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Examining the Influence of Surrounding on the use of Space Under the Flyover

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Abstract—this research study investigates the utilization of spaces beneath flyovers, focusing on their role in urban environments. Flyovers, often perceived as urban infrastructure that primarily serves as transportation routes, offer underutilized spaces that hold untapped potential for various purposes. The research aims to understand how these spaces can be optimally used to address urban challenges, enhance community well-being, and contribute to the overall livability of cities.

The study employs a multi-disciplinary approach, combining urban planning, architectural design, and sociological analysis to assess the current state of under-flyover spaces. It examines case studies from diverse urban contexts, considering factors such as accessibility, safety, aesthetics, and community engagement. Additionally, the research evaluates the benefits and challenges associated with converting these spaces into parks, recreational areas, markets, art installations, or social gathering spots.

Through observation mapping, data collection, surveys, and interviews, this research intends to provide insights into the attitudes of local communities, urban planners, and policymakers regarding the transformation of under-flyover spaces. The findings will help inform future urban planning decisions and foster innovative approaches for maximizing the potential of these often-neglected areas in our cities.

Ultimately, this research seeks to contribute to the ongoing dialogue on urban development and the importance of reimagining spaces under flyovers for more inclusive, vibrant, and sustainable urban environments.

Keywords—Urbanism, Development, Land use, spatial planning, creative.

I. INTRODUCTION

The challenges of growing population, urbanisation have increased the related transport, the need of vehicles and relatively increasing the demand of overpasses and underpasses in recent years in the city of Pune. While designing the flyovers a new space gets created which is generally considered as of no use or such spaces attract encroachments or else gets converted into parking spaces or dump yards. This spaces have a greater potential to be called as residual spaces. Such spaces can become places of greater social and community values if treated properly. This study focuses on finding creative use of such spaces in the city of Pune. This study includes documentation of such spaces. This study deals with character of space, the function it is serving and the quality it has achieved for finding positive usage. The study aims to provide design guidelines about positive usage of such spaces while designing the flyovers.

II. OBJECTIVES

1) To identify the typology of the flyovers and the spaces below.
2) To examine the activities happening under the flyover.
3) Identifying the reason for the occurrence of specific activity (due to surroundings or physical characteristics).
4) What is the influence of surrounding over the space?

III. LITERATURE REVIEW AND RESEARCH GAP

The space under flyovers is always considered as negative space. Which attracts encroachments/become dump yards. Flyovers divide the community in the surrounds into two parts. It should be avoided while planning on city level. Instead of solving problems, flyovers add to the existing problems.

A study by Kim G. (2016) explored the ecological and social potential of urban vacant land. The research emphasized that such spaces, often disregarded in urban planning, can contribute significantly to green infrastructure, offering services like storm water retention, air purification, and community gardening (Kim G. 2016)[1]. A study by Dipti Shukla (2013) explored the classification and reinterpretation of residual spaces within the cityscape. Her work argued that these spaces, often seen as undefined or leftover due to poor planning, could instead be reclaimed as meaningful public spaces (Dipti Shukla 2013) [2]. A study by Ayudya and Anggiani (2021) explored the typology, usage, and impact of residual spaces in the dense commercial zones of South Jakarta. The research identified common forms of residual spaces—such as those under flyovers and between buildings—and analyzed how informal community activities adapt to these environments (Ayudya and Anggiani 2021) [3]. A study by Abubakr, El Fayoumi, and Elshater (2022) explored the transformation of lost spaces under flyovers into usable public areas in Cairo. By using qualitative data from maps, surveys, and user interviews, the authors highlighted how these spaces—if designed with local community needs and urban aesthetics in mind—can improve connectivity, social interaction, and the overall urban experience (Abubakr, El

Fayoumi, and Elshater 2022)[4]. A study by winter bottom (2000) explored how community-driven initiatives in Seattle transformed underutilized urban plots into functional public spaces. These projects, ranging from sculptural installations beneath bridges to community gardens on traffic islands, revealed that residual spaces can support recreation, environmental education, and civic identity by (Winter bottom 2000) [5].

In Pune, some flyovers have been consciously reused for gardens, bus stops, or recreational spaces. However, no comprehensive study has evaluated the success, usability, or community impact of these interventions.

Here under-flyover spaces often attract informal uses—vendors, gatherings, parking, etc.—yet little research has been done on how communities perceive, negotiate, or appropriate these spaces for their everyday needs.

IV. METHODOLOGY

Six flyovers were selected according to their different surroundings in the city of Pune. The surroundings were Industrial, commercial, mixed use, residential, transport and commercial, markets. An observational analysis was done to map the activities happening and physical characters of the selected space under the flyover. With the help of observation mapping the activities happening were plotted in the maps between the timings 10 am to 4 pm. The analysis also included semi-structured interviews of people using the space to find out how or why the people get drawn to such spaces and its relation with the surrounding.

V. DATA COLLECTION

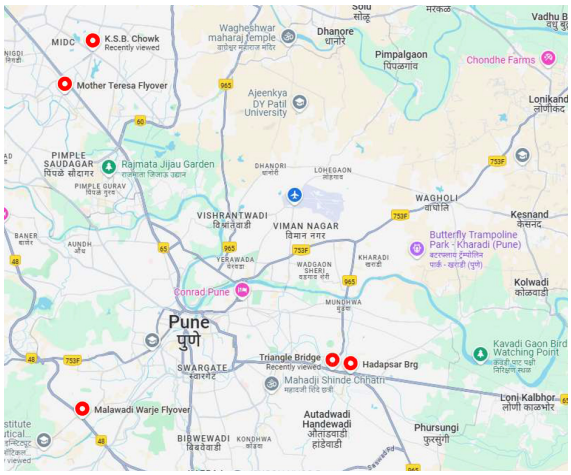

Fig. 1. *Location of flyovers chosen for observation and analysis.*

A. Pimpri-chikhli fllyover,PCMC

Fig. 2. *KSB chowk police station under Pimpri-chikhli fllyover*

Fig. 3. *Parking under Pimpri-chikhli fllyover*

Fig. 4. *Observation mapping for Pimpri-chikhli fllyover*

Here two flyovers are going parallel to each other. And the surrounding of this flyover is various automobile industries. Due to which larger vehicles such as trucks, trolleys and cars just pass by the flyover. Road junctions are critical. No public interaction takes place under the flyover. Due to the presence of industries the space is predominantly used for employee

vehicle parking, they even charge for the parking however the land is not owned by anybody. Bus terminals are developed under it for the ease in daily travelling of employees and there are some vendors around the footpath. There is much less pedestrian footfall as compared to vehicles.

B. Tri bridge flyover,Hadapsar

Fig. 5. *Informal events getting conducted under flyover*

Fig. 6. *Tri bridge fllyover*

Fig. 7. *Observation mapping for Tri bridge fllyover*

The surrounds of this flyover is very diverse as it compromises of hospitals, commercial complexes, vendors, food stalls and a garden. The space under the flyover is getting used by food vendors, rickshaw drivers, parking, newspaper stall, informal seating and leisure spaces and informal events are conducted under the flyover. In the day the space is full of hustle and bustle due to large number of vehicles and heavy pedestrian flow. However, at the dawn the space gets vacant and misused.

C. Mother teresa flyover,PCMC

Fig. 8. *Public park during construction under flyover*

Fig. 9. *Mother teresa fllyover*

Fig. 10. *Observation mapping for Mother teresa fllyover*

The surrounding of this flyover is filled with residential buildings, a railway line also crosses the area. Due to which the space get misused even in the day. The space under the flyover is designed for old aged people for yoga, small meets and some informal events. However the space is under construction due to which it not seems very safe when a person walks in so it is not getting used by anyone. The space also includes a police station, at morning there are workers which gather there for getting their work assigned.

D. Warje bridge ,Warje

Fig. 11. *Daily wagers dinning area*

Fig. 12. *Public park under flyover*

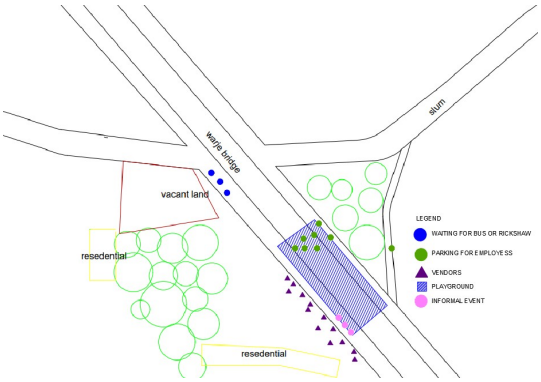

Fig. 13. *Observation mapping for Warje bridge,Warje*

The surrounds of this flyover includes a nala, food stall, commercial spaces and some low rise settlements. The space under the flyover is developed into a playground for people, it is a public space which gets used in day time and evening time by all age groups. There is also a food stall there for the daily wage workers which come and have their food daily under the flyover. Footfall always remains high in the surroundings noise level is also high due to the vehicles passing by.

E. Hadapsar bridge ,Hadapsar

Fig. 14. *Police station under hadapsar bridge*

Fig. 15. *Bus depot and passengers waiting under flyover*

The entire space below this flyover is taken by hadapsar bus depot and police station. The space is very chaotic in the daytime especially. The pedestrian footfall is much greater as compared to other flyovers. Some part of the flyover also gets used for parking of trucks. The space is occupied even at the night by the travelers so no misuse of space can be seen here. People of every age and gender come here as they feel safe.

F. Manjri bridge ,Hadapsar

Fig. 16. *Fruit and Vegetable Market*

Fig. 17. *Seasonal stalls like idols and pooja items*

The surrounds of this bridge consists of commercial complexes, small shops, showrooms, hospitals, textile market etc. The space under the flyover is developed into a daily market of vegetables, fruits, cosmetics and utensils. This place is very chaotic. No cars are allowed under the flyover. It also consists of seasonal festival market. Some areas have become dumping yards for daily waste produced by the vendors.

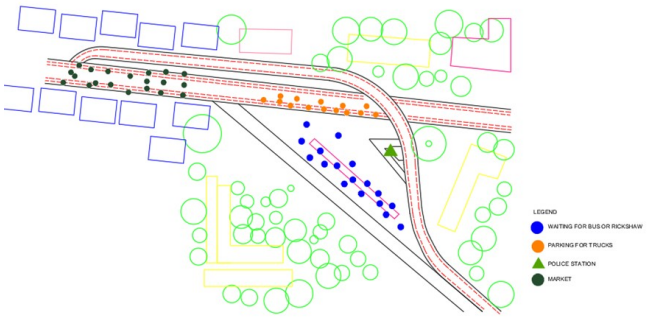

Fig. 18. *Observation mapping for Manjri-Hadapsar flyover*

VI. ANALYSIS

TABLE I. SPATIAL ANALYSIS OF AREAS UNDER THE FLYOVERS

Criteria	Flyovers		
	Pimpri-chikhli flyover	***Tri-bridge flyover***	***Warje flyover***
Surrounding	Industrial	Commercial	Mixed use
Access	Yes	Yes	Yes
Location of space	At road junction	Whole Flyover	Terminating ends of flyover
Luminance	5/5	3/5	3/5
Noise level	Medium	High	Low
Vehicular traffic	Very High	Very High	High
Activities	Employee parking Bus terminus Passengers waiting for bus Vendors	Food stalls Rikshaw Parking Newspaper stall Informal events Misused	Playground Food stalls Commercial spaces Misused

TABLE II. SPATIAL ANALYSIS OF AREAS UNDER THE FLYOVERS

Criteria	Flyovers		
	Mother Teresa flyover, PCMC	***Hadapsar Bridge,Hadapsar***	***Manjri Bridge,Hadapsar***
Surrounding	Residential	Transport	Markets
Access	No	Yes	Yes
Location of space	Below the highest point of flyover	Besides a Flyover	Below the highest point of flyover
Luminance	5/5	5/5	5/5
Noise level	No noise	High	Very High
Vehicular traffic	Low	Very High	Very High
Activities	Police station Daily wagers No use of public park	Bus depot Truck parking Commercial shops	Highly flooded Markets Food stalls

Some points can be drawn out by this research about how people get drawn towards these spaces

1) Access: The tendency of people using the space firstly depends upon does the space is easily accessible by public or not. If the space can be accessed by all age groups easily it gets used more.
2) Location: Location of If the space under the flyover is far away, is located at ignorant areas or does it is where there is greater traffic flow on the roads the space gets neglected by people. It should be at a place where there is a good pedestrian flow.
3) Noise: If the flyover is getting used by a lot of bigger vehicles and heavier traffic people there may not feel comfortable and pleasant environment due to the noise level and dust getting inside.

4) Scale: This factor have been seen controlling the light under the flyover. The more well lit the space it the more it seems safer for all people and the chances of the space getting used increases. The places at the corners of flyover has been seen getting misused by people as they were dark.

5) Surrounding: Surrounding, from what areas the flyover is getting passed changes the entire scenario of the space. For the sake of use of space under the flyover it gets designed as a public space. But in the analysis it has been seen that if the surroundings are not really studied before planning, the well-designed space also remains unused and turns into scrap. Vice a versa there are some findings which give relation between what type of surrounding attracts what type of activities such as, Industrial surrounding-Bus terminals, commercial buildings-market, and Residential spaces-parks.

VII. CONCLUSION

The study reveals that the successful utilization of space beneath flyovers is governed by a complex interplay of factors, with the surrounding context emerging as a key determinant. Accessibility is the foundational requirement—spaces that are easy to reach and navigate for people of all age groups are more likely to be used. Similarly, the location of the flyover plays a vital role; spaces that are situated in neglected or low-traffic pedestrian zones often fail to attract users, regardless of design interventions. Noise levels, especially from heavy traffic and large vehicles, further influence the comfort and desirability of these spaces, often deterring people from spending time in them.

Another important aspect is the scale and lighting of the space. Well-lit areas are perceived as safer and more inviting, whereas poorly lit corners, particularly at the ends of flyovers, tend to become zones of misuse or neglect. However, it is the nature of the surroundings that fundamentally shapes the identity and function of the space. The study shows a clear correlation between the surrounding land use and the type of activities that the space under the flyover can support—industrial zones align with bus terminals or transport hubs, commercial surroundings invite market activity, while residential contexts support parks and recreational spaces.

In essence, even a well-designed space can remain underutilized if it is disconnected from its surrounding context. Conversely, when the surrounding environment is thoroughly analysed and thoughtfully integrated into the planning process, these under-flyover spaces can evolve into dynamic and meaningful parts of the urban landscape. The findings emphasize the importance of a context-sensitive approach in designing such spaces, highlighting the potential for adaptive reuse based on existing urban patterns and community needs.

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