

Responsive design elements in traditional streets: a case study of Abbottabad, Pakistan

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Abstract

The streets play an important role due to urbanisation in Pakistan by providing the open spaces to the communities to interact with each other. This research examines how streets in Pakistani cities serve as public gathering places that encourage social interaction. Traditional street designs include social parameters such as interaction, congregating, and celebrating various occasions. This is one of their most fundamental characteristics of traditional streets. It seeks to comprehend the multiple scales of urban experience that can be used to observe, analyze, and categorize streets. A qualitative research methodology is used based on in-depth observations of the spatial and social factors that mould the streets and give them their dynamic urban qualities. The paper concludes that Pakistani cities have distinctive characteristics that reflect their cultural and traditional diversity and that the streets ought to transform to accommodate these characteristics and the local climate. According to the paper, which uses Abbottabad as a case study, streets should be designed at the micro-level, considering the sociocultural and experiential opportunities for users, including local community and visitors, as well as the practical requirements of connectivity and communication.

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1. Introduction

Pakistan has a rural society, and its large population is mainly attached to agriculture. Most of the time, people work in the fields. Also, their lifestyle is mostly attached to the land i.e., open spaces including gardens, courtyards, open marketplaces, and large free unoccupied spaces. The streets are one of the neglected open spaces that accommodate most of the social life of most villages, towns, and cities. It is the place where people come together in various daily routine life, seasonal festivals, or occasional gatherings in an area. As an important element of the public infrastructure yet a very pivotal and essential open space, streets play a pivotal role in public life in every city of Pakistan. In every contemporary city, the streets among the other open spaces, are an essential container of urban public life. It becomes more critical if the city is crowded and uncomfortable due to dense housing and the weather is not too cold. Much of the time is spent in the streets (Mehta & Bosson, 2021).

Due to rapid urbanization, streets play an important role in open space in the cities of Pakistan. We are now much more familiar with the streets acting just as mobility corridors with the attributes of allowing people to pass through them. We need to know about the traditional street networks to understand the best spatial qualities of an ideal street properly. The traditional streets have accommodated more than a conduit for commuting by providing spaces for the political, social, economic, and cultural aspects within its domain. We need to study the traditional street networks, their ecological evolution, and how it is being adapted to the various changing lifestyle of their inhabitants. This will be a great tool for urban architects to understand various elements of street design and help incorporate the traditional wisdom of any specific social and cultural context for designing active streets.

The primary objectives of this research were to establish the various scales on which the traditional streets can be assessed based on user experiences. The research questions set forth for this research include: What are the approaches for observing, analysing, and categorizing Pakistani streets on various scales of urban experience? And how can we think of context-specific modern streets with a vibrant social life, access, and connectivity? The study's significance is based on critical observation and analysis of current trends in street design. The essence of the streets is eroding daily due to applying contemporary practices based on the principle of vehicular flow and connectivity. They do not have any context-sensitive elements. Our cities' physical elements have evolved over time to accommodate social, cultural, and environmental considerations. These elements were the primary means of identifying any city's morphological characteristics and social domains. These must be studied, documented, and re-imagined in modern approaches to street design.

1.1. Streets and public spaces

In Pakistan, streets act simultaneously in place of many things, i.e., bazaars (markets), thoroughfares, shops, exhibitions, and theatres (Rashid, 2015). The activities encompassed in

these streets range from business to worshipping, marriage and funeral gatherings, and religious festivities to political demonstrations.

Streets are places for civic activities. The daily routine activities of its users offer a diverse and active participation opportunity to one's senses (Watt, 2011). One user's routine activity becomes visual entertainment for the other user. According to Jacobs, the streets can be taken as a litmus paper for checking the liveliness of a city. If the streets are attractive, then the whole city will be fascinating (Jacobs, 1993). However, if the streets are lifeless, the city must look dull. As mentioned earlier, in traditional lifestyles, the streets were not used only for horizontal movements but also it was being used as a space for gatherings and socio-cultural activities. This indigenous street pattern needed to be adopted to develop the streets in the future to make them attractive public spaces. Streets and footpaths needed to be well connected through the deliberate use of trails. A street with a pedestrian-friendly character must be created with all walkable neighbourhoods (Ali & Shah, 2021). The streets' various intersections or junction points, i.e., nodes, needed to be considered spaces for the larger public realm. It can be used for community gatherings, chit-chat, shopping activities, and spaces for the traditional hawkers as accommodated in the traditional chowks (Squares).

The streets, here in Pakistan, are the spaces that are separating the public and private spaces among the communities. People would like to spend the day gossiping with each other in the streets. Women cut vegetables and wash their clothes in their own houses while at the same time, they are chatting with their neighbours and speaking with the street vendors passing by with the *thelas* having domestic commodities such as vegetables, seasonal fruits, and everyday kinds of stuff (Ray & Shaw, 2018). Nowadays, the most preferable thing for the designers is the vehicular flow rather than these social activities. The result is the wide urban roads, with the vehicles and predominant boundary walls rather than the activities-generating frontage of the streets.

Historically, these streets have been shared by humans, vehicles, and animals in the form of pedestrians, rickshaws, animal-drawn carriages, bicycles, motorcycles, cars, trucks, tractors, and wandering animals. However, in guiding literature, the term is named "roads" instead of "streets". Both these terms are equally used interchangeably. But the two terms have been differently interpreted in the urban sensibility. The term "road" is the metallic, non-metallic, mud-packed, gravel lad passageways used for mobility purposes for connecting the people. While the "Streets" are the cohabited spaces, full of life activities. It acts like a theatre, full of opportunities for its users' engagement and a space for hospitality. Streets have people who are just going to work or home and those looking to be hired or have enough free time to observe the passersby. According to the English Dictionary (Oxford), roads are distinguished from a street. Roads are ways used for passing from one city to the other or across various cities, while the streets are the spaces within the city or village. It defines roads as the paths connecting different places and the streets as a road within a town or village running between houses (Turnbull *et al.*, 2010).

2. Research design and methods

After gaining a general understanding of the spatial characteristics of the streets using Abbottabad as a case study, specific traditional and contemporary streets were chosen as a sample. The argument is developed inductively using qualitative research and careful observations of the physical and social characteristics of these streets that have influenced their evolution into dynamic urban spaces.

2.1. Case selection method

Abbottabad district is one of the important districts of Khyber Pakhtunkhwa Province, with an Area of 1967.00 sq. Kilometres. It is a tourist destination from across Pakistan. It is famous not only for its beautiful landscape, pleasant weather, and entrance to the Northern part of the country but for the standardized educational institutes. It is also called the city of Schools.

According to the research by Raza *et al.* (2012), GIS land-use developed maps of the years 1998, 2005, and 2009 record suggest that forest and settlements increased at the rate of 2.83 percent and 9.3 percent. While the plain land had decreased by 11.4%. The area used for the settlements is 34.13 % from bare land, while 32.98% of land is used from green lands (Raza *et al.*, 2012), which indicates the relationship between the land-used pattern and its major socio-economic pressures. These researchers concluded that due to rapid urbanization and growth in the educational institutes, the district Abbottabad has been transformed and witnessed extensive land-use changes in recent years, especially after the earthquake in 2005.

2.2. Selection of localities within the city

For the comparative studies of the various indigenous and contemporary streets in Abbottabad to fully understand its main features, the streets need to be similar in context and attributes. For this purpose, the city was divided into specific timeframes for its development i.e., from older contexts to newer developments. The specific areas were taken in each chosen category, and then performed research work within such areas. This information is being integrated at two major scales i.e., macro-scale analysis and a micro-scale spatial observation followed by qualitative analysis. The localities selected for this research include Kunj Road, Murree Road, Phool Gulab Road, Eid-Gah Road, Mandian, Malikpura, Jughian, and Main Bazar Road.

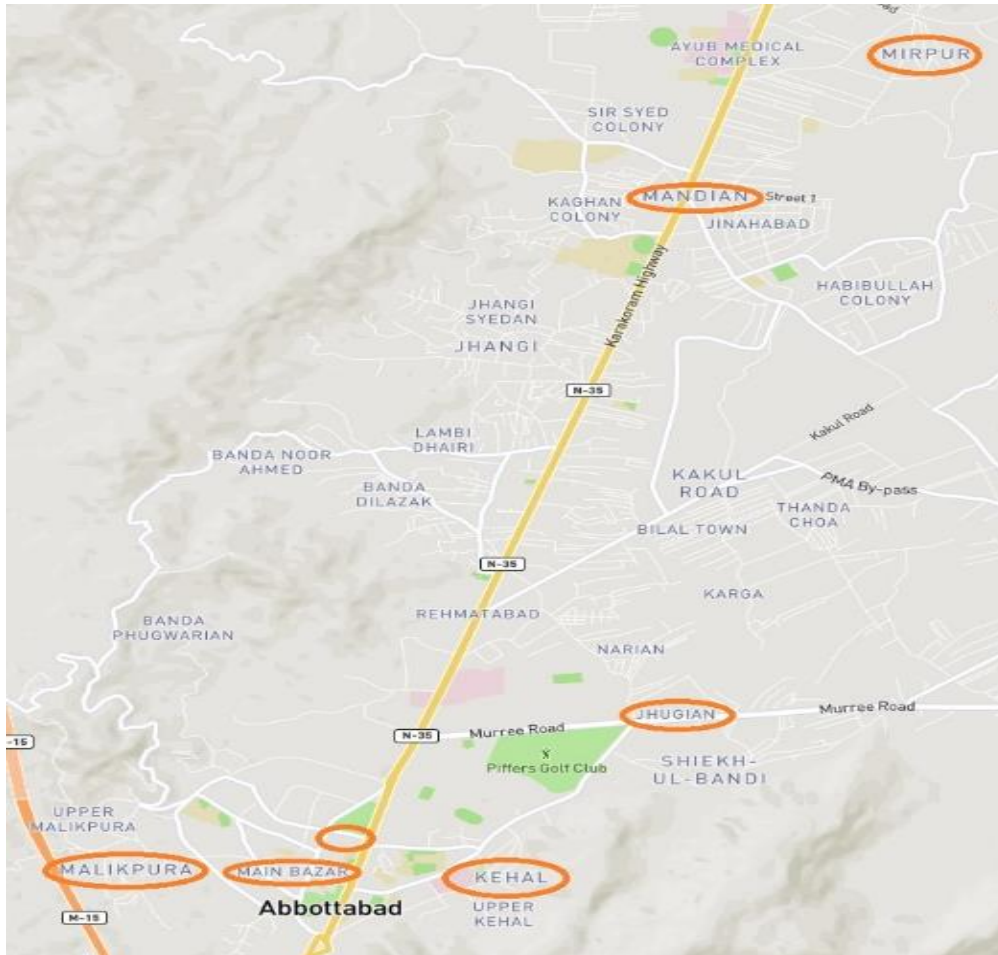
3. Perceiving the city - an explorative study

3.1. Introduction - urban scale assessment

A reconnaissance study was conducted to discover the elements within the urban fabric and sensory dominion responsible for perceiving the city of Abbottabad while one passes along the streets. It also aimed to compare the actual elements of the city with that of perceived ones. In

all these settings, the main target was to understand which spatial elements and physical form are responsible for creating specific perceptions and mental images as defined in the book. Using Kevin Lynch's five criteria, the urban typologies within cities are identified in terms of spatial considerations and the socioeconomic knowledge of the chosen areas (Lynch, 1960).

Figure 1: Google Map showing the relative positions of the selected areas



3.1.1. Landmarks

The city is a combination of formalized titles and perceived mental images of its various localities. The formalized titles in the case of Abbottabad include the Neighbourhood councils, municipalities, Mohalla's, street names, and postal codes, which are known to the residents of each area, while the perceived mental image is the result of the urban forms, urban edges, boundaries, and more personal landmarks. If we observe in the context of any traditional city, we can conclude that the landmarks are used to symbolize the city. Like the Badshahi mosque of Lahore, Quaid's tomb in the city of Karachi, Bab-e-Khyber in Peshawar, and Faisal masjid in the Capital. If we observe the important landmarks in the city of Abbottabad include Ilyasi Mosque, Cantonment police station building, Baloch Officers Mess, Piffer's Mosque, Jamia Masjid Abbottabad, Saint Luke Church, Jalal Baba Auditorium.

3.1.2. Historical background

Historically, the city of Abbottabad was famous for its large open spaces jewelled with natural scenic views, pine trees, and lakes. However, due to the haphazard growth and urbanization, the educational institute's agglomeration along with the tourist hub from the 1990s, and mass migration as a result of the Great Earthquake of 2005, no planning process took place. With all these rapidly growing factors, the city of Abbottabad can be viewed to be divided into two distinct sub-divisions. One part is characterized by the low height (1-2 floors) buildings of colonial and post-independence architectural forms having green patches and open public spaces, while the second part is distinct for having more recent concrete construction and having high boundary walls with less open spaces. However, there is a finer grain between the above two broad categories that is a major contributor to city life. This image formed in our minds not only responsible for the definition of any city, but it also helps us to move around with the urban area.

A. Streets description

Streets are the paths that provide a channel to move around within the cities. It allows us to move, interact, wait, and eat within the city. The streets are the public open spaces in urban areas that expedite the user's functions and sometimes play an important role in defining the mental image. Traditionally, all the streets were greatly imageable. Those streets ensured a robust edge definition different from the country-side path. All streets remained available, with the external rooms leading to squares acting like nodes having a specific landmark in the form of a building, mosques, or marketplace. The cities were to be divided or identified based on the various professional classes such as Lohar bazars, main bazar, sarafa bazar, fruit markets, etc. While the urban form, nowadays is determined by economics. The architectural style, plot size, availability of various amenities, and presence of infrastructure services are major elements playing roles in devising the value of the real estate. These forces are owned by the investors and state entities, the real controlling factors in the present-day city planning process.

B. Administrative authorities

According to the Cantonment Board Abbottabad website, CBA's First notification of the Cantonment Board Abbottabad was made in 1853. Presently, the authorities working in the city of Abbottabad include the Tehsil Municipal Administration (TMA), Cantonment Board Abbottabad (CBA), and neighbourhood councils. These are the authorities responsible for the laying out of the street, either on old layout or new sites. The acquiring of the land for any purpose including the construction of buildings, complex structures, housing layouts, and most specifically to accommodate smooth vehicular traffic. However, in the whole process of creating these streets, one point that is constantly being neglected is the basic local image of the streets, that are the major contributor to the imageability of the city. The very social and cultural aspects of the traditional streets are always compromised.

Figure 2: Eye-map showing the cantonment Board Abbottabad boundaries



3.2. Streets, their sequences, and experienced spaces

This reconnaissance survey was used as a base for conducting field research to study and personally experience the dual nature of spaces, i.e., formal and perceived zones, within the city of Abbottabad. By scheduling daily trips to one, two or three of the locations using a private car carrying dabba (local special transportation) or hopping on a motorbike, the study of experiencing these chosen spaces was carried out. It will always involve closely looking at each chosen area, taking pictures as you go, and stopping at a few intersections to watch. The journey to these locations begins at Fawara Chowk and proceeds to the main bazaar and Eid-Gah Road. The second section starts at Khatm-e-nabowwat Chowk and goes to Sabzi Mandi Market before starting at Sarafa Bazar and going to Lohar Bazar, Cantonment Plaza, and Lady Garden Park.

The journey on Murree Road will begin at the main KKH and conclude on the Jughian. The trip would then end in the vicinity of the supply bazaar. Additionally, a walkthrough of the Mandian and Jinnah Abad region was conducted. The officer's colony, the small industries area, Phool Gulab Road, and Mirpur are close by, and it was covered for taking the records of the areas in a couple of days. Talking with the users and taking notes from them during discussion

followed by taking pictures of the situations and analysing them visually was a very healthy activity during this study.

The widths of the streets, the heights of the buildings, the number of stories, the use of the ground floors of the buildings, traffic patterns, pedestrian activity, and open or green spaces in these areas were all noted. The presence of various landmarks and obtaining the opinions of the locals while conducting arbitrary user interviews. Building setbacks, the presence of educational or religious structures, and the proportion of open versus covered spaces. Based on these observations, classifications of the chosen zones have been made. These were then taken into account to understand how the city was perceived in relation to its actual presence and to develop the recommendations.

3.3. Boundaries

Boundaries are made by the authorities of any city to define the territorial limits of different districts or localities. However, these boundaries are not visible and not in correspondence with the edges or transitional parts between the various localities. However, to a visitor or user, boundaries are not bound by these territorial marks. To them, it is the visual experience, urban form, and visual elements while walking through the cities based on their own life experiences within the cities. According to Kevin Lynch, nodes are focal points, while the extent of the districts is defined by the edges and boundaries (Lynch, 1960). After detailed field research in the above-selected areas of the cities, observing its actual presence, and interviews with the carry dabba drivers, the boundaries are defined using the road widths, major arteries, open parks, or changing the terrain or intersection of the streets.

3.4. Reconnaissance study - travel plan

The field research took place over the course of 8 to 10 weeks, and the first phase included a reconnaissance of a few key areas within the city of Abbottabad. A thorough street analysis from chosen areas within those localities was conducted in the second half of the research. In order to understand and document the potential functionality of individual streets, each of the chosen areas was visited and covered at various times throughout the various weekdays. The traces in the urban fabric that correspond to the socio-economic conditions of areas were documented during weekend visits to each site.

3.5. Economic conditions of the population within the selected localities

The elements of physical form that are more convincing include its street widths, heights of boundary walls lining the streets, setbacks of the buildings, and size of buildings on it. The various other characteristics of the resident population, such as the vehicle types they owned, population density, and commercial activities in the areas, provide cues to the economic conditions of the locality.

3.6. Characteristics of population: religion, age, and localness

The population in Abbottabad is diverse in terms of religion, which can be seen by the presence of various religious institutions in the city. Most of the population of Abbottabad city is Muslim, while one can see the Christians, Hindus, and Sikhs also in good numbers. These institutions include many mosques of various sizes, churches of both Catholics and Protestants, Arya Semaj Mander, and Gurdwara of Sikhs. By observing the physical symbols of the star and the moon, one came to know the Muslim population and religious institutions. While the cross sign shows the Christian community and religious buildings. While the inscription of Hindi on the walls shows the Arya Semaj Mander. The presence of the image of Guru Nanak, along with the Hindi inscription denotes the Gurdwara of Sikhs. Though some of the buildings are not working in routine such as Mander / Gurdwara these buildings are in good shape. The presence of the Christian population is more considerable, and they own and use their religious building according to their customs and needs.

3.7. Conclusions of the study and its implications

Visitors and inhabitants of any city rely greatly on the physical aspect of it to develop a mental image of it in their minds. While moving in the streets of the cities either on foot or in a vehicle, each individual perceives the urban form differently. It forms a mental image of a city that stays with the user forever. This mental image is a delicate combination of both the physical parameters of the streets and the resultant socio-economic factors of these parameters. As per Kevin Lynch, these physical attributes of any city can be understood with the help of five parameters i.e., paths, nodes, edges, districts, and landmarks. However, these elements are not strictly separable in a pure sense. These are crossing each other interestingly at some points in the city i.e., paths are acting as edges at the same time. Similarly, the nodes and landmarks fulfil the same meaning in some areas. The definition of all these five elements is inconsistent with how the common person sees and experiences the urban environment; it can be a part of planning vocabulary.

An endless list can be generated by observing the physical characteristics of city streets. However, in this study, some urban area examples are provided that can be used to interpret the physical characteristics of the targeted populations using factors such as religion, the economy, and freedom of movement. The city authorities can create design guidelines for urban architects using this interpretation, which can be applied to many typologies' definitions within the city. It can also be presented with suggestions for street layout and additional features of urban landscape provisions.

The areas of the study were selected keeping in mind the time and proximity to the city centres, but after exploration of the area, the physical parameters of streetscapes and socio-economic drivers were used as the basis to categorize the overall urban fabric of the city of Abbottabad. These are as below:

3.7.1. Developed residential localities accommodating wealthier and mixed populations

These are the areas with wide streets having medium and large houses. It is provided with the main commercial area, having restaurants, cafes, guest lodges, and religious buildings. These are almost with the regular grid pattern having rectilinear characters in its layouts.

This category includes the Kaghan Colony, Jinnah Abad, and other cantonment residential areas. Residencies include individual bungalows with 02-03 stories of construction. Apartment buildings in the cantonment areas for the officers and Army jawans. This population is predominantly upper middle class in its economic conditions. While most of the population is a mix of local and migrated (working) people. As Abbottabad is a hilly area the grids are strictly rectangular.

Figure 3: Google images: (a) Kaghan Colony and (b) Jinnah Abad



3.7.2. Newer, wealthier localities (mostly non-local population)

In these localities, multistorey buildings like gyms, cafés, traditional dine-in eateries like Shinwari, Chinese restaurants, fast food outlets, various independent merchandise regional buildings of national brands like J., Gul Ahmad fabrics, Khaadi, Sapphire, Day-to-day stores, and financial institutions like ABL regional head office, ZTBL regional head office, UBL head office. These localities have fewer religious buildings, and the streets are full of evening and weekday activities. This typology includes Mirpur, Officer Colony, and Supply area. The residents of these areas are a mix of local and working (non-local) populations.

Figure 4: Google images: (a) Supply area and (b) Mirpur area



3.7.3. Older commercial chunks of the city serve the local populace

It comprises of older section of the city with mostly commercial activities serving the local population. The different parts of the areas are defined with the working-class specialities such as Lohar bazar, where you can buy iron and steel tools, equipment, utensils, and other routine things. Sarafa bazar, where one can get a variety of jewellery in one place. The goldsmiths book it. Flower markets have flower shops. The vegetable markets are providing a fresh stock of vegetables. Bird's shops are available within a centrally open courtyard market in one place. The physical properties of these areas include smaller plot sizes with two to four stories of buildings, curvilinear streets, and smaller pathways. The population of this area is mostly local and has been living here for generations.

Figure 5: Google images: (a) Tanchi Chowk and (b) Lohar Bazar



3.7.4. Urban villages

There are some parts of the present-day city, which were independent villages in the past. Due to the rapid urbanization and haphazard growth, it was surrounded by development and became a part of the city of Abbottabad. These Areas include Mandian, Jughian, Malakpura, kahal, and Jhangi saidan. One can see and observe the distinct village character of villages in it. It has smaller streets, a simple design of frontage of houses, and low-height structures, and is in alignment with the land's natural topography. These areas are present along the main historical trade route of the Karakoram Highway, also named as Silk Route.

Figure 6: Google images: (a) Malikpura and (b) Mandian



The list mentioned above of typologies is not the complete list of typologies of the city of Abbottabad. However, it is the list formulated by conducting the reconnaissance survey of the city. It can be used as a starting point for defining and characterizing Abbottabad's urban landscapes, which are the major contributors to the picture of the region. These may assist in defining the basic framework for urban design by using the image of the city under discussion that is portrayed and experienced.

The reconnaissance study in this research project aimed to identify specific streets within each selected locality for carrying out the detailed spatial analysis. One street per typology was identified and studied in detail. The shortlisted analysed streets are included in the later section of the studies.

This recce was the first step after entering the field research. This research has primarily used and concentrated on understanding the physical elements in the selected locations when travelling through the local areas' streets. However, to fully understand each locality and street pattern, it is essential to study and get detailed knowledge about the form development and morphological attributes that are responsible for its role in the characterization of the street at the scale of each locality.

4. Street patterns

The network of streets in the selected localities was observed and studied for hierarchies of the streets, widths, intersections, intervals, functions, and open and built spaces. It is based on Stephan Marshal's book. Based on the combined typologies identified in the reconnaissance study, it will be helpful to understand the basic structure, categorization, and proper nomenclature of the streets.

The pattern of these streets indicates the networks and movement along the streets. It shows the urban fabric, block sizes, fragments, and intersections or intervals of the streets. The pattern of the streets is discussed, and various categories are defined so that the planning process can be organized within the city.

4.1. Taxonomy, organization, and streets' hierarchies

The cities' streets can be considered an essential component of urban public life. The majority of people's social time is spent outside on the streets. When designing the street patterns for the new development, considerations for pedestrian activity had to be considered. Jalaladdini and Oktay (2012) coined the phrase "lost space" to describe the characteristics of cities built for vehicular flow rather than based on social interaction and human behaviour.

Streets are lines guiding the design and development of the cities. It comprises the organizational structure for the planning of the cities. If we want to design the greater cities, we need to study the underlying principles for the placement of street hierarchies. Various templates prescribing the relative widths of streets within each category are also based on the street hierarchies. Which results in the standardization of the street widths in the engineering design of cities. The main theme of width standardization is based only on the fundamental functions of connection and accessibility. These principles are the basic subjects for designing contemporary generic and non-contextual streets. Citing the book of Stephen Marshal, I saw several different ways in which organization and categorization are done worldwide. He has emphasized the existence of these structural hierarchies of the streets. However, at the same time, he stated that when we talk about the hierarchies, we are concerned with the engineering aspects i.e., vehicular flows in contemporary urban design (Marshall, 2004).

Streets are always present in a hierarchy concerning accessibility and connection. However, the methodology used for its definition has always been a matter of debate throughout history. Architect and urban planner, Le-Corbusier, based on his belief that roads are for cars, devised a structure for the categorization of roads ranging from major arteries to pedestrian roads. However, if we study Buchanan's categorization, he suggested two types of roads: one for the movement called "distributors", and the other for the buildings called "access roads." The streets would get their category based on their relative position, with the road serving the connectivity and the road serving the access to the building. These definitions of distributors

and access roads are meaningful in areas where the urban area has developed areas or patches. These examples show the more vehicular concerns for the zoning or hierarchies in urban design approaches, not being able to accommodate any traces of traditional point of view, of intermixing the functions (circulation and connectivity) with urban place-making (social) parameters.

Various themes are used for the streets' hierarchies, including form, function, relative position to each other, and designation. However, there were some shortcomings in each of the themes selected in various examples and identified by Stephen. He suggested that the form-based categorization of streets may pose problems when it comes to the changes in the physical attributes of streets along their lengths. The functional theme will be problematic due to the temporal nature of the functions. Using the designation is mostly an easier way for one to adopt, but it also tends to pose a problem because the changing of designation, which may not correspond to the realities on the ground. However, the term relation is mainly used for describing the function of the street. It is used for the vehicular flow and not for describing the function of the network, which results in the separation of the users of the streets into pedestrian and vehicular flows.

The overall explanation of these themes is to understand the role that these streets play within the larger public realm and the connected street networks in an urban area. According to Alastair Morrison (a cartographer), a pattern formed by arterial roads is a complete network where each route is connected to a route of the same stature or of higher status. therefore, the highest-stature routes develop a contiguous system while not necessary for the lower-status elements.

The process is completed in a way that localities are selected in a specific group. Elements in each group were selected, and based on it, a system will be developed. Based on its role within a broader context, this hierarchical system can be used to describe and clarify the streets. The selected streets are primarily residential hosting commercial activities on the ground floor. The boundary walls on their edges encompass the streets.

The alignment or grid of the streets in the selected are unique. Pedestrians, vehicles including cars, carry dabbas, and motorcycles share these streets. However, one can move easily on foot in these streets due to the less crowded nature of the streets.

5. Results and discussion

The layout of the streets suggests the form of any given area. An understanding of the character of any locality can be achieved by studying the street layouts, urban forms, and block sizes. These studies also suggest or identify the main driving forces responsible for its original layout planning and those that alter it over time. These forces contribute to defining the image of these areas.

The success of urban open spaces, including streets, in accommodating the inclusion of natural elements, built structures, and human activities is referred to as vitality. By observing users, or people, in the streets at different times of the day and night, their social activities like loitering, waiting, sitting, interacting with other users, and building settings, accommodating the various festivities and celebrations, we can easily understand this attribute. All of these are components of a dynamic street life. A manifestation of visual quality and the presence of numerous ongoing events is what is referred to as vitality. Urban areas needed to accommodate a range of users, including individuals, friend groups, and family groups.

As per contemporary standardization of the street's layout in terms of engineering preferences, these suggested contexts specific categorization of the streets in the city of Abbottabad will help the administration to understand the various localness of these selected localities, which are native to these areas within the city. Within each assigned category, a detailed description of the street patterns and block size attributes can be compared with the further neighbourhoods of the identical kind. Using the appraisal, a set of principles for the development can be established for the respective category that may be repeated for the extension of any category beyond its limits or new city development. In the discussion mentioned above and investigation of the various selected localities, the following categories are devised for the cities of Abbottabad.

5.1. Patterns in localities housing upper-middle class (residential)

These include the comparative older layout of the city showing the rectilinear grid layout with lively street frontage during the day having religious buildings, commercial activities contained by itself or in surrounding several street vendors, and larger plot sizes. Kehal, Kunj Road, and the cantonment can be included in this category. There are newer layouts of the same properties, including the Jinnah Abad, Kaghan colony with rectilinear layouts with similar regulations found in the older parts of the city.

5.2 Configurations of non-local residents localities mostly upper-middle-class

These streets ' character are rectilinear and irregular street patterns, often with discontinuation. These include the presence of educational institutes, offices, and commercial areas within and on these localities' peripheries. Eateries and cafés are there. This category includes Officer's Colony and Shah Zaman Town.

5.3. Configurations of streets in the lower, lower middle-class residential area

In this category, the street configuration is present with broken patterns. Malik Pura, Salhad, and supply areas fall into this category, having different street patterns and block types based on their hilly terrain. While the Jughian Murree road is a population predominantly of migrants with irregular grids. While the Mandian and Mirpur have a less rectilinear grid pattern and

house the mix of population i.e., local and working/studying institutions, small industries, and local shopping centres.

5.4. Street configuration in commercial centres

The oldest parts are the city's major commercial centres. It includes the main bazar area, Sarban Chowk, and cantonment bazar with a unique street configuration. Major transport stations i.e., the main bus terminal for intra-city transport services, while small adda such as Suzuki and Van Adda for intercity and inter-district transport services. These are the busiest of the areas in the daytime due to the variety of users due to these stations. The oldest bazaars are present in these areas i.e., the cantonment bazar and main bazar. This area also houses a variety of religious spaces including the Jamia Masjid Abbottabad, Arya Samaj Mandar, and Gurdwara. The local commercial activities are taking place majorly in these areas. This area also accommodates several narrow pathways and curvilinear streets; some align with multi-story buildings. However, no typical blocks and irregular streets are present due to its informal development.

5.5. Street patterns in urban villages

Mirpur, Mandian had its characteristics like buildings having 2 or 3-story buildings. Less haunted and mainly streets occupied by pedestrians and smaller commercial entities. Which are small packets of developments with more open spaces. These developments often work in isolation without strictly connecting with the surrounding buildings. Rural lifestyle is still the distinct style of these areas.

5.6. Street configuration in restricted groups and estates

Some neighbourhoods are developed on the city's peripheries with unique characters due to their scope and size. They have their communities and estates within their limited entry points. They have a mix of regular and irregular street configurations. The internal roads are being marked by these institutions on their own and not in connection with the city grids and patterns. Newer localities like Ayyub Medical Complex colony, army flats, and Askari officers' apartments can be included in this category.

This categorization of the localities can be a starting point for carrying out detailed research on the city layout and street patterns. This research of a specific context can be used to devise and formulate standardized practice parameters for contextual street designing. Localness of the population and urban form are used as parameters for this categorization. Further in this categorization, other factors such as the environmental, cultural, and political elements can be added to create a more sophisticated set of contextualization and classification with an optimum level of organization.

Table-1: Various broader categorizations, each with its specific configuration and character

S #	Broader area category	Street configuration	Character attributes
1	Patterns in localities housing upper-middle class (residential).	It is comparatively older parts of the city showing the rectilinear grid layout.	Lively street frontage.
2	Configurations of non-local residents localities, mostly upper-middle-class.	Rectilinear and irregular street patterns.	Discontinuity in its character with much division.
3	Configurations of streets in the lower, lower middle-class residential area.	There are numerous block types and street patterns.	With broken patterns, the street persona is present.
4	Street configuration in commercial centres.	Its informal development has resulted in irregular streets and a lack of typical blocks.	All day long, there is constant activity along the street front.
5	Street patterns in urban villages	Most developments are in tiny communities or Mohallah with more open space.	Pedestrians and smaller commercial entities primarily occupy less haunted streets.
6	Street Configuration in restricted groups and estates	They have a mixture of regular and unconventional street layouts. These institutions are identifying the internal roads on their own, independent of the grids and patterns of the city.	Unique characters due to their scope and size.

6. Conclusions

After categorization, it is crucial to thoroughly understand the street's physical components that can enhance or hinder social activities at the micro level. The research's results also indicate that the establishment of the street's distinctive character is primarily due to buildings, landscape, and street patterns. When it comes to the visual appearance and function, these components are connected. A street can be distinguished from others based on the historical significance of the buildings. The presence of the landscape contributes to the visual richness, increases the likelihood of social interaction, and gives the streets their general characteristics. The street patterns define the movement pattern along the street. These physical attributes include the ability to connect, be accessible, and have infrastructure facilities available. The fundamental and significant characteristics associated with the design of contextual and traditional streets go along with the social parameters like interaction, congregation, and celebration of various events. These are all the elements that contribute to civic, social life on the streets.

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References

- Ali, I., & Shah M. W. (2021). Integration of Islamic principles in the planning and designing of urban public spaces. *Bannu University Research Journal in Islamic Studies*, 8(1), 28-36. <http://www.burjis.com/index.php/burjis/article/view/79>
- Jacobs, A. B. (1993). Great streets: Monument Avenue, Richmond, Virginia. *UC Berkeley Access Magazine*. <http://escholarship.org/content/qt9116k9sr/qt9116k9sr.pdf>
- Jalaladdini, S., & Oktay, D. (2012). Urban public spaces and vitality: a socio-spatial analysis in the streets of Cypriot towns. *Procedia-Social and Behavioral Sciences*, 35, 664-674. <https://doi.org/10.1016/j.sbspro.2012.02.135>
- Lynch, K. (1960). *The image of the city*. MIT Press.
- Marshall, S. (2004). *Streets and patterns*. Routledge.
- Mehta, V., & Bosson, J. K. (2021). Revisiting lively streets: Social interactions in public space. *Journal of Planning Education and Research*, 41(2), 160-172. <https://doi.org/10.1177/0739456X18781453>
- Rashid, T. (2015). Theatre for community development: street theatre as an agent of change in Punjab (Pakistan). *India Quarterly*, 71(4), 335-347. <https://doi.org/10.1177/0974928415602604>
- Ray, B., & Shaw, R. (2018). Changing built form and implications on urban resilience: loss of climate responsive and socially interactive spaces. *Procedia Engineering*, 212, 117-124. <https://doi.org/10.1016/j.proeng.2018.01.016>
- Raza, A., Raja, I. A., & Raza, S. (2012). Land-use change analysis of district Abbottabad Pakistan: Taking advantage of GIS and remote sensing analysis. *Science Vision*, 18(1), 43-50. http://www.sciencevision.org.pk/BackIssues/Vol18/06_Vol18_Land_Use_Change_Au_ribaRaza.pdf
- Turnbull, J., Lea, D., Parkinson, D., Phillips, P., Francis, B., Webb, S., Bull, V., & Ashby, M. (2010). *Oxford advanced learner's dictionary*. International Student's Edition.
- Watt, D. (2011). From the streets of Peshawar to the cover of Maclean's Magazine: reading images of Muslim women as career to interrupt gendered Islamophobia. *Journal of Curriculum Theorizing*, 27(1), 64-86. <https://journal.jctonline.org/index.php/jct/article/view/309>