCH, K. (1960) *The Image of the City*, MIT Press, Cambridge.
- MCKENZIE, S. (2004) *Social Sustainability: Towards Some Definitions*, Working Paper Series No 27, University of South Australia, Magil.
- MEHDIPOUR, A., NIA, H. R. (2013) Industrialization and City Change: the Concept and Historical Evolution of Urban Regeneration, *International Journal of Sciences: Basic and Applied Research* 12(1) 176-181.
- MINISTERIET FOR FLYGTNINGE, INDVANDRERE OG INTEGRATION (2004) *Regeringens Strategi mod Ghettoisering / Governmental Strategy against Ghettoization*. [http://www.stm.dk/multimedia/Regeringens_strategi_mod_ghettoisering.pdf] Access Date (01.12.2015).
- MINISTRY OF SOCIAL AFFAIRS AND INTEGRATION (2011) *Social Policy in Denmark*. [<http://www.sm.dk>] Access Date (01.01.2014).
- MONTGOMERY, J. (1998) Making a City: Urbanity, Vitality, and Urban Design, *Journal of Urban Design* 3(1), 93-116.
- MORTENSEN, P. D. (2014) *Sound Settlements: An Interdisciplinary and Transnational Approach to Sustainable Housing*, KADK, Copenhagen.
- NORBERG-SCHULZ, C. (1996) The Phenomenon of Place, *Theorizing a new agenda for architecture: An anthology of architectural theory 1965-1995*, ed. I N. Kate, Princeton Architectural Press, New York; 414-27.

- OKTAY, D. (2012) Urban Regeneration and Place-Making For Sustainability, *Recycling Common Ground*, ed. C. L. Alinea; 29-33.
- OYEBANJI, A. O. (2014) *Development of a Framework for Sustainable Social Housing Provision (SSHP) in England*, Unpublished PhD Thesis, University of Central Lancashire, Lancashire.
- PAK, S. (2014) Space Design Marketing for Urban Regeneration in the UK through Regional Space Assets, *Journal of Urban Regeneration and Renewal* 9(1) 80-93.
- PEDERSEN, O. K. (2017) *Velfærd: Ideen, der ændrede vores samfund totalt* [<https://videnskab.dk/kultur-samfund/velfaerd>] Access Date (01.06.2019).
- PITTINI, A., GHEKIERE, L., DIJOL, J., KISS, I. (2015) *The State of Housing in the EU 2015: A Housing Europe Review*, ed. M. Goudis, Housing Europe, Brussels. [<http://www.housingeurope.eu/resource-468/the-state-of-housing-in-the-eu-2015>] Access Date (19.06.2015).
- PROJECT FOR PUBLIC SPACES (2018) *Placemaking: What if we built our cities around places?* [<https://www.pps.org/plc>] Access Date (01.09.2019).
- RAPOPORT, A. (1982) *The Meaning of the Built Environment: A Nonverbal Communication Approach*, Sage, Beverly Hills.
- RASMUSSEN, S. H., BRUNBECH, P. Y. (2009) *Velfærdsstaten*. [<https://danmarkshistorien.dk/perioder/kold-krig-og-velfaerdsstat-1945-1973/velfaerdsstaten/>] Access Date (01.06.2019).
- ROBERTS, P., SYKES, H., eds. (2000) *Urban Regeneration: a Handbook*, Sage, London.
- MUSTERD, S., VAN KEMPEN, R., ROWLANDS, R. (2009) Mass Housing Estates on Different Tracks: An Introduction to the Book, *Mass housing in Europe: multiple faces of development, change, and response*. eds. R. Rowlandss, S. Musterd, R.V. Kempen, Palgrave Macmillan UK; 1-19.
- RUDLIN, D., FALK, N. (2000). *Building the 21st Century Home: The Sustainable Urban Neighborhood*. Architectural Press, Oxford.
- SMITH, I. (2015) Introduction. *The Architects' Journal: Exemplary Housing Estate Regenerations in Europe*; 5.
- The Federation of Social Housing Organizations in Denmark (2014) *The Danish Social Housing Sector*. [<https://bl.dk/in-english/>] Access Date (08.04.2015).
- TOSICS, I. (2004) European urban development: Sustainability and the role of housing. *Journal of Housing and the Built Environment*, (19) 67-90.
- UNITED NATIONS (1987) Report of the World Commission on Environment and Development: Our Common Future. [<http://www.un-documents.net/our-common-future.pdf>] Access Date (24. 07 2015).
- USGBC (2020) *LEED Certification for Neighborhood Development*. [<https://www.usgbc.org/leed/rating-systems/neighborhood-development>] Access Date (03.01.2020).

- VALLANCE, S., PERKINS, H. C., & DIXON, J. E. (2011) What is Social Sustainability? A clarification of concepts. *Geoforum*, (42) 342-8.
- VAN KEMPEN, R., DEKKER, K., HALL, S., & TOSICS, I. (2005) *Restructuring Large Housing Estates in Europe*, The Policy Press, Bristol.
- VAN KEMPEN, R., WASSENBERG, F., VAN MEER, A. (2007) Upgrading the Physical Environment in Deprived Urban Areas: Lessons from Integrated Policies. *Informationen zur Raumentwicklung* 7(7) 487-97.
- WHITEHEAD, C., & SCANLON, K. (Eds.) (2007) *Social Housing in Europe*. London School of Economics and Political Science, London.
- WHYTE, W. (1980) *The Social Life of Small Urban Spaces*, Conservation Foundation, Washington.
- WINSTON, N. (2010) Regeneration for Sustainable Communities? Barriers to Implementing Sustainable Housing in Urban Areas, *Sustainable Development*, (18) 319-30.

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Anahtar Sözcükler: Sosyal konut; kentsel yenileme; mimarlık; sürdürülebilirlik; yer yapma

SOSYAL KONUT YENİLEMELERİNDE SÜRDÜRÜLEBİLİRLİK DOĞRULTUSUNDA MEKÂNSAL MÜDAHALELERİN ANALİZİ İÇİN YENİ BİR METODOLOJİ: GYLDENRİSPARKEN, KOPENHAG

Son yıllarda dünya genelinde ve özellikle Avrupa'da savaş sonrası dönemde toplumsal gerekçelerle inşa edilen konut yerleşimleri yenilenmektedir. Her bir toplu konut alanında kendine özgü sorunlar birikmiş, buna bağlı olarak müdahaleler farklı ölçek ve yerelliklerle ilişkili özelleşmiş sorunları çözmeye yönelmiştir. Bu çalışma, kentsel tasarım ve mimarlığa ilişkin dönüştürücü mekânsal müdahalelere ve bunların sürdürülebilirliğe somut yansımalarına odaklanarak konut araştırmaları alanına katkı sağlamayı amaçlamaktadır. Belge taraması ve önemli paydaşlarla yapılan görüşmelere dayanan araştırma çalışması, Kopenhag'da uluslararası bir iyi örnek olarak görülen bir sosyal konut yenilemesinin (Gyldenrisparken) detaylı olarak incelenmesine dayanmaktadır. Bu yerleşim, 1960larda inşa edilmiş, 2000lerde kanunen bir 'getto' olarak tarif edilmiş, 2004 ile 2015 arasında ise Danimarka'da daha önce görülmemiş katılımcı bir proje çerçevesinde yenilenmiştir. Sosyal konut yenilemelerini yaşanabilirlik, yer yapma ve sürdürülebilirlik kavramları açısından inceleyen bu çalışma, üç farklı ölçekte perspektif çizimlerle desteklenen ve üç boyutlu bir matrisle somut hale dökülen yönetsel bir araç sunmaktadır. Bu sayede, mekânsal müdahaleleri kayıt altına almakta ve sınıflandırmakta, bunlar ve yönlendikleri amaçlar arasındaki bağları keşfetmekte ve sonraki yenilemeler için yeni bir bilgi alanı tarif etmektedir. Geliştirilen yönetsel araç, sürdürülebilirlik teorisi ile dönüştürücü tasarım pratikleri arasında bir köprü kurmakta, gelecekteki uygulamalara ve farklı ölçeklerdeki karar alıcılara rehberlik etmek üzere bir sistematik ve karşılaştırma temeli sunmaktadır.

A NEW METHODOLOGY FOR ANALYSIS OF SPATIAL INTERVENTIONS TOWARDS SUSTAINABILITY IN SOCIAL HOUSING REGENERATION – THE CASE OF GYLDENRISPARKEN IN COPENHAGEN

Housing settlements have been regenerated in recent decades across the world, particularly those built in Europe for social purposes in the post-war period. As unique sets of problems accumulate in each case, interventions tend to address individual issues of different scales and localities. This study aims to contribute to housing research with a focus on the regenerative spatial interventions of urban design and architecture and their tangible reflection on sustainability. The research work, including related documentation reviews and interviews with critical stakeholders, examines in detail a regeneration case of social housing estate in Copenhagen – Gyldenrisparken – regarded as an international best practice. The estate was a settlement built in the 1960s, legally listed as ‘ghetto’ in the 2000s, and regenerated between 2004 and 2015 through an unprecedentedly collaborative project in Denmark. Exploring the regeneration of social housing through the concepts of liveability, place making, and sustainability, this study introduces a methodological tool which solidifies in form of a three-dimensional matrix accompanied by perspective illustrations in three scales. By this means, it registers and classifies each individual spatial intervention, discovers the relations among them and their intended goals, and builds up a new basis of knowledge for later regenerations. The tool developed bridges the theory of sustainability with the practice of regenerative design, while providing a basis of systematization and comparison for other cases aiming future implementations and decision-makers of different scales.

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