International review for spatial planning and sustainable development A, Planning Strategies and Design Concepts, Vol 13 No.3 (2025),79-98
ISSN: 2187-3666 (online)
DOI: http://dx.doi.org/10.14246/irspsd.13.3_79

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How Does Urban Regeneration Affect Urban Morphology?

A systematic review and bibliometric analysis

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Received: June 22, 2024; Revised: Feb 17, 2024; Accepted: Apr 20, 2025

Keywords: Urban morphology, urban form, urban regeneration, urban transformation, urban design, bibliometric analysis

Abstract: The structure of cities changes over time with various interactions. Urban regeneration strategies have an important place among these factors. This significantly affects the transformation process seen in many cities around the world. It changes the morphological structure of cities and substantially affects their socio-economic and cultural structure and climatic characteristics. This article aims to provide a comprehensive evaluation for future studies in this field while seeking answers to the question, "How does urban transformation affect urban morphology?". In this context, the study first addresses relevant definitions and historical background of urban regeneration and discusses the main approaches to urban morphology. Studies on the effects of urban regeneration on urban morphology in social, cultural, environmental, and climatic terms are analyzed with a bibliometric method. From the Scopus database, 4213 studies in the "urban morphology" field were identified, and 519 studies were reached by narrowing down the words urban regeneration, urban renewal, urban transformation, and urban redevelopment. The data obtained from Scopus were analyzed using the VOS Viewer program for keywords, citations, country, journal activity, and co-occurrence. The results revealed that urban morphology is a field that offers various approaches and valuable methods that examine the physical, environmental, and social aspects of urban transformation that can be used in multidisciplinary research.

1. INTRODUCTION

The urban fabric differentiates under the influence of physical, cultural, and geographical characteristics and develops uniquely, becoming an essential part of the urban identity and social structure. This urban fabric, which arises with a spatial organization specific to the society (Hillier, Bill and Hanson, 1984), continues to develop and change in mutual relationship with the society. At this point, urban morphology has emerged as a multidisciplinary field that examines the formation processes of the urban fabric and the social and economic aspects of the spatial form of cities (Moudon, 1997).

Urban morphology is focused on the physical elements of urban forms, such as streets, squares, plots, and buildings (Oliveira, 2016, p. 2). These elements change over time under the influence of actors such as planners,

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architects (Elzeni, Elmokadem et al., 2022), local governments, and investors. Urban morphology aims to understand how people interact with cities at different scales by analyzing the composition and configuration of the physical elements of the city over time (Schirmer and Axhausen, 2016). In recent years, urban morphology studies have broadened beyond the evolution of urban form, including its connection with environmental relations such as health and climate, and its effects on different areas such as transportation and walkability.

While cities subjected to rapid urbanization expand towards the peripheries, urban regeneration strategies have been developed in the depressed areas formed in the town over time. These urban environments created with a modern understanding have been criticized by many theorists (Alexander, 2004; Trancik, 1991), especially Jane Jacobs (1961). Today, urban regeneration projects continue to be implemented in many parts of the world. It is necessary to examine the social aspects, formal structure, and spatial organization of the urban textures that emerge with urban regeneration. In this context, urban morphology analysis is essential for analyzing urban forms and new strategies. For this purpose, studies on urban morphology and urban regeneration processes were analyzed using bibliometric analysis to answer these questions: How often is urban regeneration studied in urban morphology? Which urban morphology trends are used in urban regeneration studies? What is the extent of collaborations between authors and countries in the research field? What are the essential sources and research trends in the field?

When the studies in urban morphology using bibliometric analysis are examined, studies addressing the connection between urban morphology and climatic conditions stand out. In their study, Chen, Y., Wang et al. (2021) addressed the studies that explore the connections between urban morphology and thermal comfort. Similarly, Clarence and Udawattage (2021) researched on urban areas on microclimate and outdoor thermal comfort in urban areas. Other studies using bibliometric analysis are about how urban morphology affects climate change (Hassan, 2023), how it relates to air quality (Augusto, Rafael et al., 2023), how it relates to energy consumption, urban ventilation, and urban heat islands (Aboria, Eleinen et al., 2024). The study by Nor, Noor et al. (2021) focuses on the street network components that influence urban morphology. When the studies on urban regeneration are examined, bibliometric analysis studies have been conducted on decision-making (Liu, Y., Yang et al., 2023; Wang, Zhao et al., 2021), stakeholder perspective (Liao and Liu, 2023), and social impact (Cerreta and La Rocca, 2021). Vasile, Ghimus et al. (2024) examined the studies on urban regeneration conducted in the last thirty years with bibliometric analysis. The literature review reveals the need for a comprehensive study of urban regeneration in the urban morphology field. To fill this gap, a bibliometric analysis study was conducted on the Scopus database on how urban morphology is used in urban regeneration strategies that dramatically transform the urban fabric physically and socially.

2. LITERATURE REVIEW

Urban regeneration has become essential to urbanization policies in many cities (Riera Pérez, Laprise et al., 2018; Zheng, Shen et al., 2014). One of the most significant reasons for this situation is the emergence of the need for

urbanization as the population of cities globally exceeds the rural population (Wang, Zhao et al., 2021). The problem of rapid population growth is solved by developing new settlements through urban sprawl, and regeneration of depressed areas (Moon, 2021; Xie, Liu et al., 2021) Regeneration of these areas also aims to create higher-quality environments while integrating these areas into the city.

Urban regeneration has been on the agenda since World War II (Roberts, 2008; Xie, Liu et al., 2021). As an urbanization strategy, urban regeneration has been used with different meanings in different periods. After World War II, it was used in the sense of cleaning and reconstruction of slum areas (Couch and Fraser, 2003; Roberts, 2008; Xie, Liu et al., 2021); currently, it is used in the sense of physical, economic, social, and environmental development of an urban area (Akkar Ercan, 2011). Moreover, one of the main goals of urban regeneration policy is to prevent the adverse effects of urban sprawl (Wu, 2018; Zheng, Shen et al., 2014). The prevention of sprawl is attempted by increasing density (densification) through urban regeneration (Riera Pérez, Laprise et al., 2018).

In planning, urban renewal, urban regeneration, urban redevelopment, urban rehabilitation (Zheng, Shen et al., 2014), and urban transformation are used with similar meanings. Zeren Gülersoy and Gürler (2011) stated that the concept of urban transformation corresponded, base corresponded to different approaches in different periods and analyzed it in three main categories: heritage conservation, urban regeneration, and redevelopment/renewal-based urban transformation. In this case, the concept of urban transformation covers the other search queries used in the study.

The use of terms has changed over time *(Table 1)* within the framework of policies (Roberts, 2008, p. 14). Following the war, the term reconstruction was commonly used, while in the 1960s and 1970s, renewal and redevelopment became prevalent. After 1980, the term urban regeneration was used predominantly (Furbey, 1999). While urban redevelopment can be described as the transformation of a more specific and small-scale area based on old uses, urban renewal can be defined as an action that includes redevelopment, rehabilitation, and heritage preservation, aiming to enhance the physical, social, economic, and ecological aspects of the urban area (Zheng, Shen et al., 2014). Urban regeneration is a holistic approach that combines vision and action to address the diverse challenges of deprived urban areas and improve their physical, environmental, economic, and social aspects (Akkar Ercan, 2011).

Table 1. The evolution of urban regeneration, adapted from (Roberts, 2008, p. 18)

Period	**1950s**	**1960s**	**1970s**	**1980s**	**1990s**
Policy Type	Reconstruction	Revitalization	Renewal	Redevelopment	Regeneration
Major strategy and orientation	Reconstruction and extension of older areas of towns and cities are often based on a 'masterplan': suburban growth	The continuation of the 1950s theme, suburban and peripheral growth, and some early attempts at rehabilitation	Focus on in-situ renewal and neighborhood schemes; still development at the periphery.	Many major schemes of development and redevelopment, flagship projects, and out-of-town projects.	Move towards a more comprehensive form of policy and practice, emphasizing integrated treatments

Urban regeneration is an action that requires a multidisciplinary study involving many actors, such as local governments and investors (Smith, 2012, p. 14). Due to its interdisciplinary nature, academic studies are scattered in different fields. When the studies on urban regeneration are examined, it is observed that the keywords sustainability, sustainable development, and gentrification are frequently used. Although urban regeneration projects are often the subject of academic studies in terms of their potential to improve the social, economic, ecological, and physical aspects of the city, the practices have been subjected to many criticisms and have caused significant problems, such as gentrification and displacement (Tan and Altrock, 2016). On the other hand, this study focuses on the studies that morphologically examine urban transformation processes that directly affect the city's physical structure, aiming to fill this gap in the literature and provide guidance to researchers working in this field.

Urban transformation projects are frequently included in urban morphology studies (Arat and Topçu, 2023; Ye, Li et al., 2017) as they change the city's physical structure (Couch, 1990, p. 2). The analysis methods developed in urban morphology studies allow the change in the city's physical structure before and after urban transformation to be documented and compared from different angles. Urban morphology is a rapidly growing field, and other approaches have emerged in urban morphology, which appears by analysing urban plan elements, consisting of streets, plots, and building textures (Kropf, Karl, 2013).

Urban morphology is described as studying the formal structure of settlements over time (Carmona, 2003, p. 61; Oliveira, 2016; Scheer, 2017, p. 167). Schirmer and Axhausen (2016) extended this definition by studying settlement forms at various scales to comprehend the spatial structure, character of the settlement, and development process. Urban morphology covers the city's physical structure and the human factor that shapes this physical composition (Gökçe, 2017). Kropf, Karl (2013) mentions this in his definition: "...urban morphology is to identify the repeating patterns in the structure, formation, and transformation of the built environment to help comprehend how the elements work together, notably to meet human needs and accommodate human culture".

Although urban morphology essentially studies urban form, different approaches have emerged to deal with space. Kropf, Karl (2009) and Oliveira (2016) categorized these approaches as: (i) historical-geographical approach, (ii) process typological approach, (iii) configurational approach, and (iv) spatial analytical approach.

The historico-geographical approach, also called the Conzenian tradition (Whitehand, 2001), is based on the publications of the MRG Conzen (Kropf, Karl, 2009). Conzen (1960) developed an analytical methodology in his book 'Alnwick, Northumberland: A Study in Town-plan Analysis'. His work in Alnwick has become one of the foundational sources for urban morphology studies. In this study, Conzen (1960, p. 5) analyzed the town plan, which he saw as an essential part of the urban fabric, through three critical distinguishing features: "streets and their arrangement in a street system; plots and their aggregation in street blocks; and buildings or, more precisely, their block-plans". Another essential element Conzen identifies is land use (Carmona, 2003, p. 61). Conzen sees the plot as a necessary element of land use (Ünlü and Baş, 2017). Conzen documented the historical change in the plot structure in the town of Alnwick by examining the change in different morphological periods, which revealed that the shift in building coverage in

the plots is in a cycle. This cycle called the burgage cycle, consists of institutive, repletive, climax, and recessive phases followed by a return to the beginning with the urban fallow phase, which results in the complete demolition of the buildings on the plot (Conzen, 1960, pp. 92-94).

The process typological approach is based on the work of Italian architect Saverio Muratori and his student Gianfranco Caniggia (Kropf, Karl, 2009). Muratori and Caniggia, under the umbrella of the Italian Typological School they founded, developed an urban planning and design theory that links the traditional with the new (Chen, F. and Romice, 2009). According to this theory, urban form is explained using the concept of "type" (Marzot, 2002). According to Chen, F. and Thwaites (2013); Muratori considers the type concept "as a priori synthesis, which was initially generated by builder's minds as the spontaneous outgrowth of their cultural background". In this approach, building types are considered the fundamental element of urban form (Moudon, 1997), and the change of types belonging to the same cultural context is analyzed at specific scales and over time (Caniggia and Maffei, 2001, p. 54). Caniggia and Maffei (2001) defined the methodology of the Italian School's approach in their book 'Architectural Composition and Building typology: Interpreting Basic Building'. The book presents a hierarchical method starting from the scale of the building to the scale of the urban fabric, formed by the combination of buildings, and then to the scale of the city, formed by the combination of this fabric.

Another school conducting studies on types is the French Versailles School, founded in the late 1960s by architects Philippe Panerai, Jean Castex, and sociologist Charles DePaule (Moudon, 1997). This approach, which the French school called the typo-morphologic approach (Castex and Panerai, 1982; Chen, F. and Thwaites, 2013), was influenced by the pioneers of the Italian school, such as Rossi, Aymonino, and Maruti (Darin, 1998). The typo-morphological approach, connected to philosophers such as Henri Lefebvre and Henri Raymond, challenged the modern movement's rejection of the past and emphasized the social aspect of urban and architectural forms (Chen, F. and Thwaites, 2013; Darin, 1998). Members of the French school also opposed the imitation of the past without understanding its socio-cultural structure (Gökçe, 2017). They believed the experiences gained through studying past forms could guide new practices (Djokić, 2009). Djokić (2009) considers the work of the British, French, and Italian schools as a typo-morphologic approach due to their common characteristics of examining the urban landscape in terms of time, form, and size.

The configurational approach is based on the spatial configuration method developed by Hillier and his team at The Bartlett School of Architecture, University College London, in the 1970s (Kropf, Karl, 2009; Van Nes and Yamu, 2021, p. vii). Space syntax is a theory and analysis method that seeks to understand the relationship between human behaviour and the urban environment (Mohamed and Van Der Laag Yamu, 2023; Yamu, van Nes et al., 2021). This theory argues that configuration of the space and form directly affect people's dynamic and static behaviour (Hillier, B., 1996; Thinnakorn and Chanklap, 2022). The foundational works 'The Social Logic of Space' (Hillier, Bill and Hanson, 1984), 'Space is the Machine' (Hillier, B., 1996), and 'Decoding Homes and Houses' (Hanson, 1998) had a significant impact on the evolution of the space syntax approach (Arat and Topçu, 2023; Oliveira, 2016, p. 119). The space syntax can be applied at the building scale by examining the layout of rooms and at the settlement scale by analyzing the open space system (Hillier, Bill and Hanson, 1984, pp. 89-90; Yamu, van Nes

et al., 2021). Studies on space syntax analysis have increased rapidly since the 1990s with the development of new computer programs, analysis methods (Yamu, van Nes et al., 2021), and GIS integration (van Nes and Yamu, 2017), and have been used in studies on many different topics (Mohamed and Van Der Laag Yamu, 2023). While early studies using space syntax mainly focused on pedestrian mobility, its usage area has expanded over time. Recently, studies have been carried out on spatial cognition, building morphology and performance, transportation, segregation, crime, and social and economic exclusion (Oliveira, 2016, p. 120). Within the framework of space syntax, analyses such as convex space, axial map, visibility graph, and angular segment analysis are frequently used in urban spaces and settlements. Many measurements, such as depth, integration, intelligibility, centrality, and choice, can be made with these analysis methods. These measurements define the relationship between an open space with other open spaces, and the system as a whole and provide numerical data about the movement and life in the space.

The spatial analytical approach is based on the works of Michael Batty, the founder of the Centre for Advanced Spatial Analysis (CASA) at University College London (Kropf, Karl, 2009; Oliveira, 2016, p. 125). Batty sees cities as complex and diverse systems (Batty, 2008; Batty and Longley, 1994) and uses cellular automata, agent-based models, and fractals to understand the structure of cities. Batty (2005) describes these methods as an essential source in his book. Cities are fractal instances with self-similarity at different scales and emerge in hierarchical clustering (Batty, 2008). Fractals can be used to monitor the periodic development of cities and simulate and plan the city's growth in the future (Batty and Longley, 1994). Cellular Automata (CA) is defined as a method that can take different values in a system that works according to inputs by changing the state of the system (the output) according to the input (Batty, 2017, p. 257). CA models can capture the spatial complexity of an urban phenomenon (Oliveira, 2016, p. 126). In an urban model composed of cells, the growth of the metropolitan model can be simulated by cells dynamically taking on different roles depending on the state of neighboring cells (Batty, 2017, pp. 257-261; Oliveira, 2016, pp. 126-127). Cells in this model primarily represent parcels or plots or clusters of these parcels (Kropf, Karl, 2009). Cell interaction rules are implemented in CA models with development and land use parameters. In agent-based models, autonomous, active, and heterogeneous agents, such as people, structures, and plots are modelled to simulate how they will affect each other and the environment they are in within the framework of specified rules (Oliveira, 2016, p. 128). By running the CA model with agents, it can be observed how the cells dynamically change their state according to the agents' behavior (Batty, 2017, p. 269).

3. METHODOLOGY

3.1 Bibliometric analysis

Bibliometric analysis provides researchers studying any field with objective and reliable findings about scientific studies. It is used for several purposes, such as methodically arranging enormous volumes of data, monitoring changing patterns over time, defining the limits of research areas,

and locating essential academics and organizations within a particular field (Aria and Cuccurullo, 2017). This methodology is also helpful in pointing out research gaps and providing direction for upcoming studies (Mohamed and Van Der Laag Yamu, 2023). These factors have increased the significance of the bibliometric analysis method (Kahvecioğlu and Arslan Selçuk, 2023) in all disciplines, and this has increased the frequency of its use (Aria and Cuccurullo, 2017).

3.2 Search rules

This research aims to examine works on urban regeneration within the context of urban morphology. Analyses were carried out on January 30, 2024, on Scopus, one of the largest scientific databases covering more than 27,800 peer-reviewed journals. Determining search queries is critical for obtaining accurate literature data. While this research focuses on the urban morphology field, the term "urban morphology" was scanned in the article title/abstract/keyword field on Scopus. With this query, 4213 documents were found, of which 72.8% were articles, 14.9% conference papers, and 5.1% book chapters. The year range is limited from 1957 to 2023 since the study was conducted in early 2024, and the first publication about urban morphology was found in 1957 on Scopus. While it was observed that very few articles were published annually from 1957 to 1997, the number of publications, which was seven in 1997, increased gradually over time and reached 60 in 2008. Interest in urban morphology has gained serious momentum in the last 15 years. In 2022, the number of documents reached 480 (*Figure 1)*.

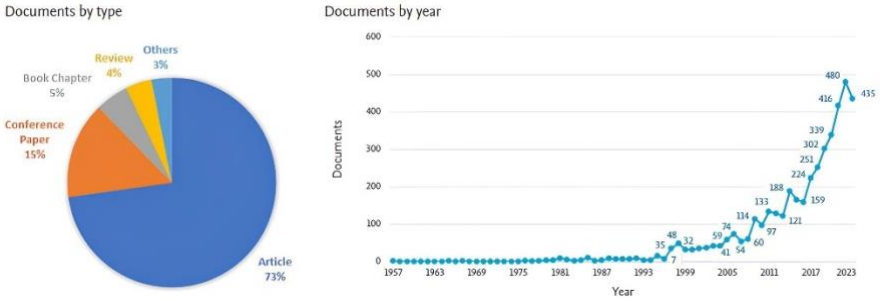


Figure 1. Distribution of urban morphology documents by type and year

To reach documents on urban regeneration in urban morphology, "urban regeneration", "urban renewal", "urban redevelopment", or "urban transformation" terms were added to the query in all field sections. These terms are commonly used to describe similar processes, which involve demolishing depressed areas to create new livable spaces, as mentioned in many papers. With these limitations, 519 documents were reached, and bibliometric data were exported as CSV files. This data includes authors, titles, year, document type, citation count, affiliations, correspondence address, abstract, and keywords.

Bibliometric analysis tools allow researchers to visualize complex and abstract information. These visualizations help find specific information, create relationships and optimize research strategies (Feng, Han et al., 2019). Bibliometric analysis of the data obtained from Scopus was conducted using the Visualization of Similarities (VOS) methodology created by Van Eck and Waltman (2007) through the VOS Viewer application. The VOS Viewer application has a text-mining feature (Hatipoğlu Şahin, 2024) used to visualize the co-occurrence of keywords and co-authorship relations. The distribution

of the articles, the number of publications by country, the citation count, and the analysis of standard references are shown in the tables and graphs prepared by MS Excel.

4. RESULTS

4.1 Overview

According to the search criteria determined within the scope of this study, a total of 519 publications were retrieved from 230 sources. These publications comprise 416 articles, 54 conference papers, 24 book chapters, 20 reviews, and four books. It was found that 37% belong to social sciences, 16.6% to environmental science, 13.8% to engineering, and 8.0% to arts and humanities, while the remaining 24.6% comprise studies from different fields such as energy, medicine, and computer science. *Table 2* shows journals with at least five publications and citation counts. Urban Morphology, Sustainability, and Cities emerge as the journals with the most publications on urban regeneration in urban morphology. Furthermore, when the number of citations is considered, it is seen that Cities and Urban Studies journals are much more highly cited than other journals.

Table 2. Distribution of the articles through search rules

Journal Title	Number of papers	Citations
Urban Morphology	28	379
Sustainability (Switzerland)	27	298
Cities	24	1127
Journal Of Urban Design	12	255
Urban Studies	10	868
Building And Environment	9	264
Environment And Planning B: Urban Analytics and City Science	8	132
Land	8	54
Sustainable Cities and Society	8	187
Urban Book Series	8	12
European Planning Studies	7	197
Habitat International	7	238
Urban Design International	7	87
ISPRS International Journal of Geo-Information	7	41
Buildings	6	25
Energy And Buildings	6	153
Eure	6	62
WIT Transactions on Ecology and The Environment	6	14
IOP Conference Series: Earth and Environmental Science	6	14
Architecture, City, and Environment	5	5

When the distribution of studies by years is analyzed, it is seen that a similar trend emerges with urban morphology studies. Since 2015, there has

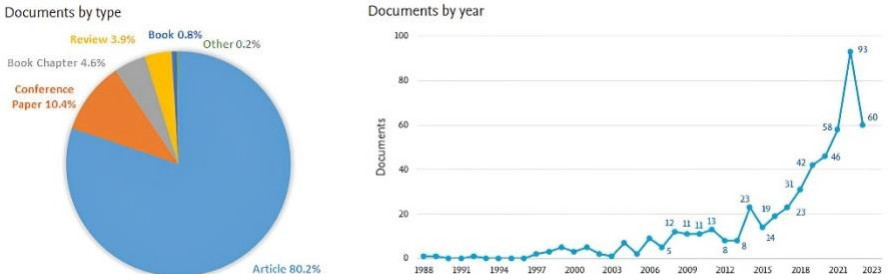


Figure 2. Distribution of the urban regeneration studies by type and year

been a consistent increment in the number of publications. After a peak in 2022, the number of articles decreased in 2023, similar to urban morphology studies *(Figure 2)*.

4.2 Keyword analysis

Keywords are an essential tool to represent the content of the study and provide information about the subject and subtopics of the research, allowing researchers to gain insights into the content without reading the full paper (Tripathi, Kumar et al., 2018). In addition, since keywords are used for indexing and categorising topics, they affect the number of downloads and citations (Uddin and Khan, 2016).

In the scope of this study, based on the co-occurrence analysis conducted using VOS viewer, 24 of the total 1528 keywords were used more than seven times. As expected, urban morphology emerged as the most frequently used keyword in the co-occurrence analysis, representing the main research area. Following urban morphology, space syntax, urban form, urban design, urban planning, urban regeneration, and urban transformation come to the fore. When the links of the keywords are analyzed, it is observed that the keyword space syntax is frequently used together with urban regeneration, urban renewal, urban transformation, and urban development. This indicates that the space syntax method is an essential analytical tool in morphological studies related to urban regeneration. In the keyword analysis, six clusters were observed *(Figure 3)*.

When the clusters are examined, it is evident that the impact of urban regeneration on the morphological structure is addressed in various dimensions, such as sustainability, climate change, urban heat island, urban resilience, urban vitality, and gentrification. The red cluster has the highest number of elements, with seven keywords: morphology, neighbourhood, planning, sustainability, urban development, urban form, and urban regeneration. The green cluster, consisting of six elements, contains the keywords: cities, climate change, urban heat island, urban morphology, urban planning, and urban resilience. The third cluster is expressed in blue colour in the graph. This cluster comprises the keywords China, space syntax, urban design, urban transformation, and urban vitality. The fourth cluster, shown in yellow, contains the words gentrification, public space, and urban renewal. The fifth cluster, indicated in purple, contains only the words spatial analysis and urbanization, while the sixth cluster, shown in cyan, consists only of the keyword GIS.

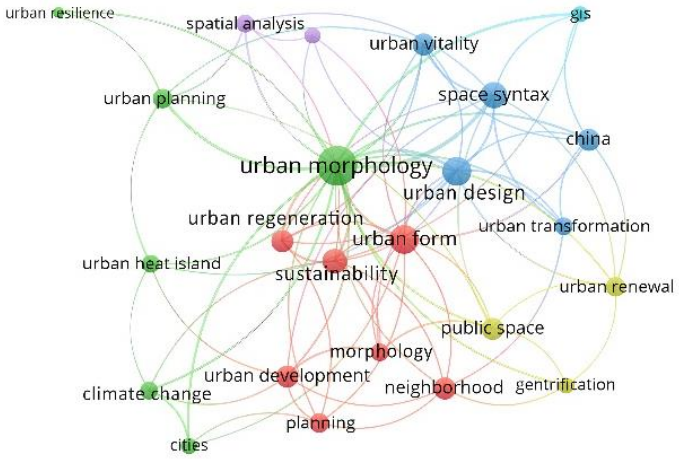


Figure 3. Co-occurrence analysis of keywords

Keywords analysis reveals that the environmental and socio-spatial aspects of urban morphology have different points of view. The green cluster that contains climate change and urban heat islands is spread out and sparsely connected. However, other clusters have formed closer hubs and a denser network structure.

4.3 Number of publications by countries and relations

One of the most fundamental issues in bibliometric analysis is the distribution of publications by country and the relationship between these distributions. When the distribution of publications according to countries is examined, it is evident that China, the United Kingdom, Italy, and the United States hold the most articles published *(Figure 4)*. At this point, China stands out with 92 articles, indicating more publications than other countries. The rapid urbanization in China, coupled with the urban regeneration movement and the associated challenges (Song, Long et al., 2018; Tian, Wu et al., 2010), is believed to have contributed to the abundance of studies on this topic.

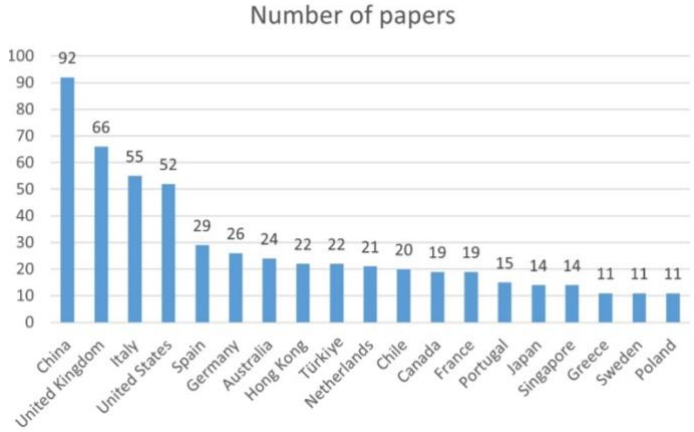


Figure 4. Number of publications by countries

China has established connections with authors from other countries and is a pioneer in this field. The fact that the publications frequently cited in the literature belong to researchers in China reveals the importance of these studies in the literature. Following China, the UK ranks second with 66

publications. The presence of significant schools and research centres, such as the British School, Space Syntax Laboratory, and CASA, has positively influenced the number of articles.

4.4 Co-authorship

Co-authorship is an essential type of scientific collaboration, and it refers to the coming together of more than one person for a common purpose. At this point, it is seen that scientific collaboration creates social networks within the same disciplines or across disciplines. When co-authorship relationships are analyzed, the number of countries with more than five co-authorships decreases to 28 out of 78 countries. Among these countries, the UK, China, and the USA stand out as the countries with the highest number of links *(Figure 5)*. This analysis confirms China's status as a pioneer in urban renewal, as mentioned in the previous section. As seen in *Figure 5*, co-authorships have been established in many different countries. This has allowed the concept to be discussed from many different perspectives by expanding the communication and connection between countries due to the cooperation established.

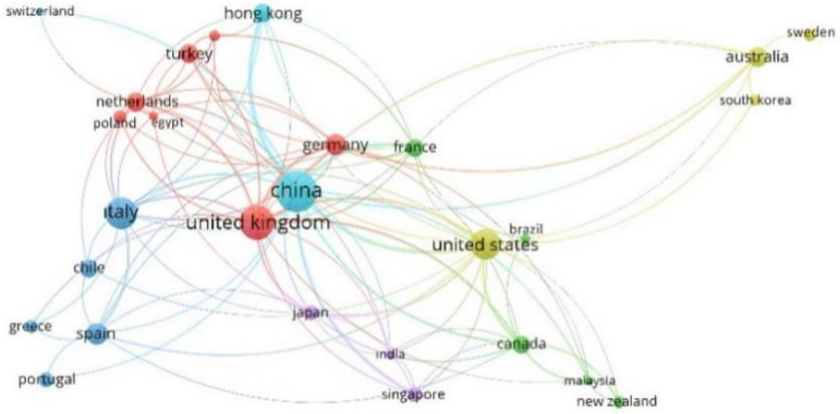


Figure 5. Co-authorship relations by countries

4.5 Citation count-important articles

Analysing the most cited publications is one of the primary analyses that can guide researchers. It is essential to know the most cited publications, especially those that address the concept from different perspectives and have proven themselves in quality. These publications serve as an essential source of data and reference for current and future studies. Again, the prominence of publications on the concept in China confirms the number of publications by country and co-authorship analysis. Out of 519 publications, 196 have received ten or more citations when the most cited publications are examined. According to the analysis conducted with VOS Viewer, only 39 of these 196 publications are able to form an interconnected cluster. The ten most cited publications are listed in *Table 3* below. According to the table, it can be observed that eight of these articles are from China. When these articles are examined, the research topics are urban heat islands, transportation, glocalisation, and urban form. When the studies are discussed in detail, land use patterns and block density criteria are investigated predominantly.

Table 3. The most cited publications

Title	Authors	Year	Journal	Citations
"Urban transformation of river landscapes in a global context"	Chin A.	2006	Geomorphology	322
"China's urban transformation: Patterns and processes of morphological change in Beijing, Shanghai and Guangzhou"	Gaubatz P.	1999	Urban Studies	277
"Urban heat island mitigation strategies: A state-of-the-art review on Kuala Lumpur, Singapore and Hong Kong"	Aflaki, A., Mirnezhad, M., et al.	2017	Cities	231
"Measuring Polycentric Urban Development in China: An Intercity Transportation Network Perspective"	Liu X.; Derudder B.; Wu K.	2016	Regional Studies	198
"How block density and typology affect urban vitality: An exploratory analysis in Shenzhen, China"	Ye Y.; Li D.; Liu X.	2018	Urban Geography	194
"Influence of urban form on travel behaviour in four neighbourhoods of Shanghai"	Pan H.; Shen Q.; Zhang M.	2009	Urban Studies	166
"Glocalising Urban Landscapes: Athens and the 2004 Olympics"	Beriatos, E.; Gospodini A.	2004	Cities	165
"The rise of 'foreign gated communities' in Beijing: Between economic globalisation and local institutions"	Wu F.; Webber K.	2004	Cities	156
"Portraying, classifying, and understanding the emerging landscapes in the post-industrial city"	Gospodini A.	2006	Cities	142
"Urban morphology and place identity in European cities: Built heritage and innovative design"	Gospodini A.	2004	Journal of Urban Design	119

Chin (2006) presented a study on how urban population growth and urbanization affect river landscapes worldwide. The study compares over 100 research results about cities worldwide where rivers are present.

Gaubatz (1999) addressed the morphological changes in Beijing, Shanghai, and Guangzhou in China since 1949, particularly analysing parameters such as the land-use specialisation pattern, circulation, and building height. In addition, planning, urban renewal, and the privatisation of the housing and real estate market processes, which are critical factors of morphological changes, are also discussed within the scope of the study.

Aflaki, Mirnezhad et al. (2017) proposed using energy consumption, environmental temperature, and outdoor air quality parameters for urban heat island measurements at the city scale. They argued about the effects of urban morphology and building materials on urban heat islands. The study offers the application of greenery on the building façade as an effective method to reduce urban heat island formation.

From a transportation network perspective, Liu, X., Derudder et al. (2016) examined the polycentric urban development of 22 metropolitan regions in China. Polycentricity was analyzed using two criteria: morphological and functional polycentricity. While the regions on the eastern coast are morphologically and functionally highly polycentric, the regions in western China are not. In addition, while morphological polycentricity is observed in most planned regions, functional integration has not been achieved.

Ye, Li et al. (2017) aimed to test the connection between urban design, urban morphology, and vitality in Chinese cities. For this purpose, the study analyzed density and typology criteria in Shenzhen City. According to the analysis results, typological elements, especially block and strip types, played a more critical role in the formation of vitality.

Pan, Shen et al. (2009) examined the increase in the need for car use due to rapid urbanization in Chinese cities where bicycle and pedestrian mobility were intensive in the past. The car ownership rate is still low in Shanghai. According to the research, the neighbourhood scale was an indispensable criterion in the preference for car usage. This shows that it is possible to create urban environments that are friendly to pedestrians and bicycles through proper planning policies.

Beriatos and Gospodini (2004) conducted their research in Athens to examine the contribution of the urban regeneration and development strategies for the Olympics and their contribution to the identity and economic development of the city. The distribution of new projects to different city areas in Athens was compared to the successful model implemented in Barcelona.

Wu and Webber (2004) examined the foreign housing developments in Beijing, which were usually built as gated communities and located close to airports. These gated communities, which were not evenly distributed in the city and were concentrated in certain areas, have led to social and economic segregation.

In his study, Gospodini (2006) examined the new urban morphology, especially in post-industrial cities, under the influence of globalisation, inter-city competition, and post-modernism. The study extensively examined 'glocalised' areas characterised by high-level financial services, cultural and leisure urban islands, knowledge-based firms, and other creative sectors, which exhibited differences in the urban fabric, providing detailed classification.

Gospodini (2004) analyzed the impact of built heritage and creative design on the formation of the identity of cities through the city of Bilbao. It was inferred from survey results that the well-preserved old buildings in Bilbao and the Guggenheim Museum's presence significantly contributed to shaping the city's identity.

4.6 Common References

Common reference analysis is one of the most valuable analyses for researchers, just like the analysis of the most cited publications. Knowing the pioneering studies on the concept and examining these sources is essential. When filtered for references used at least five times among the 27,916 citations consulted in the studies, 72 sources were identified. These sources mainly consist of seminal works in urban morphology, including studies by authors such as Jacobs, Lefebvre, Lynch, and Hillier, which can be categorised as foundational sources in the field. *Table 4* lists the top ten commonly cited references and their citation counts.

Table 4. Common references and citation count

Authors	Cited Reference	Citations
Bill Hillier and Julienne Hanson	"The Social Logic of Space" (1984)	52
Jane Jacobs	"The Death and Life of Great American Cities" (1961)	52
Kevin Lynch	"The Image of The City" (1960)	30

Bill Hillier	"Space Is the Machine: A Configurational Theory of Architecture" (1996)	29
M.R.G Conzen	"Alnwick, Northumberland: A Study in Town-Plan Analysis" (1960)	25
Karl Kropf	"The Handbook of Urban Morphology" (2017)	19
Kevin Lynch	"A Theory of Good City Form" (1981)	15
Jan Gehl	"Cities For People" (2010)	14
Anne Vernez Moudon	"Urban Morphology as An Emerging Interdisciplinary Field" (1997)	14
Michael Batty	"The New Science of Cities" (2013)	10
Henri Lefebvre	"The Production of Space" (1991)	10

5. DISCUSSION

This study aims to evaluate the concept of urban regeneration through the existing literature. In this context, a comprehensive information pool was created from the Scopus database. The study emphasises the current importance of the concept of urban regeneration by identifying that there has been a significant increase in the literature, especially in recent years. This situation highlights that the subject maintains its relevance at the international level and is becoming increasingly important.

Bibliometric analysis and bibliometric mapping have addressed the concept of urban regeneration from many different aspects. When the distribution of resources is examined in the first stage, it is seen that there are publications in many fields, such as social sciences, environmental sciences, engineering, arts and humanities, energy, medicine, and computer sciences. This situation can be explained by cities showing physical, environmental, social, economic, and political changes due to their living structure. This indicates that the concept intersects with different disciplines and is multidisciplinary. This study limits urban regeneration only to the urban morphology field.

Urban regeneration strategies have been used in many cities worldwide since the 1950s and have been applied to various concepts. Changes in the city's physical structure have many effects, including socio-economic and demographic structure and environmental impacts. Urban morphology studies cover all these aspects, as *Table 5* shows below, the key publications in various subtopics in urban morphology.

Table 5. Key subtopics in urban regeneration studies related to urban morphology

Subtopics	**Key Publications**
Climate (Urban heat island, thermal comfort, climate change, microclimate vs.)	"Urban heat island mitigation strategies: A state-of-the-art review on Kuala Lumpur, Singapore, and Hong Kong" (Aflaki, Mirnezhad et al., 2017) "Microclimate design for open spaces: Ranking urban design effects on pedestrian thermal comfort in summer" (Chatzidimitriou and Yannas, 2016) "Urban-scale CFD analysis in support of a climate-sensitive design for the Tokyo Bay area" (Ashie and Kono, 2011)
Sustainability (Sustainable development, resilience)	"Spatial pattern of urban functions in the Beijing metropolitan region" (Tian, Wu et al., 2010) "Toward an integrated theory of spatial morphology and resilient urban systems" (Marcus and Colding, 2014) "Housing, the Compact City and Sustainable Development: Some Insights from Recent Urban Trends in Switzerland" (Rérat, 2012)
Urban form (Land use, typology)	"China's Urban Transformation: Patterns and Processes of Morphological Change in Beijing, Shanghai and Guangzhou" (Gaubatz, 1999)

	"How block density and typology affect urban vitality: An exploratory analysis in Shenzhen, China" (Ye, Li et al., 2017) "Design history of China's gated cities and neighbourhoods: Prototype and evolution" (Xu and Yang, 2009)
Social aspects (Gentrification, social interaction, segregation)	"'Latino Gentrification'? Focusing on Physical and Socio-economic Patterns of Change in Latin American Inner Cities" (Inzulza-Contardo, 2012) "In-between spaces and social interaction: A morphological analysis of Izmir using space syntax" (Can and Heath, 2016) "The rise of 'foreign gated communities' in Beijing: Between economic globalisation and local institutions" (Wu and Webber, 2004)
Transportation (Travel behaviour, pedestrian movement, cycling mobility)	"Influence of Urban Form on Travel Behaviour in Four Neighbourhoods of Shanghai" (Pan, Shen et al., 2009) "Cyclable Cities: Building Feasible Scenario through Urban Space Morphology Assessment" (Scorza and Fortunato, 2021) ", Development of urban types based on network centrality, built density, and their impact on pedestrian movement" (Berghauser Pont, Stavroulaki et al., 2019)

When the results are analyzed, China stands out in terms of urban morphology and urban transformation. The main reason for this is the rapid urbanisation of China and the fact that while the existing urban fabric has changed dramatically during this urbanisation, the quality of urban space has stayed the same. In addition, environmental impacts are frequently the subject of research in these studies.

Analysis of keywords and co-citations reveals the widespread use of the space syntax methodology. The presence of Bill Hillier's books 'The Social Logic of Space' and 'Space is the Machine' among the most cited sources underscores this observation. Furthermore, in country-level activity analyses, the significant influence of the United Kingdom, following China, can be attributed to the presence of the Space Syntax Laboratory and CASA at UCL and the impact of the British Morphology School.

Recent studies have shown an increasing focus on environmental factors, particularly in ecological research areas, such as urban heat islands, climate change, and thermal comfort. Despite the concept of urban morphology traditionally focusing on the evolution of urban form over time, current research trends indicate a growing interest in climate-related impacts of urban morphology and urban regeneration approaches.

All these analyses show that urban morphology and urban regeneration have a strong relationship. Although this study focuses on urban regeneration, it presents a vital resource within urban morphology. Many studies mentioned in the study show the multifaceted effects of the change in the physical form of cities and the importance of this subject. This study guides researchers who want to work on the subject from a comprehensive perspective, both in urban morphology and urban transformation.

6. CONCLUSION

Urban regeneration, with its many different applications and scales, significantly changes the morphology of the area where it is applied. Although most of the regeneration processes aimed to improve settlements' physical, economic, and social status, the desired improvement was not achieved. Other than these, recent studies focus on the environmental effects of urban regeneration and urban morphology. Generally, studies on these subjects

include various perspectives to describe problems and create a better urban environment. In this respect, urban regeneration is considered within the scope of urban morphology, and literature research has been conducted using the bibliometric analysis method.

Urban morphology is a field that includes various approaches and methods of analysis, enabling interdisciplinary studies. Similarly, urban regeneration processes involve multiple stakeholders and are studied across different disciplines. Urban morphology and regeneration intersect in planning, urban design, and implementation. At this point, a wide range of analysis tools and methods of urban morphology approaches are essential for urban regeneration processes and academic studies. The findings of this study contribute valuable insights for researchers by providing a comprehensive understanding of the effects of urban regeneration on the spatial structure of the cities. This holistic perspective enables researchers to utilize urban morphology approaches effectively in studying urban regeneration and urban design.

The question of how urban renewal affects urban morphology was the focus of the research. This study aims to fill the gap with a holistic urban morphology and regeneration perspective. This study provides significant resources, including seminal books, core concepts, various approaches, and specific topics that can be used to identify the current situation and establish a framework for future studies. It is envisaged that the broad perspective addressed by the study will also contribute to the actors of the process.

Bibliometric analysis is an essential tool for guiding researchers. This research addresses the urban regeneration process from a broad perspective within the urban morphology field using bibliometric analysis. However, in future studies, urban regeneration and urban morphology can be limited to the subtopics shown in the *Table 5* above, and a more specific study can be developed. Additionally, the scope of this study was limited to the Scopus database, as it contains the most publications on the subject. An analysis can be carried out in future studies by including other databases.

AUTHOR CONTRIBUTIONS

Conceptualization, A.Ş. and S.A.S.; methodology, A.Ş., and S.A.S.; software, A.Ş.; investigation, A.Ş.; resources, G.F.; data curation, A.Ş.; writing—original draft preparation, A.Ş., and S.A.S.; writing—review and editing, A.Ş., and S.A.S.; supervision, A.Ş.; and S.A.S. All authors have read and agreed to the published version of the manuscript.

ETHICS DECLARATION

The authors declare that they have no conflicts of interest regarding the publication of the paper.

ACKNOWLEDGEMENT

The authors would like to thank Gazi University Academic Writing Application and Research Center for proofreading the article.

REFERENCES

Aboria, S. G., Eleinen, O. M. A., et al. (2024). "How Urban Morphology Affects Energy Consumption and Building Energy Loads? Strategies Based on Urban Ventilation". *Engineering Solutions toward Sustainable Development* (pp. 375-395). Retrieved from https://app.dimensions.ai/details/publication/pub.1167988653. doi: 10.1007/978-3-031-46491-1_23.

Aflaki, A., Mirnezhad, M., et al. (2017). "Urban Heat Island Mitigation Strategies: A State-of-the-Art Review on Kuala Lumpur, Singapore and Hong Kong". *Cities*, 62, 131-145. doi: https://doi.org/10.1016/j.cities.2016.09.003.

Akkar Ercan, M. (2011). "Challenges and Conflicts in Achieving Sustainable Communities in Historic Neighbourhoods of Istanbul". *Habitat International*, 35(2), 295-306. doi: https://doi.org/10.1016/j.habitatint.2010.10.001.

Alexander, C. (2004). *The Nature of Order.* Taylor & Francis Berkeley, CA, USA.

Arat, M. A. and Topçu, M. (2023). "An Integrated Framework for Assessment of Urban Forms and Their Transformation". *A| Z ITU Journal of the Faculty of Architecture*, X-X.

Aria, M. and Cuccurullo, C. (2017). "Bibliometrix: An R-Tool for Comprehensive Science Mapping Analysis". *Journal of Informetrics*, 11(4), 959-975. doi: 10.1016/j.joi.2017.08.007.

Ashie, Y. and Kono, T. (2011). "Urban-Scale Cfd Analysis in Support of a Climate-Sensitive Design for the Tokyo Bay Area". *International Journal of Climatology*, 31(2), 174-188. doi: 10.1002/joc.2226.

Augusto, B., Rafael, S., et al. (2023). "Connecting the Dots between Urban Morphology and the Air Quality of Cities under a Changing Climate: A Bibliometric Analysis". *Sustainability*, 16(1), 18. doi: 10.3390/su16010018.

Batty, M. (2005). *Cities and Complexity: Understanding Cities with Cellular Automata, Agent-Based Models, and Fractals.* MIT Press. Retrieved from https://books.google.com.tr/books?id=zF3aAAAAMAAJ.

Batty, M. (2008). "The Size, Scale, and Shape of Cities". *Science*, 319(5864), 769-771. doi: http://doi.org/10.1126/science.1151419.

Batty, M. (2013). *The New Science of Cities.* MIT Press. Retrieved from https://books.google.com.tr/books?id=yX-YAQAAQBAJ.

Batty, M. (2017). *The New Science of Cities.* MIT Press. Retrieved from https://books.google.com.tr/books?id=1L34DwAAQBAJ.

Batty, M. and Longley, P. A. (1994). *Fractal Cities: A Geometry of Form and Function.* Academic press.

Berghauser Pont, M., Stavroulaki, G., et al. (2019). "Development of Urban Types Based on Network Centrality, Built Density and Their Impact on Pedestrian Movement". *Environment and Planning B: Urban Analytics and City Science*, 46(8), 1549-1564. doi: https://doi.org/10.1177/2399808319852632.

Beriatos, E. and Gospodini, A. (2004). "“Glocalising” Urban Landscapes: Athens and the 2004 Olympics". *Cities*, 21(3), 187-202. doi: https://doi.org/10.1016/j.cities.2004.03.004.

Can, I. and Heath, T. (2016). "In-between Spaces and Social Interaction: A Morphological Analysis of Izmir Using Space Syntax". *Journal of Housing and the Built Environment*, 31(1), 31-49. doi: 10.1007/s10901-015-9442-9.

Caniggia, G. and Maffei, G. L. (2001). *Architectural Composition and Building Typology: Interpreting Basic Building.* Alinea Editrice, Firenze, Italy.

Carmona, M. (2003). *Public Places Urban Spaces: The Dimensions of Urban Design.* Routledge.

Castex, J. and Panerai, P. (1982). "Prospects for Typomorphology". *Lotus International*, 36, 94-99.

Cerreta, M. and La Rocca, L. (2021). "Urban Regeneration Processes and Social Impact: A Literature Review to Explore the Role of Evaluation". *Computational Science and Its Applications – Iccsa 2021* (pp. 167-182). Retrieved from https://app.dimensions.ai/details/publication/pub.1141059598. doi: 10.1007/978-3-030-86979-3_13.

Chatzidimitriou, A. and Yannas, S. (2016). "Microclimate Design for Open Spaces: Ranking Urban Design Effects on Pedestrian Thermal Comfort in Summer". *Sustainable Cities and Society*, 26, 27-47. doi: 10.1016/j.scs.2016.05.004.

Chen, F. and Romice, O. (2009). "Preserving the Cultural Identity of Chinese Cities in Urban Design through a Typomorphological Approach". *URBAN DESIGN International*, 14(1), 36-54. doi: https://doi.org/10.1057/udi.2009.6.

Chen, F. and Thwaites, K. (2013). *Typology, Morphology and Typomorphology.* Ashgate Publishing Ltd, Aldershot. Retrieved from <Go to ISI>://WOS:000386201900004.

Chen, Y., Wang, Y., et al. (2021). "Knowledge Map of Urban Morphology and Thermal Comfort: A Bibliometric Analysis Based on Citespace". *Buildings*, 11(10), 427. doi: https://doi.org/10.3390/buildings11100427.

Chin, A. (2006). "Urban Transformation of River Landscapes in a Global Context". *Geomorphology*, 79(3), 460-487. doi: https://doi.org/10.1016/j.geomorph.2006.06.033.

Clarence, D. and Udawattage, G. D. W. (2021). "Urban Microclimate and Outdoor Thermal Comfort of Public Spaces in Warm-Humid Cities: A Comparative Bibliometric Mapping of the Literature". *American Journal of Climate Change*, 10(04), 433-466. doi: 10.4236/ajcc.2021.104023.

Conzen, M. R. G. (1960). "Alnwick, Northumberland: A Study in Town-Plan Analysis". *Transactions and Papers (Institute of British Geographers)*, (27), iii-122.

Couch, C. (1990). *Urban Renewal: Theory and Practice.* Springer.

Couch, C. and Fraser, C. (2003). "Introduction: The European Context and Theoretical Framework". *Urban Regeneration in Europe* (pp. 1-16). Retrieved from https://onlinelibrary.wiley.com/doi/abs/10.1002/9780470690604.ch1. doi: https://doi.org/10.1002/9780470690604.ch1.

Darin, M. (1998). "The Study of Urban Form in France". *Urban Morphology*, 2(2), 63-76. doi: https://doi.org/10.51347/jum.v2i2.3879.

Djokić, V. (2009). "Morphology and Typology as a Unique Discourse of Research". *SAJ: Serbian architectural journal*, 1(2), 107-130.

Elzeni, M. M., Elmokadem, A. A., et al. (2022). "Impact of Urban Morphology on Pedestrians: A Review of Urban Approaches". *Cities*, 129, 103840. doi: https://doi.org/10.1016/j.cities.2022.103840.

Feng, Y., Han, Y., et al. (2019). "A Visualized Review of Ecological Planning and Design Based on Bibliometrics from 1992 to 2017". *International Review for Spatial Planning and Sustainable Development*, 7(1), 101-116. doi: https://doi.org/10.14246/irspsd.7.1_101.

Furbey, R. (1999). "Urban 'Regeneration': Reflections on a Metaphor". *Critical Social Policy*, 19(4), 419-445. doi: https://doi.org/10.1177/026101839901900401.

Gaubatz, P. (1999). "China's Urban Transformation: Patterns and Processes of Morphological Change in Beijing, Shanghai and Guangzhou". *Urban Studies*, 36(9), 1495-1521. doi: https://doi.org/10.1080/0042098992890.

Gehl, J. (2010). *Cities for People.* Island Press. Retrieved from https://books.google.com.tr/books?id=lBNJoNILqQcC.

Gökçe, D. (2017). "An Empirical Investigation of the Interplay between Typo-Morphological Transformation of Historic House Form and Sense of Place". (PhD Thesis), University of Liverpool.

Gospodini, A. (2004). "Urban Morphology and Place Identity in European Cities: Built Heritage and Innovative Design". *Journal of Urban Design*, 9(2), 225-248. doi: https://doi.org/10.1080/1357480042000227834.

Gospodini, A. (2006). "Portraying, Classifying and Understanding the Emerging Landscapes in the Post-Industrial City". *Cities*, 23(5), 311-330. doi: https://doi.org/10.1016/j.cities.2006.06.002.

Hanson, J. (1998). *Decoding Homes and Houses.* Cambridge University Press, Cambridge, UK.

Hassan, A. M. (2023). "Umc-Based Models: An Integrating Umc Performance Analysis and Numerical Methods". *Renewable and Sustainable Energy Reviews*, 181, 113307. doi: 10.1016/j.rser.2023.113307.

Hatipoğlu Şahin, B. (2024). "Leading Trends in Mass Housing Research in Türkiye and Worldwide". *IDA: International Design and Art Journal*, 6(2), 249-264.

Hillier, B. (1996). *Space Is the Machine: A Configurational Theory of Architecture.* Cambridge University Press, Cambridge.

Hillier, B. and Hanson, J. (1984). *The Social Logic of Space.* Cambridge University Press.

Inzulza-Contardo, J. (2012). "'Latino Gentrification'?: Focusing on Physical and Socioeconomic Patterns of Change in Latin American Inner Cities". *Urban Studies*, 49(10), 2085-2107. doi: https://doi.org/10.1177/0042098011423425.

Jacobs, J. (1961). *The Death and Life of Great American Cities.* Random House, New York.

Kahvecioğlu, B. and Arslan Selçuk, S. (2023). "Adaptive Reuse in the Realm of Architecture: Global Research Trends and Gaps for the Future Studies". *Sustainability*, 15(13), 9971. doi: https://doi.org/10.3390/su15139971.

Kropf, K. (2009). "Aspects of Urban Form". *Urban Morphology*, 13(2), 105-120. doi: https://doi.org/10.51347/jum.v13i2.3949.

Kropf, K. (2013). "Ambiguity in the Definition of Built Form". *Urban Morphology*, 18(1), 41-57. doi: https://doi.org/10.51347/jum.v18i1.3995.

Kropf, K. (2017). *The Handbook of Urban Morphology.* Wiley. Retrieved from https://books.google.com.tr/books?id=Glw6DwAAQBAJ.

Lefevbre, H. (1991). *The Production of Space.* Blackwell Publishing.

Liao, Z. and Liu, M. (2023). "Critical Barriers and Countermeasures to Urban Regeneration from the Stakeholder Perspective: A Literature Review". *Frontiers in Sustainable Cities*, 5, 1115648. doi: https://doi.org/10.3389/frsc.2023.1115648.

Liu, X., Derudder, B., et al. (2016). "Measuring Polycentric Urban Development in China: An Intercity Transportation Network Perspective". *Regional Studies*, 50(8), 1302-1315. doi: https://doi.org/10.1080/00343404.2015.1004535.

Liu, Y., Yang, Y., et al. (2023). "Making Decisions for Urban Regeneration: A Bibliometric Analysis and Critical Review". *Proceedings of the 27th International Symposium on Advancement of Construction Management and Real Estate* (pp. 679-694). Retrieved from https://app.dimensions.ai/details/publication/pub.1163118963. doi: 10.1007/978-981-99-3626-7_52.

Lynch, K. (1960). *The Image of the City.* MIT Press, Cambridge.

Lynch, K. (1981). *A Theory of Good City Form.* MIT Press. Retrieved from https://books.google.com.tr/books?id=AzGXQwAACAAJ.

Marcus, L. and Colding, J. (2014). "Toward an Integrated Theory of Spatial Morphology and Resilient Urban Systems". *Ecology and Society*, 19(4). doi: 10.5751/ES-06939-190455.

Marzot, N. (2002). "The Study of Urban Form in Italy". *Urban Morphology*, 6(2), 59-73. doi: https://doi.org/10.51347/jum.v6i2.3901.

Mohamed, A. A. and Van Der Laag Yamu, C. (2023). "Space Syntax Has Come of Age: A Bibliometric Review from 1976 to 2023". *Journal of Planning Literature*. doi: 10.1177/08854122231208018.

Moon, T.-H. (2021). "Editorial Introduction Communities and Urban Regeneration". *International Review for Spatial Planning and Sustainable Development*, 9(2), 1-4.

Moudon, A. V. (1997). "Urban Morphology as an Emerging Interdisciplinary Field". *Urban Morphology*, 1(1), 3-10. doi: https://doi.org/10.51347/jum.v1i1.4047.

Nor, M. M., Noor, N. M., et al. (2021). "Bibliometric Analysis on Street Network Components in Influencing Genome of Urban Morphologies". *Journal of Architecture, Planning and Construction Management*, 11(1).

Oliveira, V. (2016). *Urban Morphology: An Introduction to the Study of the Physical Form of Cities.* Springer International Publishing, Switzerland.

Pan, H., Shen, Q., et al. (2009). "Influence of Urban Form on Travel Behaviour in Four Neighbourhoods of Shanghai". *Urban Studies*, 46(2), 275-294. doi: https://doi.org/10.1177/0042098008099355.

Rérat, P. (2012). "Housing, the Compact City and Sustainable Development: Some Insights from Recent Urban Trends in Switzerland". *International Journal of Housing Policy*, 12(2), 115-136. doi: 10.1080/14616718.2012.681570.

Riera Pérez, M. G., Laprise, M., et al. (2018). "Fostering Sustainable Urban Renewal at the Neighborhood Scale with a Spatial Decision Support System". *Sustainable Cities and Society*, 38, 440-451. doi: https://doi.org/10.1016/j.scs.2017.12.038.

Scheer, B. C. (2017). "Urban Morphology as a Research Method". *Planning Knowledge and Research* (pp. 167-181). Routledge, London.

Schirmer, P. M. and Axhausen, K. W. (2016). "A Multiscale Classification of Urban Morphology". *Journal of Transport and Land Use*, 9(1), 101-130.

Scorza, F. and Fortunato, G. (2021). "Cyclable Cities: Building Feasible Scenario through Urban Space Morphology Assessment". *Journal of Urban Planning and Development*, 147(4). doi: 10.1061/(ASCE)UP.1943-5444.0000713.

Smith, A. (2012). "Events and Urban Regeneration". doi: 10.4324/9780203136997.

Song, Y., Long, Y., et al. (2018). "Are All Cities with Similar Urban Form or Not? Redefining Cities with Ubiquitous Points of Interest and Evaluating Them with Indicators at City and Block Levels in China". *International Journal of Geographical Information Science*, 32(12), 2447-2476. doi: https://doi.org/10.1080/13658816.2018.1511793.

Tan, X. and Altrock, U. (2016). "Struggling for an Adaptive Strategy? Discourse Analysis of Urban Regeneration Processes – a Case Study of Enning Road in Guangzhou City". *Habitat International*, 56, 245-257. doi: https://doi.org/10.1016/j.habitatint.2016.06.006.

Thinnakorn, R. and Chanklap, B. (2022). "Influence of the Global Urban Grid on Natural Movement within a Local Public Space". *International Review for Spatial Planning and Sustainable Development*, 10(4), 174-191. doi: 10.14246/irspsd.10.4_174.

Tian, G., Wu, J., et al. (2010). "Spatial Pattern of Urban Functions in the Beijing Metropolitan Region". *Habitat International*, 34(2), 249-255. doi: https://doi.org/10.1016/j.habitatint.2009.09.010.

Trancik, R. (1991). *Finding Lost Space: Theories of Urban Design.* John Wiley & Sons.

Tripathi, M., Kumar, S., et al. (2018). "Occurrence of Author Keywords and Keywords Plus in Social Sciences and Humanities Research : A Preliminary Study". *COLLNET Journal of Scientometrics and Information Management*, 12(2), 215-232. doi: 10.1080/09737766.2018.1436951.

Uddin, S. and Khan, A. (2016). "The Impact of Author-Selected Keywords on Citation Counts". *Journal of Informetrics*, 10(4), 1166-1177. doi: https://doi.org/10.1016/j.joi.2016.10.004.

Ünlü, T. and Baş, Y. (2017). "Morphological Processes and the Making of Residential Forms: Morphogenetic Types in Turkish Cities". *Urban Morphology*, 21(2), 105-122.

Van Eck, N. J. and Waltman, L. (2007). "Vos: A New Method for Visualizing Similarities between Objects". (pp. 299-306). Springer Berlin Heidelberg. Retrieved from https://dx.doi.org/10.1007/978-3-540-70981-7_34. doi: 10.1007/978-3-540-70981-7_34.

van Nes, A. and Yamu, C. (2017). "Space Syntax: A Method to Measure Urban Space Related to Social, Economic and Cognitive Factors". *The Virtual and the Real in Planning and Urban Design* (pp. 136-150). Routledge, London.

Van Nes, A. and Yamu, C. (2021). *Introduction to Space Syntax in Urban Studies.* Springer Nature, Berlin.

Vasile, A.-M., Ghimus, C., et al. (2024, 2024//). "Bibliometric Analysis of the Evaluation of Interest in Urban Regeneration". Proceedings of Constraints and Opportunities in Shaping the Future: New Approaches to Economics and Policy Making, Cham, Springer Nature Switzerland 213-239.

Wang, H., Zhao, Y., et al. (2021). "Collaborative Decision-Making for Urban Regeneration: A Literature Review and Bibliometric Analysis". *Land Use Policy*, 107, 105479. doi: https://doi.org/10.1016/j.landusepol.2021.105479.

Whitehand, J. W. (2001). "British Urban Morphology: The Conzenion Tradition". *Urban Morphology*, 5(2), 103-109.

Wu, F. (2018). "Planning Centrality, Market Instruments: Governing Chinese Urban Transformation under State Entrepreneurialism". *Urban Studies*, 55(7), 1383-1399. doi: https://doi.org/10.1177/0042098017721828.

Wu, F. and Webber, K. (2004). "The Rise of "Foreign Gated Communities" in Beijing: Between Economic Globalization and Local Institutions". *Cities*, 21(3), 203-213. doi: https://doi.org/10.1016/j.cities.2004.03.002.

Xie, F., Liu, G., et al. (2021). "A Comprehensive Review of Urban Regeneration Governance for Developing Appropriate Governance Arrangements". *Land*, 10(5), 545. doi: https://doi.org/10.3390/land10050545.

Xu, M. and Yang, Z. (2009). "Design History of China's Gated Cities and Neighbourhoods: Prototype and Evolution". *URBAN DESIGN International*, 14(2), 99-117. doi: https://doi.org/10.1057/udi.2009.12.

Yamu, C., van Nes, A., et al. (2021). "Bill Hillier's Legacy: Space Syntax—a Synopsis of Basic Concepts, Measures, and Empirical Application". *Sustainability*, 13(6), 3394. doi: https://doi.org/10.3390/su13063394.

Ye, Y., Li, D., et al. (2017). "How Block Density and Typology Affect Urban Vitality: An Exploratory Analysis in Shenzhen, China". *Urban Geography*, 39(4), 631-652. doi: 10.1080/02723638.2017.1381536.

Zeren Gülersoy, N. and Gürler, E. (2011). "Conceptual Challenges on Urban Transformation". *A|Z ITU JOURNAL OF THE FACULTY OF ARCHITECTURE*, 8(01), 10 - 24.

Zheng, H. W., Shen, G. Q., et al. (2014). "A Review of Recent Studies on Sustainable Urban Renewal". *Habitat International*, 41, 272-279. doi: https://doi.org/10.1016/j.habitatint.2013.08.006.