

# Developing The Parameters for Evaluating Contemporary Street Space: A Review Study

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## ABSTRACT

The 18th century witnessed paradigm shifts in almost every facet of life, including the tough adjustment to the urban lifestyle. Modern theories and urban planning practices pay little attention to the social and psychological needs of people, which causes them to live in a constant state of alienation from society. Through the extensive literature review from the past few decades, this study attempts to develop a parameter to analyze the vitality of urban space in general and contemporary street space in particular. Four parameters; Pedestrian realm, Sense of Place, Sense of safety & security, and Robustness are developed. It is concluded that the design for livable streets emphasizes the physical and designable qualities, the social and cultural details that give life to the communities, and aid in the creation of places that are safe and comfortable for the diverse users.

**Keywords:** streets, Pedestrian realm, Sense of Place, Sense of safety & security, Robustness

## 1. INTRODUCTION

The industrialization has witnessed the transformation in almost every field of life, including the difficult adjustment to an urban lifestyle. Modern theories and urban planning practices pay little attention to the social and psychological needs of people, which causes them to live in a constant state of alienation from society. For instance, a modern city with multi-story residential apartment buildings was proposed without Corridor Street and the flood of trees at ground level in huge grassy spaces. According to Corbusier(1987), this corridor street poisons the flanking buildings (p.167). Nobody did visit those grassy planes and parks at ground level making the city as a sign of fear. Taking the example of the Igoe Pruitt housing project, demolished in July 1972. One of the reasons of demolish was no place to socialize and children to play, the crime rate was high due to alienation. This project proved the intentions of modernists are quite opposite to the actual needs of social maturation (Jencks, 1977, p.9)

The city's streets are an essential element. Streets are the most important component of the urban environment in terms of the public realm. When a city's street is in good condition, the city is visible and easy for people to comprehend. Physical as well as functional qualities affect the street's quality. Most of these characteristics are

intentional, but some are sequential. Social interaction, livability, population density, and street life are examples of sequential features. The pedestrian realm, street amenities, vegetation, eye-catching features, comfort, sense of enclosure, and legibility, on the other hand, are design-dependent traits. In general, these attributes produce an impressive image and a pleasant mood in the user, expressed as walkability, sociability, bringing safety and protection to the driver, and amusement to the pedestrian (Brown, 2000)

Even though there has been improved awareness in the design of streets with the consideration of the relationship between man and the environment in the 2<sup>nd</sup> half of the 20th century but in Pakistan, still the main focus is the technical management of traffic. The misconception is just to tackle fast movement in design theories and practical rather than considering the potential of street space of housing diverse activities and catering to diverse users. Developing countries like Pakistan are a sufferer of challenging adaptations of modern urban living and respective planning policies. Increased demand for automobiles dominated the pedestrian realm in contemporary streets. This domination badly affected the need for sociability, security, and comfort. Endeavor to meet the need for an efficient transport system has engulfed the opportunity of the walkability of people. Thus, it is imperative to formulate a parameter that is not only suitable for pedestrians but also the diverse street user.

The article focuses on the process to determine the parameters for the design of a vital street with the inclusion of multiple users. An urban designer's interest is not only to deal with the product (urban environment) but with the process as well to achieve that particular environment (Madanipour, 1996, 117). This article aims to establish the parameter for livable streets, highlights; the physical and designable characteristics that are requisite for an inhabitable street, human and social details that bring streets and communities to life, and the traits of a street that help them in creating places that are secure, comfortable and identifiable.

## **2. MATERIALS AND METHODS**

The process of developing the parameter, to explore the qualities that make a street great, involved the study of various books, journal articles, research reports, street improvement guideline documents, and various websites. This research is beneficiary of the key principles of eminent design of selected architects/urbansdesigners or city planners including Kevin Lynch, Gordon Cullen, Jane Jacob, Christopher Alexander, Jan Gehl, Elizabeth Burton, and Lynne Mitchell. Allan B. Jacob and Donald Apple yard. Several ideas are generated in the 21<sup>st</sup> century; others date back 50-60 years. The reason the aforementioned architects and urban designers were chosen over others is that they placed an emphasis on sociological and psychological concerns in addition to aesthetic and physical design concerns. Prior to the 1960s mostly 2-dimensional issues were discussed with emphasis on aesthetic issues rather than social and cultural. This approach is apparent From Sitte (1889) to

Unwin (1909), as well as in the work by Gibberd (1967) and Keeble (1959) (cited in Taylor, 1999, p331).

Lately, the role of the built environment in citizens' well-being and health has garnered a lot of attention. For instance, there is a link between obesity and community design, and the physical design of dwellings is related to stress and sadness (Burton, 2014). The parameter formulated from this assessment and recent concern of built environment for well-being will help to analyze the design quality, and character of contemporary Pakistani streets.

### **3. LITERATURE REVIEW TO DEVELOP PARAMETER**

As they looked at the urban environment from the perspective of the inhabitants, Gordon Cullen and Lynch's work formed a new approach. For instance, *The Image of the City* (1960) established the notion of legibility based on five elements (paths, districts, edges, nodes, and landmarks) and people's perception to image the urban landscape in three dimensions. Conferring to Camillo Sitte and Raymond Unwin's publications, Cullen (1961) based his work, *The Concise Townscape* on the traditional artistic method. He coined the phrase "serial vision," which characterizes the city as a network of interrelated areas (cited in Velibeyoglu, 1999, p.3).

Urban designers nowadays are placing a strong emphasis on the connections between social processes and urban space, the link between people and the built environment, and the role of social sciences. This is similar to how they did in the late 1960s. Without the social and cultural framework, a city cannot be thought of as a large-scale architecture. Jacob (1961) criticized Corbusier's utopian views in *Death and Life of Great American Cities*, where she emphasized the value of social interactions in city parks, sidewalks, and streets and concentrated on the actual social interactions of city dwellers in public open spaces. She responded by stressing diversity, density, and dynamism as reasons to clear slums to make room for new development. Her new theory of reconstructing cities holds that a happy mixture can be created by crowding people and activities together (Martin, 2006).

In addition, aspects of urban planning that are social and psychological were also covered by Christopher Alexander (1977). Alexander talked about the city's diversity, mixed-use development, packed space, buildings of all ages and repair levels, and the existence of multiple overlapping systems. Therefore, the work's scope extends beyond a search for the physical and observable characteristics that make a street prosperous and livable. Similarly, another well-known urban designer, Rapoport (1977), asserted in his book, *Human Aspect of Urban Form* that diverse land use and the creation of pedestrian-oriented developments are necessary to promote vitality. He emphasized the value of social interaction and human behavior. Consequently, establishing a welcoming physical setting that affirms the group's identity (cited in Velibeyoglu, 1999, p.5).

Moreover, Allan B. Jacob (1995) emphasized the need for good roadways in order to create healthier communities. His most well-known piece, *Great Streets*, emphasizes the characteristics that make a good roadway. The features include transparency,

complementarity, upkeep, and the quality of construction of the design. He also included safety when walking, comfort with reference to weather or climatic conditions, and the sensation of an enclosed area with special attention to the width to height ratio. He underlined the need for each of the aforementioned characteristics for a street to be the most effective and well-planned street possible.

Furthermore, another well-known author whose publications are worth mentioning for this study's parameter development is Donald Appleyard. He discussed how streets in particular make cities livable. His writing is especially notable for his inclusion of the social sciences as well as the urban environment. His main worries are related to traffic, safety, and how it affects people's social lives. In *Livable Streets* (1983), he evaluated three residential streets with nearly identical characteristics but varying traffic loads and came to the conclusion that residents of low-traffic streets are more sociable and content than residents of streets with heavy traffic.

In addition, in their book *Inclusive Urban Design: Streets for Life* in 2006, Elizabeth Burton and Lynch Mitchell presented the concept of designing streets and outdoor spaces that are effective and appealing to people of all ages. The demands of humans in an outside environment, both physically and cognitively, were addressed by Burton and Mitchell. They suggested a few guidelines for the creation of "streets for life." These guidelines include comfort, familiarity, distinctiveness, legibility, accessibility, and safety. The book focuses in particular on the characteristics of streets that are meant to be there for elderly or physically challenged persons. However, the majority of these guidelines complement the traits and standards developed by Allan B. Jacob and Appleyard for the average street user in their books and journals. Burton and Mitchell also covered how architects and urban designers contribute to the implementation of these fundamental principles in the existing urban environment in the final chapters. Correspondingly, Widjaja Martokusumo gave a presentation at the Environmental Technology and Management Conference on guidelines for creating habitable cities in 2006. He explained that livable spaces with comfort and security are necessary to build responsive environments. He also emphasized the need for trees, plants, a lack of irritating noise, physical protection, and the enclosure of space in order to create livable neighborhoods and streets. By "enclosure," he meant the placement of structures and open areas so as to create the impression of a certain space. He referred to *Towards the Urban Design Manifesto* (1987) by Jacob and Appleyard to devise three influential aspects (Gestalt, social and ecological aspects) of urban design (Martokusumo, 2006). Likewise, the outline for a better street plan offers guidelines for the creation of a pedestrian realm where people can stroll, sit, play, shop, and engage in other activities alongside the flow of traffic. Safety for pedestrians, street amenities, accessibility, integrating transportation and walkers, traffic slowing, on-street parking, and substantial greening are among the main issues (San Francisco Planning Department, 2010).

Another study also emphasizes similar issues. This study concentrated on attributes of urban architecture that reflect how people see their surroundings and interact with

them, such as legibility, enclosure, imageability, transparency, connection, etc (Ewing, et al., 2005). The desire to make urban areas more walkable has been steadily expanding in recent years. As an illustration, research suggests that people who live in areas with mixed-use development are more likely to walk and are less likely to be fat. (Frank, et al., 2004).

Likewise, the Project for Public Spaces (PPS) group has done amazing work. This organization has played a significant part in the development of the "place making" concept, which is based on William H. Whyte's Street Life Project from 1969. In this regard, Jan Gehl's name is indisputable due to his prominent philosophy of defining the boundaries between sociology, architecture, planning, and psychology. He transformed Copenhagen, a city dominated by cars, into one that prioritizes pedestrians (Gehl, 2002).

Around the world, people are becoming more aware of the negative effects of driving too much and the relationship between the lack of certain urban amenities, such as walkability, efficient public transportation, and other urban amenities, and stress, obesity, and the development of children's mental health (Newman & Kenworthy, 2006). The Liberty Square in Lahore serves as the most inspirational illustration of this understanding. A few years ago, the neighborhood was entirely automobile-dominated. A few wise moves in the direction of the pedestrian realm, such as using brick pavers rather than metal roads, street amenities like benches and good lighting, designated parking spaces, and soft landscaping, have completely improved the situation. Without being afraid of fast traffic, people enjoy going shopping, interacting with others, dining, walking, chatting, and watching children play.

#### **4. ANALYSIS**

##### **4.1. Process of Parameter Formulation to Analyze the Street Space**

As it can be seen from the debate above, it is generally acknowledged that streets can contribute to the growth of a healthy and bearable society by promoting sociability, which in turn depends on whether it enables walkability, which in turn depends upon the pedestrian realm (see Table 1). The pedestrian realm is successively dependent on street amenities and meticulously on traffic safety. As a result, the criteria for measuring the success of streets were also decided upon based on the needs of the various users. Specifically, cyclists, motorists, passengers, and pedestrians. When a designer's approach is considerate of (and inclusive of) human experiences, a truly cohesive community is created, rather than just a collection of individuals.

The following list of variables (Parameter), taken as a whole as a compelling idea of "place creating," addresses not only the physical and functional qualities of streets but also the quality of interactions between places and people as well as between the individuals who create and utilize places. Burton/Mitchell correctly noted that because people differ in terms of their personalities, the "street for life" design

proposals may not satisfy everyone's demands. Some people appreciate social engagement, whereas others just value peace, quiet, and privacy (Burton & Mitchell, 2006, p.155). However, the objective is to provide for all street users generally. Following are the highly discussed parameters deliberated under different headings/variables by different writers (see table 2 & 3)

1. Pedestrian realm (Places to linger and spontaneous social encounters)
2. Sense of place (An informal sociable place)
3. Sense of safety & security (Convenience and comfort. (Enclosure)
4. Robustness

Below is the detail of choosing above mentioned parameters

**Table 1: summarizes the traits discussed by postmodern writers discussed in the literature review**

<b>Ar./Urban designer</b>	<b>Article/book/report</b>	<b>Traits</b>
Jacob, Jane	Death and Life of Great American Cities (1961)	Diversity Security Sociability Legibility
Alexander, Christopher	A Pattern Language (1977)	Diversity Sociability Legibility
Whyte, William H.	The Social Life of Small Urban Spaces (1980)	Sociability Walkability Pedestrian realm Less use of car
Appleyard, Donald	Livable streets(1983)	Safety Sociability Traffic-calming Walkability
Bentley	Responsive environment (1985)	Legibility Robustness Richness Permeability variety Visual appropriateness

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Rapoport, Amos	Human Aspects of Urban Form, (1977)	Layout pattern of streets
Jacob, Allan B.	Great Streets (1995)	Safety Walkability Comfort Qualities engaging eye Transparency Complementarity Maintenance
Kunstler, James Howard	Homes from Nowhere (1998)	Peaceful places Interactive environment Design of streets
Ford, Larry	Lynch revisited: New urbanism and theories of Good City Form (1999)	Layout of streets Cul-de-sac
Broadbent, Geoffrey	Emerging concepts in urban space design (2003)	Arrangement of streets Height and width of the street Cul de-sac Design of streets Enclosure
Burton, E. & Mitchell, Lynne	Inclusive Urban Design (2006)	Familiarity Legibility Social engagement Eyes on street Distinctiveness Comfort Safety and security Mixed land use
Martokusumo, Widjaja	SUSTAINABLE URBAN DESIGN REVISITED: Some brief notes of ecological notions in creating livable city (2006)	Comfort Safety

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		Vegetation Trees No offensive_ noise Enclosure Sociability
San Francisco Planning Department	Better streets plan: policies and guidelines for the pedestrian realm (2010)	Walkability Safety Street-amenities Traffic-calming Mixed land use
Gehl, Jan	Cities for People (2013)	Sociability Walkability Pedestrian realm Less use of car

**Table 2. depicts the repeatedly discussed traits and less often discussed traits based on the findings in table 1**

Repeatedly discussed traits	Less often discussed traits
Legibility	Eye engaging qualities
Diversity	Transparency
Safety	Complementarity
Walkability	Robustness
Enclosure	Familiarity
Comfort	Distinctiveness
Sociability	Richness
Traffic calming	Permeability
Pedestrian realm	variety
Arrangement of streets/Layout Pattern	Vegetation
	Trees
	No offensive_ noise
	Less use of car
	Street-amenities



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Maintenance  
Visual appropriateness

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After sorting the most discussed and less discussed details it is found that different urbanists talked about the same quality or related character with different names and sometimes partly studied that major trait.

**Table:3 Development of parameters on the basis of literature review**

Basic Parameter	Related traits accumulate to formulate one basic concern
Pedestrian realm	Traffic calming Pedestrian realm Vegetation Trees Maintenance Walkability
sense of place	Sociability No offensive noise sense of place Street-amenities Enclosure Eye engaging qualities
Sense of safety & Security	Transparency Familiarity Comfort surveillance Less use of cars Safety Legibility
Robustness	Robustness Diversity Mixed-use - -development

## 5. DISCUSSION

A detailed discussion of each of these parameters is as under, where all the related traits mentioned in Table 3 are discussed under the basic parameters' heading. This

part encompasses all the traits mentioned in table 2 since table 3 is a culmination of the review presented in Tables 1 and 2.

### **5.1. Pedestrian Realm**

It speaks to the level of a street's comfort and pleasantness for pedestrians. This characteristic of the street encourages users to walk there. Since streets are typically unsafe when the pedestrian realm is absent, it is crucial to take this into account while designing streets, according to Jacob (1995). A street space, with a pedestrian realm, takes into account the following: landscape, a suitable area for leisurely strolling, greenery, street amenities, and last but not least, the control of traffic in terms of speed, noise, and pollution (see table 3)

The landscape and vegetation play a major role in creating comfortable streets. These characteristics not only enhance aesthetics but also have positive environmental effects. In addition to providing shade to shield pedestrians from extreme weather, trees also serve as a barrier between traffic and foot traffic. Even plants can act as a soothing barrier between the movement of vehicles and pedestrians. Another form of visual stimulation is trees. An intriguing scene is created by the interaction of the sun's rays with the trees' leaves and the movement of their branches. Cars can also draw attention due to their ability to move, yet rapid traffic may produce a frightful rather than a pleasant view (Jacobs, 1995).

Moreover, Traffic-calming methods are crucial for pedestrian space on the streets. Traffic calming is a method for reducing the negative consequences of driving, changing driver behavior, and enhancing the situation for non-motorized street users (Lockwood, 1997). The largest challenge for pedestrians nowadays may be fast-moving automobiles because modern roadways are constructed to facilitate quick traffic flow. This convenience is advantageous for highways and expressways, but for streets, there needs to be traffic-calming measures like speed limits, chicanes, and speed bumps. Appleyard and Gerson (1983) considered the speed and noise of traffic as the basic hindrances in the pedestrian realm spaces (p.20). Currently, traffic calming techniques are regarded as the most vital element for upgrading streets in all industrialized nations. Since the automotive movement is an issue for people who stroll in public places, it is also irritating how loud these cars are. Street's design, which in the first part of the 20th century catered mostly to automobiles, is now viewed as a major error (Fixing the great mistake: Autocentric Development, 2010)<sup>1</sup>. Street pedestrian space is likewise reliant on amenities and

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<sup>1</sup> "Fixing the Great Mistake" is a new films series that explores what was wrong in the street design strategies in the first part of the 20th Century, when streets began catering to the vehicle, and how those strategies are affecting our lives today.

their upkeep. Street amenities create aesthetically pleasing, hospitable, and useful public spaces.. The pedestrian realm is provided by maintained, well-lit roadways with shaded, adequately paved walking areas. According to a New York Times story, a different approach to the street issue than only focusing on vehicle speed is required to calm down the city's streets. People have a great desire for the betterment of street space and use it as a place to linger (Byles, 2008).

An area's or space's walkability is determined by how conducive it is to walking. If the environment is accommodating and sensitive to the diverse user base, walkability will increase. Walkability is inversely correlated with social indifference, and street crime, and is directly correlated with sociability. As fewer cars are used and more opportunities for walking are available, pollution falls along with carbon dioxide emissions. Along with the economic advantages of fewer infrastructures needed for cars, enhanced livability, and financial gains from better public health, increased walkability has the additional consequence of reducing ailments including high blood pressure, obesity, and depression (Litman, 2003). The walkability of a place enables people to meet and experience each moment. In addition, the People moving on a street make it more walkable. You might not be able to meet anyone if you can't walk down the street (Jacob, 1995)

## **5.2. Sense of Place.**

When a street addresses the social and cultural values of that particular community in addition to serving as a simple path, it acts as a place. Sociability is defined as "the ability to make friends and interact with others" or "the skill, tendency, and inclination to form a friendship." (Oxford Advanced Learner's Dictionary, 2015). The ability of a space to encourage people's propensity to be social and connect well with one another is referred to as social interaction (Pretty, 2003). The city's streets had long served as hubs for unstructured conversation and socializing (Kennedy, 2010). This specific feature is promoted by the city's effective planning and design. Cities may be stimulating locations where money is created and distributed, to quote Roger. On the other hand, cities can separate us, engulf us in their issues, and make us want to flee. (Rogers & Power, 2000)

Numerous factors, including the development of information technology, the use of electronic media, the absence of spaces for casual conversation, and most importantly, high-speed traffic, are to account for the destruction of street sociability. The analysis of streets in three distinct communities revealed that inhabitants living on high-traffic streets have fewer friends and acquaintances than those living on medium- and slow-traffic routes. (Rogers, 2008, p.24-25). Similar results from Josh Hart's study for his MSc in Briston, UK, demonstrated how variations in street traffic volumes affected neighbourhood social interactions. He observed three streets in north Bristol with high, medium, and light traffic and discovered that residents of heavy traffic streets only had a quarter as many local friends as residents on light traffic streets (Hart & Parkhurst, 2011).

The role of the street in fostering communication and contact among people is less obvious but crucial for linking individuals together in a social structure or in a local urban community. Its main function is as a venue for ceremonial rituals as well as for casual interaction such as conversation, entertainment, and reaction (Moughtin, 2003, P.23)..

The built environment's continuity also improves the aesthetic appeal. For instance, a street that has excessive holes in it is less alluring than one that is entirely alluring and never loses its allure. Streets that are continuous provide a movement that makes it easier for eyes to stay on the street, leading to unplanned surveillance. The eyes generally move in modern streets. Nothing can stop them temporarily or halt them from moving. According to Gibson (1979), "any extended focus of the eye is exceptional in the typical vision of everyday life." (p.211). Furthermore, research suggests that a complex environment might inspire a sense of mystery, which some people find appealing (Herzog & Kropscott, 2004), but it shouldn't go too far and cause visual pollution.

The street space is not for the mere service of a family but it addresses a group. It has a predominant function as an enclosed space rather than acting as just a public thoroughfare. The street can work wonder if things like a strong sense of enclosure and a definition, lined with trees are rightly applied' (Chase, 2001). For good street design, the ratio of the height of enclosing buildings to the width of the street is critical. When, for instance, a street is long and wide with 2-story houses array along a typical frontage the sense of enclosure is lost. Such streets do little to pinch the spirit and lighten the monotony. For a street design particularly a residential one, Gibberd (1953) advocated the reduced width of street that will bring houses closer. This close dwelling set up might pinch the spirit and adds the urban quality in that particular street. (as cited in Moughtin, 2003, p.141)

The wide street so preferential by the road engineer is most inappropriate for shopping. A narrow walking street with flanking building walls a little higher than the width of the street serves the purpose of being an attractive place. Streets appear enclosed and complete when they are 20-30 feet wide and bordered by 3-4 story buildings. (Unwin, 1909, p.245). Similarly, the width of street should be equal or ideally, less than the flanking buildings. (Council, Essex County, 2005, P.46). Hence, definition of street turns out to be weak with the increase of street width that is not in proportion to the height of flanking buildings.

### **5.3. Sense of Safety and Security**

If it is not practical and comfortable, the function of the street space cannot be served. Everyone who uses urban streets, from pedestrians to motorists, needs comfort and convenience. Transparency, familiarity, legibility, natural surveillance, etc., are crucial factors to consider when traveling and navigating metropolitan streets (see Table 3). Transparency means "the quality of a street that offers the ability to know or view, what is behind the wall of the street". (Jacobs, 1995, p.285). Generally, Buildings' doors and windows on the street provide transparency. On a

residential street, transparency is crucial for both the residents' visual access to the outside and an outsider's ability to get a sense of prospective habitation inside.

In addition, natural surveillance also adds to the comfort level of a street user. Windows and doorways are also important to serve the purpose of surveillance. Jane Jacob's notion of "eyes on the street" tells the story of surveillance uncomfortable through windows opening in the street (Jacobs, 1961). Bentley refers to it as "visual permeability" in his discussion. (Bentley, 1985, p.13). By reducing the sense of being aloof, visual permeability provides comfort and convenience by generating a sense of safety among street users who feel like they belong in the public place.

Furthermore, comfort in the streets is not only convenient for communication but also facilitates people to recognize where they are in the city (Jacobs, 1995, p.257). Quality of familiarity adds to the convenience and comfortableness of the urban street. It is the ability of users to recognize the components associated with the streets. It depends upon the frequent visits performed by the users. Through repeated visits, users become attached to that particular place and feel comfortable going there (Ujang, 2008). Now that people are emotionally attached to familiar spaces, each alteration in the space could be crucial. Therefore, any modest alteration in the street adds to the familiarity, avoids confusing the consumer, and maintains comfort. (Burton & Mitchell, 2006, p.63). The same thing was said by Christopher: "Every increment or addition must coincide with the existing (Alexander, et al., 1977). Thus, familiarity is the key to remembering to make it comfy for the users whether it concerns the layout of Overall Street or the inclusion of some new structures in the existing street.

Legibility means the ease of understanding a place and navigation of it thoroughly. When assessing urban features, legibility is believed to be of utmost importance. The place achieves legibility if it is imaginable. Landmarks, focal points, and distinctive corner design of an area can make it more legible. Image-ability is the feature of a place that makes it recognizable and memorable (Lynch, 1961). It refers to components that provide the scene context, whether by pointing viewers in the appropriate direction or helping them construct mental maps (Ryan & Bernett, 2016). The street is not a simple pathway, but it is a sequence of connected places, somewhere for staying in and not only for moving through. For instance, according to Lynch (1961) 'The street space is heightened with the help of nodes that are places where paths meet and activities are so intensified that the street transcends the purpose of mere movement and pathway. A successful street space offers with pleasant traffic and efficient mobility. It is dependent on a well-connected network of streets and corridors. Whether structured or winding and twisted, a network of interconnecting streets follows a hierarchy. (The New Jersey Department of Transportation (NJDOT), n.d.). Besides, the ratio of intersections to linkages affects mobility and circulation. There are more convenient and direct ways that are shorter in distance and travel time. More junctions should be built, according to Bentley (1985), because they give users more freedom of choice. Jacob (1995) further

emphasizes the idea by contending that fewer intersections limit the freedom to make decisions (p.266). Additionally, it elongates the distance and time needed to get there. Consequently, many quick trips taken by people use fewer cars.

#### **5.4. Robustness**

“It is the flexibility to make use of a place for diverse purposes”. ‘As opposed to places that by design limit people to a single use, places that are used for a variety of reasons offer more options to their users. A robust environment is a characteristic of one that offers such opportunities (Bentley, 1985, P.10). It is one of the indispensable prerequisites of fine urban design (Gardner & Evans, 1998). Alexander (1988) discussed the importance of diversity and emphasized it. A place's design will be unsuccessful if it fails to take into account the diversity of linkages between activities, places, and individuals (Alexander, 1988). The mix and variety of uses are not only suitable for a town but it is equally important well within a small neighborhood or street. Mixed-use also prompts the opportunities for creating higher densities. Jacob also advocated the mixed use of places, ‘intermingling of various people and activities are important for urban and economic development. According to Jacob’s idea diversity of uses of a place with people of different ages at dissimilar times of the day create vital communities (Jacobs, 1961, pp.144-177)

The robustness of the streets particularly plays an important role in the liveliness of the city. A Street is robust if it is active, vibrant and offer varied use, and has diverse user. This advocates the concept of amalgamation of the use of space thus, negating the ‘concept of segregation of functions’ endorsed by Le Corbusier (1973) in the Athens charter. Segregation or strictly defined places particularly streets kill the vitality. Restricting and severely defining the use of streets would result in an alienated society. For instance, if we consider the function of the street is just the fast movement of vehicles it will ruin the factor of sociability of society. Alternatively, Streets, which serve a variety of purposes, draw a variety of individuals to the same place at different times. They provide an opportunity for people to interact and build relationships with one another, which enhances sociability. In a nutshell, robustness is a healthy trait for a society that might be ruined by designing and planning streets keeping in mind the single use. (E.g., Just for vehicles)

#### **6. CONCLUSIONS**

The streets of a city build community, define society, and have a big impact on how people, live, move around, and communicate. The street, in a city, does not only serve as a physical component but a social reality as well. The function of the street inducing the interaction & communication among the people is less tangible but, very important to bind together the people in social order or in the local urban community. The aforementioned traits are barely taken into consideration while designing streets today. As opposed to this, facilitating the speed of cars is the primary concern. Due to this exclusive concentration on car accommodations, health

disorders like obesity, diabetes, and other similar conditions are also common. Therefore, it is need time to develop parameters to change and analyze the street space on the basis of post-modern concerns as is evident in developing countries. Multiple ranges of theories by designers and planners are put into consideration along with the discussion of environmental psychology and urban environment to attempt the understanding of the relationship of a man with the environment and street space with the built space, traditional city: an amalgamation of events and cultures and lifestyles of so many generations and the present system's workings and malfunctioning. To design a responsive city in general and street space, in particular, it is important to consider all of the following four parameters, i.e.; Pedestrian realm (Places to linger and spontaneous social encounters), Sense of Place (An informal sociable place), Sense of safety & security (Convenience and comfort. (Enclosure), and Robustness is developed. It is concluded that the design for livable streets emphasizes the physical and designable qualities, the social and cultural details that give life to the communities, and aid in the creation of places that are safe, comfortable, and recognizable. Since the traits, appropriate for preindustrial city streets might not work fully for automobile-oriented city streets. Therefore, it is attempted to establish the parameter that might predominantly attend to the pedestrians and human dimensions of the street but have concerns for all other contemporary users (for instance, car drivers, bus drivers, cyclists, etc.)

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