

# Decoding Advanced Streetscapes: Case Study of Delhi

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**Abstract**—Streets or Right of Ways, cover almost 25% of city area as per Master Plan of Delhi. Yet most of the master plans, development regulations give much more importance to zoning and built mass than streets. Streets are merely understood as connecting corridors and not primary spaces. For something that covers more than 1/4th of city area, not giving an in-depth focus to them in city development plans is a big miss.

Daily human activities such as sleeping, working at office, recreation is given importance, but time spent in commuting is usually neglected. Negative experiences while commuting on streets contribute to an overall decline in inclination of commuter to achieve desired goals.

As per research conducted by ford sponsored agency, commuting is considered more stressful than most activities such as planning holidays, being at work, moving a house, dealing with money matters etc.

With changing technology, requirements of streets and commuters is also visibly changing. To design & foresee streets of future, it is important to identify and integrate both physical & social dimensions of street.

Delhi like any other city has a hierarchical network of streets ranging from neighborhood pathways to national highways. Delhi is a city of contrasts that on one hand was home to several settlements of bygone eras that are still being actively used, along with new developments with varied shades of street patterns.

Paper aims to understand the physical and social dimensions of street by exploring various street sections of Delhi from a commuting experience perspective. It also tries to evaluate certain design considerations that can help in achieving better street spaces. Paper also tries to analyze the street strategies that are applicable with changing technological advances with respect to Delhi.

## 1. DELHI'S GROWTH AS A CITY

Cities today are constantly escalating in terms of number and size. As India is moving on the path of rapid and massive urbanization, urban centers are also growing at a faster pace. Census 2011, positioned level of urbanization at 31.1% with number of urban residents at 377 million spread over more than 7500 urban settlements. The spatial growth of Delhi indicates tremendous rise in settlements.

While the total population growth from 2001 to 2011 is 21%, urban population is 27% indicating that Delhi has been urbanizing faster than its growth in past decades. Although, master plans are made for proper functioning of cities, but very little attention is paid to street design, which is the basic unit of cities and urban spaces. It is important to address the design, street environment and street network holistically with a design led approach as applied successfully in UK & Europe.

## 2. PRESENT DAY DELHI

Delhi as a city has various shades of settlement to it. On one hand, there are villages with urban characteristics, on the other, there are areas that are at par with internationally recognized settlements. Delhi has streets with calm and composed organizations, as existing in Delhi Cantonment on one hand.

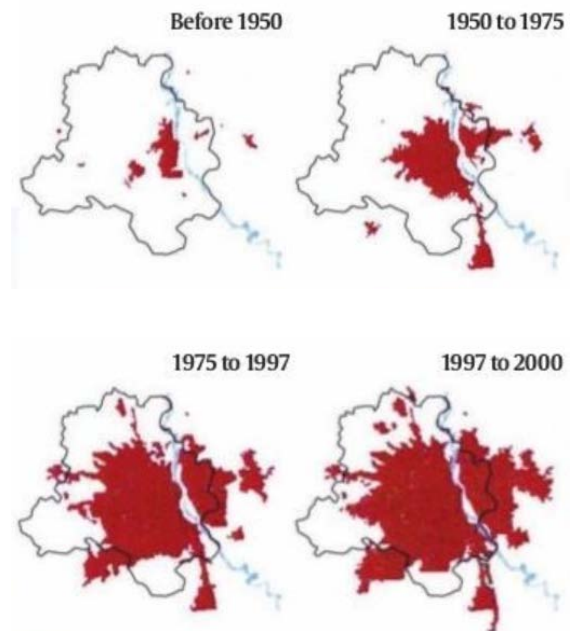
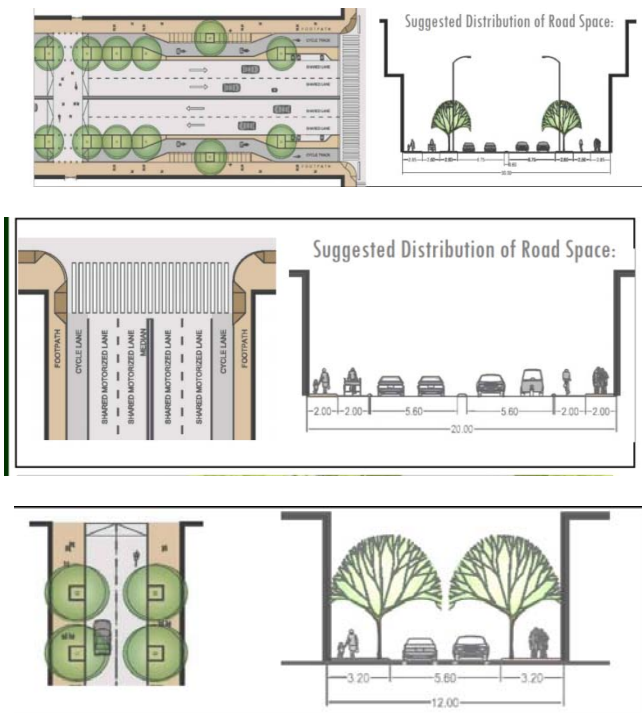


Figure 1: Spatial Growth of Delhi (1950-2014). [1]

It also has chaotic but experiential streets of Shahjahanabad within itself. Then, there are recently planned developments of Dwarka streets designed to give priority to vehicular movement which have been taken to another level in execution of arterial roads where human scale seems to lose all its essence. This same Delhi holds within itself streets in Hauz Khas that have come up as one of the lively stretch meant for pedestrian movement & interaction.

### 3. FUTURE OF DELHI STREETS

To design & foresee streets of future, it is important to identify and integrate both physical & social dimensions of street. Physical dimensions include transit usage, mobility traffic scale on one hand and social dimension include accessibility, focus of people, street life and social networking on the other. A well-designed street is able to link physical, social and transport networks which result in workable alternatives. The sustainable approach thus looks for greater integration treating streets as places managed well in context of travel, time and calmed traffic.



**Figure 2: Suggested Distribution of Road Space in Delhi By UTTIPEC. [7]**

To attain a more local and integrated street design, it is essential to promote higher level of permeability and legibility for all users. For achieving an overall balanced approach, all elements of design need to be worked out in coordination with each other.

These elements include contextually responsive spaces, efficient utilities, safe and efficient movement corridors,

climatically responsive designs, multi nodal connectivity, traffic management to name a few.

### 4. DESIGN CONSIDERATIONS

It is essential to design streets based on their width, flow of pedestrians, vehicular traffic per hour, special requirements, contextual dependencies to name a few for achieving results beneficial for all. Since Delhi is also home to a number of settlements that belong to bygone eras, but are still being actively used, it is important to create sustainable neighborhood by retrofitting the existing streets. The more it is made pedestrian and cycle friendly, better the results will be, in terms of comfort, safety and social behavior. Special care needs to be placed for material and finish selection in historic context.

Integration of various functions within streets helps in promoting efficient usability. Streets should be treated as multi-functional entity that balances the user needs with a self-regulating environment. Examining the relationship between place and movement functions of a street and designing on its basis results in a more sustainable approach. All the public amenities, safety features, activity kiosks, street furniture should be designed in coordinated way for achieving desired results.

Landscaping of streets play a vital role in improving experiential behavior of users. It helps in improving the overall life of area making it more attractive and user friendly. Landscaping also provides for cost efficient solutions for controlling noise and pollution of streets. There are a few design considerations that can be applied to all streets for achieving results.

#### These are:

- The street layout can revolve around promoting walkable and cycleable route. This will require a planned network of highly connected roads. Focus can be placed on parking and management plans.
- Street can have differential surface treatments for ease of use and for further highlighting traffic flow and importance of a place. This will also help in improving mobility of differently abled.
- An easy transition between streets and roads need to be designed. These transition zones can be treated by changed surface material, narrowing of carriageways and plantation of large trees.
- Principal of design can focus of making streets more legible for users. These can be achieved by use of nodes and landmarks that are easily recognized by people.
- Balanced approach to design selfregulating streets that not only help in controlling both vehicular and pedestrian traffic, but also maintains the ambience of place and makes transition a better experience.
- Activated street edges can help in providing passive surveillance of place. These can be achieved by providing

various activities such as controlled street markets, plantations of appropriate size, user friendly and aesthetically sound street furniture.

- Integrated approach to design with detailed emphasis on various components of street such as use of footways, verges, sitting, lighting, cycle parking etc accounts for easy usability.

Although planners are trying to include essential components while redesigning streets, it is important to have an overall plan so that planning can take place in a coordinated manner.

There is also a need to understand current demands of users and provide solutions that will take care of user needs in future ensured by forecasting future trends.

## 5. TECHNOLOGY ADVANCES

With coming up of technological advances, new and integrated street furniture can be developed which were either not required in past or wasn't possible because of technological constraints. These furniture in integration with minimum energy consuming utilities will help in development of efficient streets. Smart travel services facilitating sustainable travel patterns and environmental monitoring techniques together will contribute in designing streets that are at par with requirements.

Analysis of future street strategies and their applicability in Delhi are as under:

**Table 1: Future Street Strategies.**

S. No	Future Street Strategies	Applicability in Delhi
01.	Multi modal integration of transportation	1. Easy Identification & access to public, 2. A smart travel service 3. Multi Modal Interchanges
02.	Smart Apps	1. Integrated smart apps for street networking, safety and utility 2. Parking space availability
03.	Safety	1. Integrated CCTV's 2. Multifunctional street 3. Balancing the user need with a self-regulating environment 4. Compact interconnected layout
04.	Street Management	1. Creation of walkable, cycleable and public transport oriented communities, 2. Signage and line marking for self-guided regulations

05.	Aesthetics	1. Planned transition zones 2. Gateways demarcate the movement from one area to another, also they help in traffic calming 3. Sensible streetscapes considering building height to street width
06.	Universal Accessibility	1. Compact and connected neighbourhood with emphasis on street pattern ensure compact development.

## REFERENCES

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