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Discussing Urban Terms: A critical Study Of the Concepts Sustainable, Complete, Liveable And Humanized Streets

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ABSTRACT

The purpose of this study is to define the basic terms used in urban design and planning that are specifically related to urban streets. Among them are complete, livable, humane and sustainable streets. Clarifying these concepts is necessary to increase people's satisfaction with their cities. In addition, it allows people to participate more actively in discussions regarding urban development. It is often unclear when used in literature and research related to urban design.

This study reviews the relevant literature and research. It seeks to find out whether these terms reflect distinct ideas within a common framework. We will investigate these terms based on their criteria and usage.

The results obtained through the questionnaire and comparison adopted by the radar plan show that these concepts are similar. They all aim to preserve the environment, improve transportation, and enhance interactions in the city. However, each term has an aspect that it focuses on. Livable streets focus on comfort and well-being. Sustainable streets focus on the environment and the protection of natural resources. Complete streets value diversity and multiple transportation options. Humane streets aim to promote social cooperation and community prosperity. Urban policies toward more inclusive and sustainable development.

Keywords:Urban terminology, Sustainable streets, complete streets, Liveable streets,
Humanized streets.

1. Introduction (11 PT)

As cities expand, urban design terms become crucial. This is due to increasing environmental and social challenges. Good urban design is key to city life. It should balance social dynamics, infrastructure, and sustainability. Urban streets are vital to city life. They are key routes for movement and social interaction [1]. Vague terms for urban streets confuse urban design debates. Words like sustainable, complete, livable, and humanized are among them. This, in turn, highlights the need for precision in urban terms, as shown in figure 1. Clear definitions are essential for effective communication among professionals, policymakers, and citizens. The study is considered one of the important studies in urban design, as it aims to better understand the urban terms related to street design. It also aims to identify the unique features of the mentioned street types. It will do so through a descriptive and definitive analysis of each type. Thus, this clarity improves science and helps urban design. The research raises the question of whether we can simplify the existing terms into specific categories. Or do the terms have distinct meanings that distinguish them? The hypothesis assumes that many terms may share conceptual overlaps. However, they have unique qualities. Urban design should recognize and distinguish between them. The study consists of several parts. It begins with a literature review of street types. After that, an analysis of urban streets will follow. It will detail the types of streets and their functions in the city.



Figure 1. Urban terminology cloud for urban streets. By: Author.

2. Research Methodology

This research relies on the descriptive analytical approach to examine the urban concepts related to street design, namely: sustainable, Complete, Livable, and humanized streets, through reviewing scientific literature and analyzing applied studies. Data are collected from peer-reviewed academic sources and specialized planning reports, and are analyzed using systematic comparison, gap analysis, and data representation via radar charts to determine the extent of overlap or distinction between these concepts. The research is grounded in a hypothesis that posits that these terms have common goals while maintaining unique characteristics. This investigation aims to evaluate this hypothesis through a comparative critical lens, acknowledging the constraints of the study, which is restricted to theoretical examination without engaging in direct fieldwork. As shown in Figure 2 below.



Figure.2. A diagram showing the methodology used for the research.by author.

3. Urban Street Terms

As a result of the development of urban design, new and overlapping concepts have emerged and become part of the literature of urban design [2]. In the past three decades, terms such as sustainable, integrated, livable, and humanized streets have become popular and have become central to the formation of cities. However, these terms are often misunderstood and misapplied. In this paragraph, we try to clarify these terms. We will discuss the terms that have recently emerged that describe streets and compare each type of street:

3.1. Sustainable Streets

The concept of sustainability in general refers to meeting the needs of the present without compromising the ability of future generations to meet their needs, which was clearly expressed in the Gro Harlem Brundtland Report on Sustainable Development, which indicates the need to achieve a balance between current needs and the preservation of resources for future generations. According to [3] sustainability is a major force in guiding the development of societies, especially with the escalation of environmental pressures resulting from rapid industrialization and increased consumption of resources.

According to a study [4] The concept of sustainability is fundamentally grounded in the preservation and conservation of resources, energy, and land use, aimed at avoiding resource depletion. In the context of the built environment, achieving sustainability involves fostering a healthy environment, promoting economic growth, and enhancing social well-being. A sustainable city can be characterized by the implementation of practices that facilitate walkable neighborhoods, reduce pollution, and combat obesity.

Mixed-use developments play a vital role in this framework by encouraging walking, social interaction, and overall happiness among residents. Well-designed landscapes enhance pedestrian comfort, ensuring safety and distinct mobility pathways. The adoption of sustainable materials and green technologies is essential for minimizing energy consumption. Consequently, the responsibilities of sustainable urbanism encompass landscape preservation, biodiversity protection, and energy consumption.

Sustainability is typically framed around three core dimensions: environmental, social, and economic. The environmental dimension promotes safe and healthy interactions with the environment, such as walking from home to nearby amenities and ensuring efficient public transportation [5]. From a social perspective, sustainable urbanism provides a diverse array of spaces and buildings of varying sizes and types to support a mix of community activities. Economically, sustainability focuses on creating job opportunities for residents and fostering business growth.

Sustainable street design aims to reduce environmental impact and improve mobility, stressing that integrated urban planning contributes to creating environments suitable for both residents and society [6].

Street networks foster social contact in public areas, foster economic development, and link communities. In addition to maintaining environmental balance and lowering adverse effects on natural resources, sustainable street networks encourage mobility through walking, bicycling, and public transit while interacting with natural systems at all scales. This concept is exploited in detail by [7] in his study on the effects of sustainable streets on the urban environment.

3.1.1. Principles of Sustainable Street

A study [8] addressed the Conference on New Urbanism (CNU), a leading organization advocating for walkable, mixed-use neighborhoods and sustainable communities. To promote the development of sustainable street networks, the Conference on New Urbanism identifies several basic principles for sustainable streets that include :

• Social aspect

Street networks are crucial for connecting people to important destinations. They not only serve as transportation infrastructure but also facilitate the movement of individuals, goods, ideas, and wealth. These networks create a flexible framework that fosters cohesive communities by promoting economic activity and offering public spaces for social interaction [9].

• Attract and Sustain Economic Activity

Sustainable street networks enhance a community's commercial and cultural fabric by providing a wide range of housing, retail, and transit alternatives.

These networks serve as engines for economic growth, job creation, and corporate expansion [10].

Maximize Transportation Choices

A sustainable street network guarantees safe, efficient, and dignified travel for all individuals within their community. It offers multiple transportation modes—walking, cycling, public transit, and vehicular travel—integrated seamlessly throughout the network to facilitate easy access to various destinations.

Integrate Natural Systems

Respecting and enhancing the natural environment are essential for sustainable street design. These networks include storm water management and wildlife habitats, aligning street layouts with ecological systems at different scales. This approach creates a harmonious relationship between urban development and natural features, recognizing the interconnections at local, regional, and global levels [11].

Respect the Existing Environment

The design and layout of streets should reflect the unique characteristics of the local and regional landscape, including architecture, climate, geography, and history. This consideration fosters a sense of place and identity within the community [12].

Prioritize Walking

The most successful urban spaces prioritize pedestrian design. A well-planned network of streets and blocks provides direct and varied walking routes, enhanced by thoughtful design to create engaging environments for pedestrians [13].

These principles collectively guide urban planners and policymakers in creating sustainable street networks that enhance community vibrancy, accessibility, and economic viability.

3.2. Complete Streets

Complete streets are defined as roads or streets designed to accommodate a variety of transportation modes, users, and activities, including walking, cycling, public transit, private cars, businesses, and local residents. This approach to street design promotes the development of multimodal transportation systems and enhances the livability of communities. The direct benefits of complete streets include improved accessibility for users of various modes, cost savings for individuals, energy conservation, and reduced toxic emissions. Indirect benefits include increased community livability, improved physical fitness, and improved public health outcomes. They also align with strategic development goals such as urban redevelopment and mitigation of unplanned urban sprawl [14].

Modern trends in complete streets initiatives are influenced by the current demand for alternative transportation and efficient urban development. Moreover, the success of complete streets projects is closely linked to their integration with other planning reforms, including smart growth principles, new urban planning, and transportation demand management approaches[15].

Integrated streets are typically worked on by redesigning streets to enhance features such as sidewalks and pedestrian crossings. These improvements may include crosswalks, which allow pedestrians to cross only half the street at a time, as well as bike lanes and center turns, as shown in Figure 3. Projects may also include reducing the number of lanes and parking spaces, implementing traffic calming measures, and replacing traffic signals with roundabouts. Additionally, there may be improved enforcement of speed limits and sidewalk encroachment regulations. These recommendations generally result in lower maximum traffic speeds, smoother traffic flow, and increased use of alternative, more environmentally and human-friendly transportation [16].



Figure 3. Typical complete street layout that includes provisions for public transportation, bicycling and wider sidewalks [6].

3.2.1. Principles of complete Street

In addition, according to a study [18], the most prominent principles of complete street design are:

• Accessibility - the ability of people to easily access a variety of services and activities within the city.

• Transportation – multiple modes of transportation to resolve conflicts and the time and money required by different people to access services and activities.

• Street design priority – accommodating parking spaces and multiple activities on sidewalks.

• Vehicle speed – controlling vehicle speeds to reduce traffic congestion and user safety, preferably 20–30 miles (30–40 kilometers) per hour.

• Design – designing interconnected streets and sidewalks that provide pathways and paths for all users, including pedestrians, people with disabilities, and the elderly, as well as bicycle paths and public transit lines.

Complete street projects typically involve a comprehensive redesign of streets to incorporate these features. This may include improving sidewalks and pedestrian crossings, adding pedestrian refuge islands, bicycle lanes, and center turn lanes, as shown in the relevant illustrations above Figure.

complete street design projects also include reducing traffic and parking lanes, implementing traffic calming measures, and replacing traditional traffic signals with roundabouts. Additionally, speed limits and sidewalk encroachment regulations are often part of these initiatives. These initiatives generally result in lower maximum traffic speeds while promoting smoother traffic flow and increasing the use of alternative modes of transportation [19].

3.3. Livable Streets

Streets are an essential part of the identity of cities and towns, with almost everyone living on one. However, streets have historically been sites of conflict and oppression. These tensions are embodied in the conflict between the needs of residents and passersby, as well as between daily life and the risks associated with traffic [20].

Living Streets is a project that aims to make these spaces more comfortable, welcoming and safe, contributing to a strong sense of community where people can live, play, interact and shop. The ideal street is a sanctuary that provides safe, healthy and enjoyable environments, while meeting the needs of surrounding neighbourhoods through accessible play and education spaces.

Studies identify specific characteristics of living streets, including the ability to walk slowly, feel physically comfortable, aesthetic quality, architectural clarity and harmony with surrounding buildings. These characteristics also include good maintenance and thoughtful design, reflecting a design approach that focuses on pedestrian needs and local development goals.

Traffic calming measures, such as continuous sidewalks and design elements that reduce the negative impacts of cars, help improve the pedestrian experience. Research suggests that tree-lined streets can effectively separate residents from traffic, reducing the negative impacts of traffic and helping to enhance a sense of place. In

addition, well-designed spaces that meet the needs of residents contribute to community bonds and improve the quality of life in these environments [21].

Concept for creating Livable Street:

1. The basic idea of the vital street is "people-centered". It is concluded that the traffic connotations of the vital street are to have an efficient, safe, healthy, environmentally friendly green traffic system and a good slow travel environment.

2. The traffic design method of a section of the vital street is determined. According to the main characteristics of vital streets, combined with the design concept of people-centered, when designing livable streets, attention should be paid to the aspects of specific design elements and design methods: the internal space of the road, the walking and activity space, the auxiliary facilities, and the facade of the architecture on the street as shown in Figure 4.

3. The traffic design method of vital street intersections is determined, mainly by considering three parts of the key points and design methods: physical space design, traffic regulation design, and auxiliary facilities design [22].



Figure 4. Figure Standard cross-section for livable street design [2].

3.3.1. Principles of livable Street

According to a study [24], the most important principles that must be taken into account when designing livable streets are:

- Separations between roads and pedestrian walkways, as they are considered among the important physical elements that improve livability in pedestrian walkways.

- Shaded areas to protect pedestrians from sunlight.

- Providing places to sit and relax.

- Despite their impact on livability, elements such as mixed use, building depth, and street vendors are not very important.

Among the most important recommendations for obtaining livable streets:

1. Providing continuous shade: Building roofs should extend at least 1.25 meters to ensure sufficient shade for pedestrians.

2. To improve safety, determine the height difference between roads and pedestrian areas, arrange sidewalks with trees, and only allow cars to be parked on the sidewalk in safe places.

3. Providing comfortable seating: Chairs should be placed in pedestrian areas to help people who need rest.

4. Avoiding accidents: To reduce accidents, it is preferable to avoid deep foundations without fences or permanent parking areas to ensure easy access [25].

5. Street vendor locations: It is preferable to place street vendors in areas that enhance the safety and comfort of pedestrians.

6. Encouraging multi-use buildings: It is important that buildings that serve multiple purposes are located near pedestrian paths, which increases the diversity of activities. The main goal of these principles is to make pedestrian paths livable and thus provide a comfortable and safe environment suitable for living [26].

3.4. Humanize streets

Humane urban street design is a creative approach that focuses on people as the focus of street design and development. In contrast to modern design, which often focuses on the needs of vehicles, Human-centered design tends to bridge this gap between street users by working on both the visual and functional parts of the street, ensuring safer and more comfortable development for pedestrians and other road users. This approach calls for planting trees along roads to achieve a logical and appropriate design for humane urban streets. The humane approach focuses on people in planning and developing roads that meet their needs and provide safety, accessibility and comfort for pedestrians, cyclists and street users [27].

One of the most important basics of creating humanized roads that meet people's desires is planting trees on both sides of the road using certain techniques, as well as creating streets that match the surrounding structures. Moreover, planting flowerbeds in different shapes and planting bright flowers can improve air quality and lift people's spirits [28].

A critical component of humanize street design is widening pedestrian walkways to give people more space to walk rather than use vehicles. This approach focuses on people on the street as evidenced by the changes in the roadways before and after implementing this approach Figure 5 [29]. Humanize designs can change in light of the roadway, but they must also incorporate physical components, such as rest areas and barriers, to improve safety and walkability for residents.



Figure 5. The Street Humanization Project shows the difference before and after implementing the approach...Source [28] .

3.4.1. Principles of humanize Street

According to a study [7], the design characteristics of humanized street design include the following design considerations:

1. Scale

Design should prioritize human scale to enhance accessibility and encourage physical activity.

2. Security

Safety is paramount; designs should include thoughtful accessibility, buffer zones, appropriate materials, adequate lighting, and speed-reducing measures for vehicles.

3. Comfort

Streets should cater to user comfort through essential public amenities and thoughtful landscaping.

4. Openness

Spaces should be inclusive, promote public well-being, and provide a welcoming atmosphere for all.

5. Substantiality

Enhances the integration of multi-use activities into street planning to encourage vibrant interactions between pedestrians and vehicles.

6. Design

Design should create clear, recognizable areas that intuitively guide users through the environment.

7. Walkability

Safe, clear, and open walking paths are essential to enhancing pedestrian movement and accessibility. 8. Liveability

Inviting public spaces that accommodate a variety of activities greatly enhance the quality of urban life.

9. Social Interactions

Designs should encourage social interaction, support cultural activities, and foster community bonds. 10. Inclusiveness

Streets should be adaptable to different uses, addressing the diverse needs of all users through humanize street design.

By adopting these principles, city designers can create functional and productive environments that enhance the quality of life for all members of society [12].

4. Comparison and analysis of street types

By reviewing the different concepts of urban streets and studying their indicators and standards, we notice that they all seek to achieve multiple goals, including sustainability, safety and comfort. In this context, we present a table that shows the main indicators that characterize urban streets, along with measuring the impact of each type of street: sustainable, complete, livable, and humane. This table highlights how these concepts interact with each other and their impact on the urban environment.

	Indicator	Sustainable Streets	Complete Streets	Livable Streets	Humanize Streets
1	Safety Level for Pedestrians and Cyclists	It prioritizes safety. It has features like protected bike lanes and crosswalks.	It ensures dedicated, safe pathways for all users, minimizing conflict points.	They created it to ensure high safety. It has clear signs and layouts designed for pedestrians	Focuses on community needs, fostering safety through inclusive design.
2	Quality of Access and Available Means of Transportation	It offers sustainable transport: biking and walking.	Offers many transportation methods, including public transit and pedestrian paths.	It enhances accessibility through a mix of transport choices that focus on convenience	It supports diverse transportation modes that encourage social connectivity.
3	Pedestrian and Bicycle Spaces	There is plenty of room for walking and cycling, promoting active transport.	It ensures safe pathways and bicycle lanes.	The design supports community movement. It has well-planned areas for pedestrians and bikes.	Additionally, it features gathering spaces that encourage social interaction.
4	Green Spaces and the Environment	Includes large green spaces to boost wildlife and health.	Adds parks and green features to enhance beauty and air quality.	Focuses on welcoming green areas to improve well-being.	Use green designs to foster community

Table 1. Table summarizes the key indicators and their impact on different street types.

					gatherings and natural beauty.
5	Availability of Public Amenities	Removing the adverb is not possible.	It ensures a mix of public facilities, such as seating, restrooms, and transit stops.	Additionally, it provides essential amenities that enhance comfort and convenience for residents.	Moreover, it features community- focused amenities that encourage interaction and cooperation.
6	Psychological Comfort and Social Interaction	Designs that enhance well-being and lower stress.	Fosters spaces for gatherings, boosting community spirit.	Focus on comfort with appealing features and inviting public areas.	Encourages a sense of belonging and strengthens community ties.
7	Technology and Intelligence in the Street	Employs smart technology for better traffic and energy use.	Enhances transit efficiency and user experience with intelligent systems.	Improves safety and accessibility for all with advanced technology.	Facilitatescommunityengagementthroughtechsolutions.

* key indicators and their impact on different street types

5. Result

Using the opinions of experts in the field of urban design and planning through the questionnaire https://forms.gle/mt12vCYTPxbw4dL17 (measuring the differences between street types according to urban indicators), we arrived at the following percentages that evaluate the seven indicators mentioned above according to each type of street.

Table.2. Showing the percentage of application of each indicator for each type of street. By: Author based on questionnaire results.

	Indicator	Sustainable Streets	Complete streets	Livable Streets	Humanized Streets
1	Safety for Pedestrians and Cyclists	90%	85%	80%	90%
2	Transport Options	95%	85%	80%	90%
3	Space for Pedestrians and Bicycles	90%	80%	85%	95%
4	Green Spaces	95%	75%	80%	85%
5	Public Amenities	85%	80%	95%	95%
6	Psychological Comfort and Interaction	90%	80%	90%	95%
7	Technology and Smart Features	85%	75%	70%	90%

* The percentage of application of each indicator for each type of street

The results shown in the table above are represented by a radar map that serves as a comparison tool for four types of urban streets—sustainable, complete, livable, and humane—in relation to seven indicators relevant to urban design. As shown in Figure 6, each axis of the plan reflects a specific criterion, such as pedestrian and cyclist safety, transportation accessibility, or urban green space. In this way, the radar map provides an unambiguous assessment of how each street type performs against these seven indicators, so that comparisons can reveal differences and similarities across urban street types.



Figure 6. Comparison of street Types across Key Indicators. By: Author.

From the above analysis, we conclude that these terms – sustainable streets, complete streets, livable streets, and humanized streets – address different parts of a central idea of improving the quality of urban streets to enhance human life within the urban environment. However, the blanket use of these terms reflects conceptual confusion, which means that researchers and urban design professionals may find it difficult to understand and apply these ideas later on. Despite the similarity of the terms and their similar goals and indicators, they differ in the focus they focus on, as follows:

- Sustainable streets: Focus on environmental design while balancing green spaces and transportation options.

- Complete streets: Emphasize safety and accessibility with excellent transportation options and means.

- Livable streets: Promote psychological comfort and community engagement.

- Humanized streets: Promote a sense of belonging and interaction, while providing ample space for pedestrians and cyclists. In addition, based on the survey we conducted on a sample of experts in urban design and planning, we arrived at the following values, which reinforce our findings in the administrative drawing:



Figure 7. Classification of street types on environment, social, and economic aspects. By author.

6. Conclusion

The research results show that each type of urban street carries a distinct meaning and specialized focus, despite the overlap of concepts or principles. While sustainable streets, complete streets, liveable streets, and human streets may converge on certain principles or features, each type retains unique goals and orientations that distinguish it. Therefore, these concepts cannot be combined into a single framework but can instead be grouped based on the above-mentioned ratios into distinct categories classified into three main classifications, the environmental aspect, the economic aspect, and the social aspect.

These classifications facilitate the identification of the roles and contributions that each type of urban street plays in addressing the ambiguity and confusion in the use of its terms. When we talk about the environmental aspect, we tend towards sustainable streets, when we talk about the social aspect, we tend towards humane streets and livable streets, and when we want to talk about the economic aspect, we tend towards complete streets because they are concerned with providing all types of transportation within urban streets.

These classifications facilitate the identification of the roles and contributions of each street type in addressing contemporary urban challenges, highlighting that a comprehensive urban design approach requires balancing environmental, social and economic factors while respecting the specificity of each urban street concept.

7. Recommendations

Urban Literature Terminology Standardization. In order to prevent misunderstandings and conceptual disorder, a strategy to standardize vocabulary used in urban literature and actual activities is advised. This might consist of:

• Creating a cohesive conceptual framework that incorporates the four concepts into an all-encompassing framework that aids in standardizing how they are understood and used in urban policy.

• Providing guidance: Disseminating standards and guidelines for the application of these concepts in street design and planning.

• Improving scholarly cooperation: Promoting cooperation between scholars and professionals to create precise and widely accepted definitions of the terminology.

Conflict of Interest Declaration

The authors declare that there is no conflict of interest regarding the publication of this manuscript.

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Authors' Contributions

All authors proposed the research problem, Yaqeen Haider and Ihsan Abbas reviewed the literature, proposed the analysis and discussed the results, Ihsan sent the questionnaire and arranged the results, Manal Awad prepared and prepared the questionnaire, discussed the results and proposed the conclusion, and all authors discussed the results and the final version of this paper.

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Notes

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