SPONTANEOUS URBANIZATION AND SOCIAL SUSTAINABILITY: A CRITICAL COMPARISON OF FIVE SPONTANEOUS URBANIZATION THEORIES.

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Abstract This review article discusses and critically analyzes five theories used to explain spontaneous urbanization and how humans and their behaviour affect urban and architectural structures, in addition to defining both spontaneous urbanization and social sustainability. These theories are (Theory of the spontaneous evolution of social institutions, living systems theory, overlapping space theory, right to the city theory and social capital theory).

The importance of the research is highlighted by the necessity of studying and analyzing the theories of spontaneous urbanization and extracting social principles and values, as the success of the spontaneous environment stems from comprehensive and balanced thinking in various aspects of life-related to humans and their social and cultural requirements.The importance of finding a solution to the increase in human gatherings in the urban environment and the inability of the plan to keep pace with the construction of the population in poor areas and informal (spontaneous) settlements that were the result of local residents' initiatives and efforts to adapt to the rapidly changing environment. The importance of benefiting from the development of civil society and encouraging and strengthening local customs.

Theory of the spontaneous evolution of social institutions, living systems theory and social capital theory each focus on the individual and society through the interactions of individuals, groups and social networks and the impact of human behaviour on the physical environment, although living systems theory focuses on the city being a biological structure that adapts and evolves in its surroundings. The two theories (overlapping space theory, and right to the city theory) focused on space and place from a legal, rights and social perspective, which emphasized how urban spaces are used and how they are spontaneously reshaped by residents, such as the right to social participation in urban decision-making, institutional diversity and the right to use space. Each theory contributed to analyzing an aspect of spontaneous urbanization, and the researcher concluded that they complement each other to reach an integrated model of spontaneous urbanization, to reach the indicators and principles that have been extracted from theories towards sustainable social development.

Keywords Spontaneous urbanization, Spontaneity, social sustainability, Theories, Social capital, Critical comparison.

Introduction

The most important aspect of the 21st century is opening new horizons in human settlements, the remarkable concentration of people in major global cities, and increased urbanization. According to United Nations projections, 75% of the Earth's population will reside in urban areas by 2050 (Tuts et al., 2015). However, with urbanization, the growth of cities has accelerated social and economic development and created opportunities for scientific and technological progress and social, cultural, and economic growth. Sustainable city development requires an integrated approach that reduces unfavorable situations and helps achieve desirable situations (Antanaitytė & Urbonaitė-Vadoklienė, 2017; Masboungi, 2012). The term spontaneity refers to people or personalities who "act of their own volition" or "act without external pressure"(Dictionaries, 2021). Therefore, the term "spontaneity" can be understood as a specific quality of actions. In contrast, the term "emergent formation" refers to any (socio-spatial) formation that develops over time as a result of an infinite number of events. Of actions and not as a direct result of a single action or design. Such configurations can be found in any system involving multiple actors pursuing distinct goals and taking independent actions. The city itself shows the highest level of expression (Cozzolino, 2018).

In principle, two prevailing stereotypes of spontaneity have emerged, one relating to "informal" architecture and the urban and urban context and the other to urban works that take place without prior planning, identified as

"unplanned." In many disciplines, such as sociology, art, music, literature, and natural sciences, spontaneous behavior is largely viewed as a positive quality, identified as a natural process or action. However, in the architectural context, and through spontaneous, exploratory, and intertwined harmony with the environment and social and cultural interaction, traditional architecture has been embodied in many parts of the world since ancient times. It has happened rapidly over time through the development of trial and error, and by harnessing the power of Sun, wind, and soil, it refers to the buildings that are built by its residents using local materials. In the traditional Arab cities, the main inspiration for its design came from Islamic teachings that had an impact on the social structure and human behavior in general and which were reflected in the urban product (Soltanzadeh & Moghaddam, 2015). Examples include planning guidelines for cities and urban agglomerations or unique architectural features (such as narrow, winding fabric, balconies made of wood, inner courtyards, and traditional house morphology)(Al-Zubaidi & Shahin, 2005), which contain many of the characteristics of the compact city that the world is calling for to solve the problem of the dispersed city. There are several explanations for spontaneous urbanization presented, all of which support the researcher's claims. Spontaneity is seen as a useful architectural and urban element that preserves the genetic composition of the settlement and adds to the human essence of cities. Therefore, spontaneity is believed to have architectural value and can be a resource and tool for design(Al-Shouk & Al-Khfaji, 2018; NOEV, 2013).

cientific and literary research has varied in including sustainability in its various dimensions in spontaneous settlements, as the researcher Elmanzlawi, concluded that spontaneous urbanization is a flexible and open solution and a strategic tool that can empower cities and create a sustainable society. Communities and architecture (between the material and moral aspects) meet the general requirements of humans and reflect the spirit of the place (Elmanzlawi, 2022). And the stories of its residents. Researchers Slaev et al., have contributed to the long and heated debate about spontaneity in urban development. His findings show that the emergence of automatic rules is a prerequisite for establishing automatic order. Social life cannot exist without rules (Slaev et al., 2022).

In study 2021, Salingaros found two critical design lessons that architects and planners can learn from cities and spontaneous settlements to improve housing and quality of life, namely (1) design to accommodate human biology and (2) design to conserve energy (Salingaros, 2021). As for Cozzolino, the researcher discussed spontaneity (spontaneity) and the possibility of its occurrence, which is characterized by the flexibility that design provides through (the size of the design and the level of its details), at the level of the architect with a hypothetical model, and then the possibility of generalizing this at the level of city planning (Cozzolino, 2018) .

In study 2017, Colombier et al Informal described (spontaneous) settlements as a result of local people's initiatives and efforts to adapt to a rapidly changing environment. He explains that the best way to move to more inclusive and sustainable development is to amend existing land, housing and urban laws in metropolitan France to match French Guiana's unique characteristics while encouraging and strengthening local customs. Moreover, to leverage local energy and expertise in a proposal for a social housing project for sustainable developmen.(Colombier et al., 2017).

All of the above confirms the importance of research into the necessity of studying and analyzing theories of spontaneous urbanization and extracting social principles and values. The success of the spontaneous environment stems from comprehensive, balanced thinking in the various directions of life related to man and his social and cultural requirements, materially and spiritually.

Spontaneous urbanization

Accordingly, spontaneous urbanization is defined as "spontaneous urbanism," "Local urbanization," "human urbanism," "popular urbanism," "innate urbanism,"(Elmanzlawi, 2022, p. 67) or "Spontaneous urbanization" (Kadi, 1985) in addition to other terms that characterize the impact of urbanization. The intellectual interests of many pioneers of modern urbanization focused on it, and given the important link between the restoration of the spontaneous traditional environment and its ability to satisfactorily meet the needs of spiritual and material users, being an environmental product, it must be sustainable as in local (ancient) Arab cities (Al-Shouk & Al-Khfaji, 2018). **Especially if we want to make spontaneous urbanism a separate stage, it lacks precision, and spontaneous societies can advance towards modernity and then mix this idea in many ways.**

According to all of the above, the researcher believes that each of the terms mentioned represents spontaneous urbanization, but not all spontaneous urbanization is slum-poor areas or shantytowns. **Spontaneous**

urbanization is defined as any design or planning act carried out by a person that violates the laws, planning directives, and design standards of that country; despite the differences and overlapping concepts and terminology that can explain the concept, an approximate definition can be set for it as **spontaneous urbanization is the material and moral product of a pattern of urban fabric that expresses the reality of the time and place in which it exists through the essence of which it is composed. It has a certain shape and characteristics depending on the period and place using environmental and social vocabulary. It is a type of collective creative work in which residents make an effort to build it according to an approach and planning that goes back to customs and traditions stemming from the environment. Thus, it is considered a mirror that reflects the social and cultural environmental components because it is related to the environment and compatible with it from a financial and human standpoint while maintaining the full extent of its environmental capabilities.**

Social sustainability

Social sustainability is a process that strengthens and enhances social connections and cultural quality of life among all types of people within local areas, which is essential for healthy and livable communities (Teimouri, 2019). It is not easy to come up with a universal definition because each researcher or policymaker creates his or her definition based on the perspectives of the study. However, a number of definitions are offered; defined as the quality of society, as it represents the links within society as well as the links between nature and civilization through labor. Social sustainability is defined as the stability and continuity of the social environment in all areas related to society or its institutions (Itma & Monna, 2022). **Social sustainability is achieved when society's activities and associated institutional structures meet a wide range of human needs and are formed to protect nature and its ability to reproduce over time, supporting normative claims to social justice, human dignity, and participation. It is the practical aspect of "social sustainability" that determines its definition according to the primary goal of the process. In the process of building our cities, we aspire to achieve just and equitable outcomes. It is challenging because of the diversity of agents involved in these complex settings. However, it may be easier to achieve the desired result if "social sustainability" is defined.**

Spontaneous urbanization in social and behavioral theories:

Theory of the spontaneous evolution of social institutions

Michael Polanyi and Friedrich Hayek's theory of spontaneous order, initially developed in the 1940s and 1950s, provides a more plausible basis for interdisciplinary social theory. It acknowledges the diversity of resources and constraints in different social systems, is consistent with psychological research on human behaviour, and considers long-term societal and individual learning processes. Scientific, democratic, market and cultural systems are the four central distinct systems of human interaction around which the theory of spontaneous order is united. These orders have unique resources (Andersson, 2021; Moroni, 2014). Spontaneous orders are decentralized systems with self-organizing qualities (Andersson, 2021).

The basic components of Hayek's theory of spontaneous development: depend on on the following (Andersson, 2021; Colin, 2021; Moroni, 2015; Reimers, 2020)

1. Self-organization: Institutions that have evolved represent the collective wisdom or knowledge of multiple generations. This body of knowledge is stable rather than dynamic and stimulating. The majority of information is obtained through a continuous process of sorting through acquired traditions, which requires individual recognition and commitment to customs.

2. The emergence of order: In contrast to imposing standards from the top down, Hayek sees that the social order develops from the bottom up. He highlighted the importance of the "Rules of Fair Conduct," which are broad guidelines that govern people's behaviors and interactions. Although these guidelines are known and adhered to by community members, they are not always written down.

3. Criticism of rational design: Hayek disagreed with the idea that central authority can successfully create and manage social structures. He believed that because the distribution of information among people relied mainly on "dispersed, successive knowledge," central planners lacked the skills necessary to create complex social structures. An improvised arrangement that arises from personal communications is more efficient because it integrates this dispersed knowledge.

4. Cultural development: Hayek emphasized that human thinking is a result of culture and society and not the other way around because our culture and the development of society are what determine our thinking(Reimers, 2020)

. It is the ability to adapt to changing conditions and the iterative learning process in societies that drives this evolutionary process.

5. Dispersed knowledge (customs and traditions): Hayek was interested in the development of traditions, customs, and rules, which shape the way we interact in society. Hayek viewed customs and traditions as storehouses of sophisticated knowledge, giving them high value. He emphasized that through years of trial and error, traditions and rituals often represent practical answers to societal issues.

Living Systems Theory

Within the interdisciplinary framework of living systems theory, the principles governing social systems and organizations and the behaviour and evolution of living organisms are investigated. It aims to understand the dynamics and patterns present in various living forms, including cells, organisms, ecosystems, and society (Vondracek & Ford, 2018). LST is an integrated conceptual approach to studying ecosystems, with eight hierarchical levels of living systems, each with its structure and procedures. They are (cells, organs, organisms, groups, organizations, communities, societies, and supranational systems).
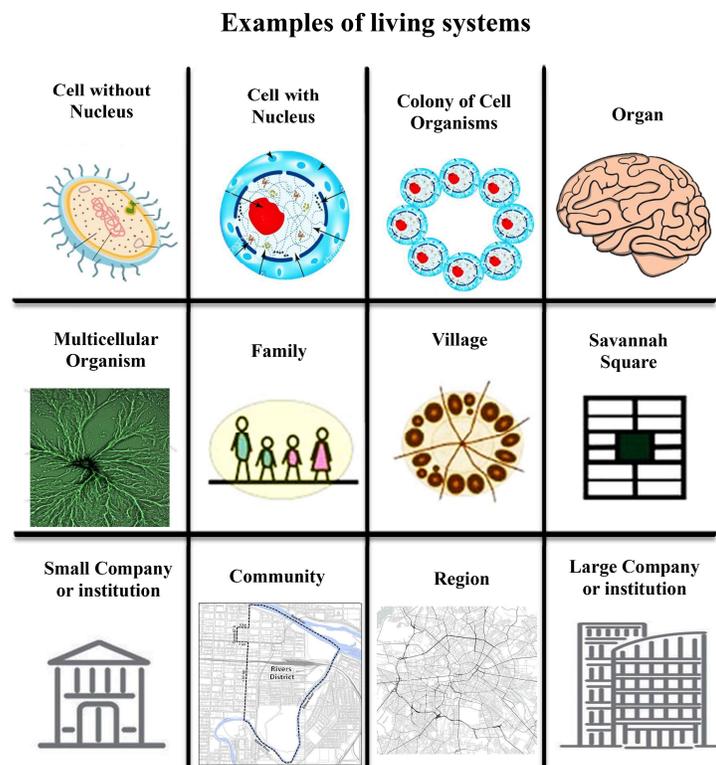
Figure 1. Living Systems Theory Idea.

Living systems theory is depend on the following(Caetano-Anollés et al., 2021; Vancouver, 1996; Vondracek & Ford, 2018).

1. Systems thinking: Living systems theory emphasizes a comprehensive approach to understanding life, paying more attention to the relationships and interconnections between the system's elements rather than examining each element individually.
2. Self-organization: The ability of living systems to produce and sustain their organizational structures and patterns independently of external interference. In biological systems, where complex structures and behaviors evolve from the interactions of smaller components, this emergent feature is frequently observed. It is also called the principle of unitary action through behavioral loops.
3. Hierarchy: Subsystems are nested within larger systems in many of the hierarchical arrangements found in living systems.
4. Feedback loops: In order to control the dynamics and behavior of living systems, feedback mechanisms are necessary. Positive feedback amplifies changes within the system, while negative feedback balances the

system and maintains equilibrium. These two types of feedback loops are known as reinforcing and balancing, respectively.

5. Evolution and adaptation: Living systems are able to adapt over time to changes in their surroundings. Development and change always start with what already exists. "New" behaviors are rarely completely new; Rather, "new" behaviors are the result of developing, distinguishing, and modifying pre-existing patterns (such as schemas) in living systems.

6. Open systems: Living systems and their environment exchange materials (conduction and storage), energy, and information. Because of this constant connection, organisms, and living systems can influence and be affected by their surroundings without losing their integrity.

Theory of Interstitial Spaces

This theory is based on (situations of social interaction) through interstitial spaces, defined as small-sized spaces or places where individuals in different fields are located and interact, sometimes informally, around joint activities for which they set a specific time. Interstitial spaces should include (amateur clubs, civil society organizations, small workshops, meetings and informal gatherings). How the dynamics of micro-interaction between fields can lead to new practices (Villani & Phillips, 2021).

It is based on the following principles: (Edwards-Hughes, 2020; Furnari, 2014; Villani & Phillips, 2021)

1. Institutional diversity: a situation in which disparate prescriptions from multiple institutional logics collide since members interacting within interstitial spaces come from different fields and have been socially integrated into the different norms and institutions that regulate their field.

2. Interaction is time-limited, meaning that it occurs at irregular and non-recurring intervals. The time that individuals allocate to these joint activities is limited when compared to the time they allocate to the activities that they carry out on an ongoing basis in their fields of specialization.

3. Catalysts: Mediators (actors) who also act as organizers, mediators, and motivators by organizing and activating joint activities, maintaining the interactions of others over time, and helping build shared meanings.

Right to the City Theory

Henri Lefebvre first proposed this concept in 1968, inspired by the imperatives of collectivist cities. Every person living in a city has the right to exercise their civil rights within the boundaries of urban areas (Lefebvre, 1996, p. 158).

This theory sees the city as a social structure in which its residents have rights, and urban planners in Latin America were the first to legislate this concept (Fallahi & Safa, 2023). As for the right to the city that Harvey discussed in his book, it is an opportunity for the city, as a historically unique human creation, to once again become a place of coexistence and group solidarity (Marinković, 2013). The principle of the right to the city can be put into practice to achieve important goals, including social participation, employment, justice, security, and the preservation of human dignity for all people.

The theory is based on the following aspects: (Fallahi & Safa, 2023; Marinković, 2013)

A. The right to use urban spaces (Haderer, 2020; Moroni & Chiodelli, 2014)

1. Physical access: Cities must be planned so that every member of society can benefit from the services and resources provided, such as housing, public areas, and urban services, regardless of gender, age, or social or economic status in time and place.

2. Control and ownership of space: According to Lefebvre, it expresses a political-economic concept

3. Urban vitality: It takes the form of three variables (security, communication, and entertainment).

B. The right to participate:

1. Urban decision-making: Implementing the theory requires the adoption of multidisciplinary policies and procedures. The active participation of stakeholders in decision-making processes, the consensus of multidisciplinary researchers, and government support are necessary to reform cities in line with these ideals. Positive improvements could also be achieved more quickly if citizenship rights were made more widely known and public demand was generated(Fallahi & Safa, 2023) .

2. Urban organization: Lefebvre believes that the way cities are organized and designed significantly impacts people's thinking and daily (Lefebvre, 1996) .

3. Space production/the right to urban citizenship: This topic has been discussed in a book with the same title and refers to an individual and political movement to reclaim the city and its spaces for citizens. Lefebvre's
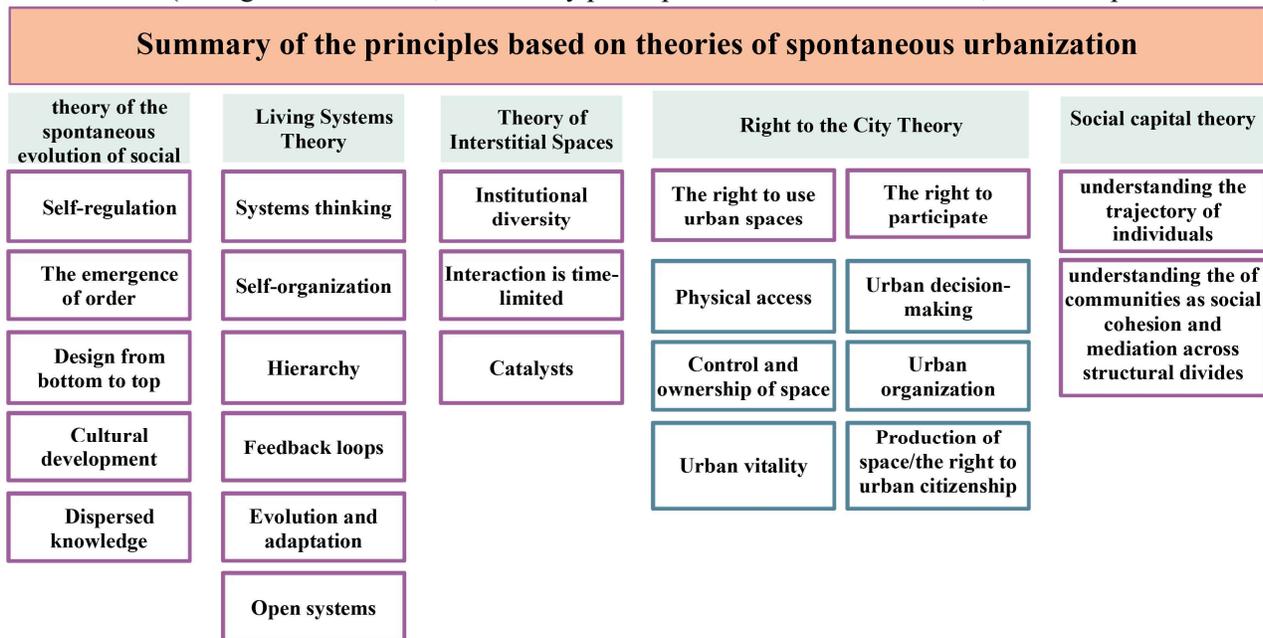
focus on the important role of space in the production of everyday life and the reproduction of social relations creates an approach to citizenship rights in which city residents should be the main actors and beneficiaries in the production of urban space(Heidari et al., 2021) .

Social capital theory

Bourdieu initially articulated social capital theory (Bourdieu, 1986), which has been expanded upon by Coleman, Putnam, Fukuyama, and other scholars who have made significant contributions to contemporary research on social capital as multifaceted Specialties (Pawlewicz & Cieślak, 2024). Many definitions of social capital have been put forward in the literature, but most acknowledge the strong relationship between social interactions, social ties and social capital. Strong ties and a spirit of cooperation make communities more successful in achieving common goals. Civic participation, or the direct participation of citizens in social, public and political life, is another aspect of social cooperation (Guzhavina, 2019; Sierocińska, 2011). Building social cooperation within a group requires mutual trust among its members. Social trust is among the most important metrics to determine the degree of social capital (Aldrich & Meyer, 2015; Ali & Shah, 2018). Social capital encourages the development of collective communities and instils the belief that natural resources are valuable public goods that must be preserved through enhanced social participation and cooperation (Pawlewicz & Cieślak, 2024) .

The literature on social capital includes two main ideas: (Daskalopoulou, 2018; Tahlyan et al., 2022)

1- social capital for understanding the trajectory of individuals (as access to resources through social networks).
2- social capital for understanding the of communities as social cohesion and mediation across structural divides (through levels of trust, community participation and collective action, and other public benefits).

Summary of the principles based on theories of spontaneous urbanization

theory of the spontaneous evolution of social	Living Systems Theory	Theory of Interstitial Spaces	Right to the City Theory		Social capital theory
Self-regulation	Systems thinking	Institutional diversity	The right to use urban spaces	The right to participate	understanding the trajectory of individuals
The emergence of order	Self-organization	Interaction is time-limited	Physical access	Urban decision-making	understanding the of communities as social cohesion and mediation across structural divides
Design from bottom to top	Hierarchy	Catalysts	Control and ownership of space	Urban organization	
Cultural development	Feedback loops		Urban vitality	Production of space/the right to urban citizenship	
Dispersed knowledge	Evolution and adaptation				
	Open systems				

Figure 2. Summary of the principles depend on theories of spontaneous urbanization.

Discussion

Through the literature review of spontaneous urbanism and spontaneity, we find that currently, the term spontaneity has a wide range of meanings in architecture and urban context, and depending on the situation and philosophical point of view, it is usually associated with unplanned urban phenomena as mentioned by (Cozzolino, 2018; Elmanzlawi, 2022; NOEV, 2013; Noev, 2020; Salingaros, 2021; Slaev et al., 2022) , while such events typically have a negative connotation in urban subjects, spontaneity is generally seen as a desirable trait in other disciplines such as sociology, art, literature or science. Natural. Psychologists recognize the importance of spontaneity in human social interactions. Spontaneity in an urban environment and context can be described as a dynamic and open concept. To understand and interpret spontaneous urban events outside the

framework of being formal or informal, the researcher tried to discuss theories that explain spontaneous urbanization and spontaneity, compare them, and analyze similarities and differences, to understand individual, social, and economic motivations. Behind the spontaneous action of human behaviour and the growth of spontaneous (informal) gatherings

Comparing the similarities among the theories

Comparing the similarities among the theories of spontaneous urbanization is important because it allows us to gain a deeper understanding of the social, economic, and cultural processes that lead to the emergence and development of cities without central planning. This helps in:

- Finding commonalities: We may comprehend the primary drivers of spontaneous urbanization, such as internal migration, population increase, and economic shifts, by recognizing the similarities among the various ideas.
- Examining social dynamics: By contrasting the theories, we can comprehend how local people respond to these developments and how they overcome the difficulties that arise from unplanned urbanization.
- Use in public policy: The theories' commonalities can be leveraged to create more potent regulations to restrain the expansion of cities and lessen the unfavourable consequences of spontaneous urbanization, such as pollution, slums, and a shortage of essential services.
- Creating development strategies: By recognizing the connections between the ideas, development strategies that build on the advantages of spontaneous urbanization – like creating job opportunities, strengthening social bonds, and encouraging creativity and innovation – can be made.

In general, comparing the similarities between theories of spontaneous urbanization enables the development of a comprehensive understanding that helps guide urban development in a sustainable and effective manner.

Table 1. The similarities among the theories

In terms of	Discussion
A. Focus on the individual and society:	• Spontaneous systems theory and living systems theory: Both theories focus on how urban systems develop and organize themselves spontaneously based on the interactions of individuals and groups. • Social capital theory: Similar to the previous two theories in its emphasis on the role of social networks and personal relationships in shaping cities spontaneously.
B. Focus on space and place:	• The theory of Interstitial Spaces and the theory of the right to the city: are similar in their emphasis on how urban spaces are used and how they are spontaneously reshaped by residents.

Comparison of the differences among the theories:

Different theories offer a range of approaches and tactics that can be chosen and used by the particular circumstances of each city or community. This makes it possible to create adaptable and varied answers to the problems caused by unplanned urbanization. It can also stimulate creativity in addressing urban issues because several theories' components can be combined to produce original solutions. Understanding the variations enables the creation of development plans and urban solutions that are customized to the unique requirements of each community, resulting in more sustainable and balanced urban growth. To put it briefly, contrasting the various theories of spontaneous urbanization aids in the development of more precise and potent solutions to the different issues that cities and communities face in the setting of unplanned and rapid urbanization.

Table 2. The differences among the theories

In terms of	Discussion
A. Theoretical scope:	• Spontaneous order theory: focuses on how urban spaces organize themselves without central intervention. • Right to the city theory: focuses on the legal and political dimensions of spontaneous urbanization, and how individuals and groups can claim their rights to reshape the city. • Living systems theory sees the city as a living biological system that adapts and grows, which differs from theories that focus more on the social or legal dimensions such as the right to the city theory

B. The view of the individual versus the system:	• The theory of spontaneous order Hayek believes that the social order develops from the bottom up through the successively acquired knowledge of generations and the cultural store that leads to a social order, forming an institution emphasizing the importance of "rules of just behaviour" which are broad guidelines that control people's behaviour and interactions. While the theory of the right to the city emphasizes the importance of social participation, justice, security and individual dignity.
C. Interaction with urban structure:	• The theory of spontaneous order focuses on dispersed knowledge, customs, traditions, and cultural development and their importance in shaping the urban structure. Thus, it is similar to the theory of social capital in that it focuses on social relations and how they affect the urban structure, while the theory of overlapping spaces focuses on how urban spaces are formed and overlapped physically.

An integrated model towards sustainable social development

Integrating different theories of spontaneous urbanization is important in achieving sustainable social development, as each theory provides a unique vision that contributes to a deeper and more comprehensive understanding of urbanization processes and how to direct them towards sustainable community development. Here are some points that highlight the importance of integrating these theories:

Table 3. Dimensions or principles of social sustainability.

target	Importance
1. Achieving comprehensive understanding and application:	• Spontaneous system theory: It gives an idea of how urban communities organize themselves naturally and without central intervention, which enhances the understanding of how to design flexible policies that respond to the actual needs of the community. • Living systems theory: It contributes to understanding the city as a living ecosystem, and emphasizes the importance of adaptation and organic growth. This enhances sustainable development by focusing on the balance between humans and the urban environment.
2. Promoting social justice	• Theory of the Right to the City: Highlights the legal and political dimension of urbanization, ensuring that sustainable development is not only environmental and economic but also social, by empowering all groups with their right to shape and develop their city. • Theory of Intersecting Spaces: Helps understand how urban spaces overlap and are used spontaneously by different social groups, contributing to achieving comprehensive development that takes into account cultural and social diversity.
3. Enhancing social capital	• Social capital theory: focuses on the importance of social relationships and networks in promoting cooperation and community participation, which is considered a crucial element in achieving sustainable development based on collaboration and social integration.
4. Flexibility and responsiveness to change	• Integrating the theory of spontaneous systems and the theory of living systems enhances the flexibility of urban planning, as cities can quickly adapt to social, economic and environmental changes, which contributes to the sustainability of development in the long term.
5. Encouraging urban innovation and creativity	• The overlap between the theory of overlapping spaces and the theory of social capital can generate creative and innovative urban environments, where individuals can interact and participate in creating new spaces that adapt to their needs and aspirations.
6. Enhancing community participation	• The right to the city theory pushes for participatory urban policies, which enhance community participation in the decision-making process and ensure that urban development meets the needs of all members of society, not just certain groups.
7. Addressing	• By integrating living systems theory with social capital theory, the ability to meet

|	
environmental and social challenges	environmental challenges can be enhanced through social cooperation and the activation of relationships between individuals and communities.
8. Enriching urban policies	By integrating these theories, urban planners and decision-makers can develop more comprehensive and sustainable urban policies that take into account the environmental, social, economic, and cultural aspects of urbanization.

Source: The researcher depends on theories.

Integrating these theories can contribute to creating more sustainable and just cities, where the interaction between the different dimensions of spontaneous urbanization is enhanced. This integrated approach provides a framework for a comprehensive understanding and addressing the multiple challenges facing cities today, contributing to sustainable social development that meets the needs of the present without compromising the ability of future generations to meet their needs.

Table 4. Dimensions or principles of social sustainability.

Dimension or principle	Target	Mechanisms for achieving them in spontaneous areas
Social justice	• Equity primarily means access to adequate resources for full participation in community life as well as adequate opportunities for personal growth and advancement.	• The accessibility of different groups to the natural resources of the community in which they live. • Access to and use of services • The ability to adapt
Institutional diversity	• Achieving institutional diversity involves creating an environment in which different institutions (such as educational, cultural, governmental, civil society organizations, and the private sector) coexist, cooperate, and complement each other. This diversity contributes to the social, economic, and cultural vitality of society	• Social networking • The size of the individual's social network. • Cultural diversity • Social integration • Institutional sustainability: the ability to fully bear the cost of construction and maintenance by the residents of spontaneous areas

Source: The researcher aadapted from (Davidson, 2010; Horner et al., 2009; Ly & Cope, 2023; Magis, 2010)
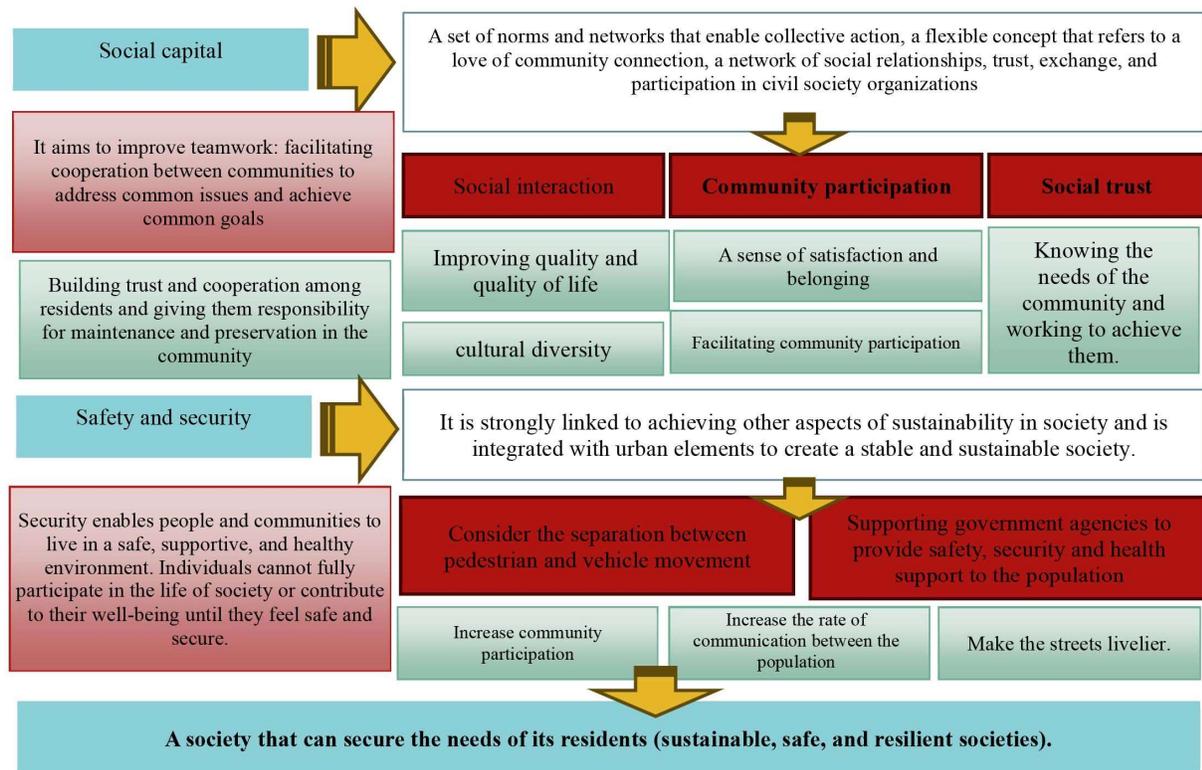
Figure 3. Indicators to measure the principles and targets of social sustainability.

The importance of extracting indicators from the theories of spontaneous urbanization to measure the social sustainability of spontaneous urbanization areas and settlements

Extracting indicators from theories of spontaneous urbanization to measure the social sustainability of these areas has many important benefits, including:

1. Realistically evaluating societal sustainability
    ▪ Relevant indicators for the situation: An accurate assessment of social sustainability in unplanned areas can be obtained by utilizing indicators that are suited for the actual setting of these areas, as they are derived from theories of spontaneous urbanization.
    ▪ Determining the real needs: These metrics aid in quantifying the social needs that communities in impromptu settings require, including housing, healthcare, education, and basic services.
2. Comprehensive analysis of sustainability dimensions:
    ▪ Social cohesiveness among inhabitants is a crucial component of social sustainability, particularly in spontaneous urban areas where a significant demographic diversity may be present. These measures can be used to gauge the degree of social cohesion among people.
    ▪ Evaluating life quality: A comprehensive picture of social sustainability is provided by the indicators, which cover topics including chances for community engagement, a sense of security, and life satisfaction.
3. Improving development policies:
    ▪ Public policy guidance: These indicators can be used to direct policy in the direction of improving social sustainability in sectors that arise spontaneously. Based on the findings of these indicators, policies about housing, basic services, and infrastructure, for instance, might be enhanced.
    ▪ Prioritization: By identifying development priorities in these areas, indicators make sure that resources are distributed wisely to take care of the most urgent problems.
4. Tracking advancement and development
    ▪ Monitoring advancements: Over time, indicators can be used to track the improvement of social conditions in areas of spontaneous development, enabling an evaluation of the success of development

measures.
- Comparing data across regions: By allowing comparisons across various places that are undergoing spontaneous urbanization, indicators make it possible to share experiences and comprehend the variables influencing social sustainability.

5. Local communities are empowered when:
- Community engagement is encouraged by indicators that point out areas in which the community may take a more active role in enhancing its social environment. This improves the community's capacity to self-organize and work together to address challenges.
- Encouraging local initiatives: Local communities can create projects that strengthen social cohesion and raise standards of living by learning about the advantages and disadvantages of social sustainability.

6. Fostering enduring sustainability
- Reducing social inequality: By identifying social gaps and inequities within informal areas, the indicators facilitate the implementation of policies aimed at promoting social justice and reducing social inequality.
- Sustainable urban planning: By utilizing these indicators to gauge social sustainability, the groundwork may be established for sustainable urban design that integrates social, economic, and environmental factors.

Most of the literature and previous studies on spontaneous urbanization or spontaneous (informal) settlements use social and demographic factors in the evaluation such as gender and income, the high urban land area, the inadequacy of the provision of formal land, the inability of low-income people to bear the high rent costs, or administrative failures that caused the emergence of these areas and the search for the reasons for the formation of these areas. This is the case in many studies, including (Baye et al., 2020, 2023; Bikis & Pandey, 2023), but these areas and settlements have not been evaluated socially and viewed through the social and cultural values they reflect, and the local solutions they provide to solve their housing crisis, which is considered a centre of strength that can benefit from the latent forces behind the local community that makes up these areas through indicators that have been extracted from the theories that explain spontaneous urbanization. To measure issues of social sustainability in spontaneous settlement areas, the researcher, relying on the theoretical framework, developed several indicators and questions to evaluate social sustainability.

Table 5. Developing indicators to measure social sustainability standards for spontaneous urbanization areas.

Indicator	Principle	The goal	Strategy achieving	Mechanisms achieving
Social capital	Institutional diversity	Social interaction	The size of an individual's social network	The friendship and neighbourhood within the neighbourhood are strong.
				A high degree of cooperation and assistance
			cultural diversity	Various options for the residential unit (ownership, rent)
				Allocating cultural spaces (such as cultural and religious seminars, lectures, and cultural cafes)
				There are public awareness campaigns to educate the population towards a particular aspect
			Social integration	Strong participation of the population in social, cultural and religious events
				Strong participation of residents in the decision-making process (i.e. decisions regarding their lives and their city)
				A strong contribution to community members in searching for resources that help them improve their living environment

	Community participation	Level of community participation	Strong participation of residents in the decision-making process (preparing the city plan)	
			Strong citizen participation in defining development projects	
			The presence of government administrative support (for example, a municipality) for community institutions (Ataba - charitable societies)	
			Strong government support for the private sector in projects within the city	
			The presence of active community associations and institutions (such as social associations, charitable institutions, religious counseling offices, women's welfare and women's rights associations, children's rights associations)	
			Strong participation in social activities and associations	
	Social trust	Trust among members of the local community	Doing a lot of volunteer work without compensation	
			High trust among residents (neighbors and friends)	
		Trust in local leaders, politics	The municipality is greatly preoccupied with civil society issues (to provide services and work for their convenience)	
			Large participation in voting in elections at various levels reflects the confidence of the population in the city administration (for example, the municipality, the governor)	
	Social Justice	Accessibility of different groups to the natural resources of the community in which they live	The city provides adequate housing for residents.	
			Providing spaces that suit humanitarian needs	
			Designing pedestrian paths to support walking in the area	
		Accessibility and use of services	Providing basic services in proportion to the size of the population	
			Easy access to services (school, public bathroom, health center) according to walking distances and the lowest cost	
			Placing commercial use on the main axes to avoid disturbing privacy and increasing the area's vitality.	
			Diversity of uses in the area, which increases urban interaction and vitality	
			Availability of site landscaping elements (such as seating, canopies, and chairs for people with special needs)	
			Various spaces for the residential unit (houses)	
			The building entrances do not opposite due to the privacy of the units and their grouping to prevent transient space	
			Designing residential units to suit housing needs and standards	
		Adaptability	Providing great technical and legal facilities from the municipality to build an individual's home according to his needs and financial ability	
			The ability of residents to bear the costs of building and maintaining housing units	
			The ability of city government to address important issues affecting the community	
			Legal recognition is available: Provide a legal framework that	

				recognizes and supports community organizations and resident associations
				Providing financial support for community-led projects and initiatives
				Providing tax exemptions or incentives for donations to community organizations and initiatives
Safety and security	Institutional diversity	The service side	Supporting government agencies to provide safety, security and health support to residents	Providing primary health services (free) and the degree of its efficiency
				The existence of institutional (governmental) frameworks that can be referred to and spread awareness among the population to know their rights and ways to obtain them
				Separating pedestrian traffic and creating an open view of open areas and lighting them, especially those isolated from traffic
				Waste disposal and recycling
	Social Justice	The physical aspect	Taking into account the separation between pedestrian and motorized traffic	Reducing the crossing road (i.e. reducing the movement of cars with pedestrians)
				The old city provides a good, safe transportation network
				Separating pedestrian traffic from bicycles (such as small service vehicles available in the area)
				There are no empty or invisible spaces
				Directing the entrances to residential units and activities well over urban spaces
				There is preparation for the boundaries of spaces and main streets to accommodate mixed uses

Table 6. Criteria for issues of the physical aspects of social sustainability in spontaneous urbanization areas.

Specialized field	Physical aspects of social sustainability	Mechanisms achieving
Urban planning and design	Site layout and general location	The fabric in harmony with its surroundings and its relationship with the city as a whole.
		The general site characteristics of the area express a certain time period that reflects its cultural and social aspect and needs
		The urban area is balanced in terms of built and open space.
		Cooperation and coordination of government agencies and the private sector in planning and developing the region
	Road network (gray and green)	Designing Public Transport, Pedestrian and Bicycle Infrastructure ((Diverse Transportation Options))
		A clear gradation of the street network at different levels
		The presence of parking lots that serve the area in a way that suits its needs and does not violate its privacy
		Providing green spaces and comfort in a way that suits the privacy of the place
	Land uses	Integration of land uses.
		Mixed land uses - which encourages the vitality of the area

		Cultural and tourism uses - which increases interaction and exchange of knowledge and information, and educational programs to educate the community about a topic
		Integrating uses on the main axes to not compromise privacy and increase social interactions
	Activities and services	Providing basic services in proportion to the size of the population (schools - health centers)
		Pedestrian and bicycle infrastructure: The presence of safe walking and cycling paths
		Easy access to services according to walking distances
		Access to services at the lowest cost
	Social investment	Providing opportunities for local employment
		Providing investment opportunities in the region, which increases its economic capacity
Architectural Design	Public domain design	The presence of site landscaping elements (such as adding seating, lighting).
		A hierarchy with a network of public and open spaces and spaces
		Pedestrian paths are designed to support pedestrian movement and there is no crossing path within the space
		Providing various housing options (rent - ownership)
	Residential unit design	Diversity in space for residential units
		Taking into account the minimum distance between buildings for the privacy of opposite units while grouping them to prevent transient space.
		Designing housing units in a way that suits housing needs and standards, quantitatively (number) and qualitatively (flexibility).
		Building efficiency – proportional to the occupant's economic and social ability
		Provide housing characteristics (auditory comfort / aesthetic aspects / natural lighting/distribution of openings / privacy)
		The building materials used are locally available materials

Conclusions

Spontaneity has not been closely studied in the urban context. However, it has many meanings and can be recognized in different urban settings, scales, and conditions after the researcher studied spontaneous urbanization and the theories that explain spontaneous urbanization, which are: (Theory of the spontaneous evolution of social institutions, living systems theory, overlapping space theory, right to the city theory and social capital theory).

Studies and experiences have proven that attempts to address the issue of spontaneous societies through policies that followed the logic of rejection, starting from complete neglect and even complete elimination, have not succeeded in addressing the problem and phenomenon. Therefore, it has become necessary to follow a more realistic policy that focuses on providing an alternative at a reasonable price. As a result, policymakers must appreciate the benefits of spontaneous urbanization and spontaneous settlements (illegal settlements). This urban pattern, in which residents willingly contribute to the construction of minimal residential buildings for themselves without waiting for the relevant authorities, must be recognized and legally recognized as a real pattern. It is believed that if they are encouraged, they can do more and more to address the issues surrounding inadequate housing, with the ultimate goal being the advancement of society - that is, the development of both humanity and humanity - taking into account the unique characteristics of housing. Each location has its uniqueness, needs, and capabilities of its citizens through interactions between local government bodies and the general public. While encouraging sustainable urban growth, there is a need for supporting structures and systems to support the preservation of the social and cultural history of places that have become spontaneously urbanized. The research

attempted to delve into the behavioral and social theories that explain this phenomenon and is considered the beginning of a group of ideas that other researchers may address in the future. The research has reached the importance of understanding the theories that explain spontaneous urbanization, interpreting them and integrating them to extract lessons and indicators to achieve sustainable social development. Drawing indicators from informal urbanization theories provides a powerful tool for measuring and evaluating social sustainability in unplanned areas. This contributes to developing effective development policies, improving the quality of life, and promoting social solidarity in these areas, ultimately leading to achieving sustainable and comprehensive urban development.

Future Research Directions
- Discuss which theories might be most effective in understanding the urbanization of particular cities or specific case studies.
- Applying the proposed integrated model to a city.
- Comparison between more than one area of spontaneous urbanization in a city or more than one city within a region through the five theories.

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