

Neighbourhood open spaces for social cohesion

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Abstract. The global cities of the world are witnessing a visible disconnection of everyday life. In India the Smart City guidelines acknowledge the need to counter the growing social detachment and intolerance by encouraging interactions. They go further in identifying that preserving and creating of open spaces must be a key feature of comprehensive urban development. Most social relations are cemented within open spaces at the neighbourhood level. Previous studies examine the association between the attributes of neighbourhood open spaces and social activity but neglect to view the issue comprehensively. The present study turns to Lefebvre's Unitary Theory which states that open space is a result of three forces; 1) perceived space which is the physical dimension and material quality identifiable by the senses; 2) conceived space created by planners and other agents as plans and documents; and 3) lived space which is shaped by the values attached and images generated through user experience. For open space conducive to social interactions these three aspects must work in tandem. With this consideration a framework of criteria and indicators is developed and used to measure and compare the open spaces in select neighbourhoods in Europe and India. The investigation thus reveals differences in all three aspects of neighbourhood spaces. It also reveals a discrepancy between the planning standards formulated and employed by the city authorities in providing the spaces and the actual needs of the community. The research aims to address this gap. The study of the Indian cases lays foundation for the use of the framework to measure open spaces in association with social cohesion and thereby contribute to the enhancement of the social infrastructure of the City.

1 Introduction

Forrest and Kearns [1] acknowledge that the rapid and unplanned urbanization during the first half of the twentieth century produced social order in which the traditional ties of community were replaced by anonymity, individualism and competition. At the same time the literature of the late 1900s was filled with laments over the loss of convivial public spaces. Salama and Ghraib [2] emphasise that traditionally cities or urban spaces were able to evolve over a period of time to accommodate a diversity of activities and provide a variety of experiences. Modern cities face the challenge of providing these qualities to accommodate the sudden increase in social diversity. Legeby and Marcus [3] support the idea that sharing public space and everyday activities is a crucial prerequisite for promoting integration and fostering tolerance in society [4]. Chen et al [5] identify that the important factors effecting the use of an open space are its attributes, users attributes and the distance between the space and the users. Though these links have been established there is still a gap put forward by Constant [6] who observes the growing discrepancy between the standards applied in allocating urban space and the real needs of the community.

In a learning of social cohesion, it is useful to consider the concept of 'neighborhood' as it is defined in urban sociology as a starting point in a discussion of social relations within a spatially bounded area [7]. The study thus aims to identify a process that can aid in the designing and planning of neighborhood spaces for a vibrant social life and increased social interaction.

The study is divided into three parts. The first part is an understanding of neighborhood open spaces and their relationship with social cohesion. A learning of the categorization of neighborhood open spaces is made. The

research then moves towards an exploration of selected spatial theories that relate neighborhood open spaces to social cohesion. This is undertaken in order to reveal criteria for study of the said spaces. The second part uses a case study method to formulate indicators to measure neighborhood open spaces for social cohesion. The third part of the study compares the neighborhood open spaces in Indian context with relation to social cohesion. A framework is thereby developed for the study.

2 Neighbourhood Open Spaces

Open space is a broad term that can be used to describe all land that does not contain buildings and structures [8]. Though a major part of the neighborhood consists of residential area which is supported by commercial, institutional and other built-up land uses, an important component consists of open space. Chen et al [5] establish the benefits of the neighborhood open space in providing opportunities for children's play, passive and active recreation for all age groups, education, improving physical health, increased economic value, crop production and for community and cultural activities. Without a space conducive to social life, community relations cannot prosper and grow [9].

2.1 Categorization:

The Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines [10] categorizes urban open spaces into three types: i) Recreational space; ii) Organized green; iii) Other common open spaces (such as vacant lands, open spaces including flood plains, forest cover, etc.). It establishes a hierarchy of spaces for different levels of city use including neighborhood. This physical categorization fails to integrate the social activities that are to be performed in these spaces. Stanley & Stark [11] delineate seven major

types of open space according to form and function: (1) food production areas; (2) parks and gardens; (3) recreational space; (4) plazas; (5) streets; (6) transport facilities; and (7) incidental space. Each type is further categorized by a spatial scale from city-wide to intermediate (neighborhood level) to individual buildings. The spaces are also differentiated into green spaces (which contain vegetated land, water or geological feature) and grey spaces (which are civic-oriented). The present study focuses on the intermediate (neighborhood) space.

2.2 Social Cohesion:

Forrest & Kearns [1] affirm that social cohesion is the need for a shared sense of morality and common purpose; a social order that specifies the level of social interaction within communities or families; and a sense of belonging to place. For neighbourhood, it is the concept of ‘nearness’ both as physical and social proximity that is central to social cohesion. The spatial layout of a neighbourhood can influence physical proximity which may in turn affect the relationship between potential contacts in a social network [12]. Gri [13] notes that neighbourhood public spaces play a crucial role in facilitating community interaction through which experiences are shared and identities and values of different cultures are celebrated.

2.3 Measurement:

The selected theories that aim to decipher the complex relationship between space and society and provide a framework for the analysis of neighbourhood public spaces and social activities are i) Structuration theory of Anthony Giddens[14]; ii)Space Syntax Theory of Bill Hillier and Julian Henson [15];and iii) Unitary Theory of Henri Lefebvre [16]. In the Structuration Theory Giddens uses the daily route followed by people as a means of analyzing urban open space. He neglects the perception of the users and the claims by governing bodies. The Syntax Theory relates space formation with daily use and to cognitive response by the people but fails to address the limitations imposed by governance and the possibilities imagined by planners.

The Unitary Theory is able to unite the three forces responsible for the formation of open space, the physical dimensions of the space, the mental picture created by planners and regulators and the meaning given to the space by its users. It thus forms the basis for the study of neighbourhood open spaces for social cohesion.

2.4 Unitary Theory of Production

In his book ‘The Production of Space’, Lefebvre [16] finds that presently public spaces are mass produced like a product. People’s activities and behavior within these public open spaces are regulated through political and economic forces. According to Weinert [17] real social change can only be brought about if people are given the power over space so that they can create, appropriate and play with it. Lefebvre suggests the Unitary Theory, seeking to unify the three fields of space:

2.4.1 Perceived Space (First Space):

It is associated with spatial practise of a society which through time and dynamic interaction, produces space and

appropriates it. This is revealed by close relationship between urban reality and daily life.

2.4.2 Conceived Space (Second Space):

It is the space imagined and created by scientists, planners, urbanists, technocratic sub-dividers and social engineers. Weinert [17] refers to it as the administrating space that supports the modes of governance by the state. It presently dominates the production of open space.

2.4.3 Lived Space (Third Space):

It is the social space where people live their everyday lives and interact. It may be expressed in terms of how people interpret the space and give “meaning” to it, and how such meaning helps develop a sense of community or place[18].Table 1 lists the criteria for each space based on the understanding.

Table 1 Understanding of Criteria for Production Of Open Space Adapted From [16]

SPACE	CRITERIA	UNDERSTANDING
PERCEIVED	Daily Routine	Activities that conform with official representation of space
	Urban Reality	Physical dimensions & materials
CONCEIVED	Concepts	Intellectualized official conception of urban areas for administrative and property development
	Codes	Rules of how, when, where and who can use the space
LIVED	Experiences	Meanings and values attached to the space by the user
	Images & Symbols	Artistic vision of the space

2.5 Indicators and Tools for Measurement

The formulated criteria are applied in the study of neighbourhood open spaces with a view of evaluating social cohesion. Two works are studied to appreciate the indicators and methods used for spatial analysis under the triad propounded by the Unitary Theory: i) a post occupancy evaluation of the public open spaces of MediaCityUK., U.K. by Gorska & Materna [19] and ii) an examination of open spaces of Jattavagen, Norway by Griffith [20].

2.5.1 Mediacityuk, Manchester, United Kingdom:

Located in the Salford Quays, it is a former abandoned dockland which is part of a significant urban regeneration program started in 1985 under the Salford Quays Development Plan [19]. The provisioned open spaces consists of i) the Piazza; ii) the terraced Waterfront Area; and iii) the Park (Fig. 1).

2.5.2 Jattavagen, Stavanger, Norway:

Another abandoned docking area and construction site, it was ear marked for redevelopment as a new urban district with commercial and residential space. The latest master-plan for the area is a result of merging three different winner-entries in the international competition held in the year 2000. The considered public spaces are: i) Central park; ii) Central Plaza; iii) Axial Promenade; iv) Waterfront Park (Fig. 1).The listed indicators from the two chosen case studies are adapted in a framework developed to study open spaces in Indian neighbourhoods.

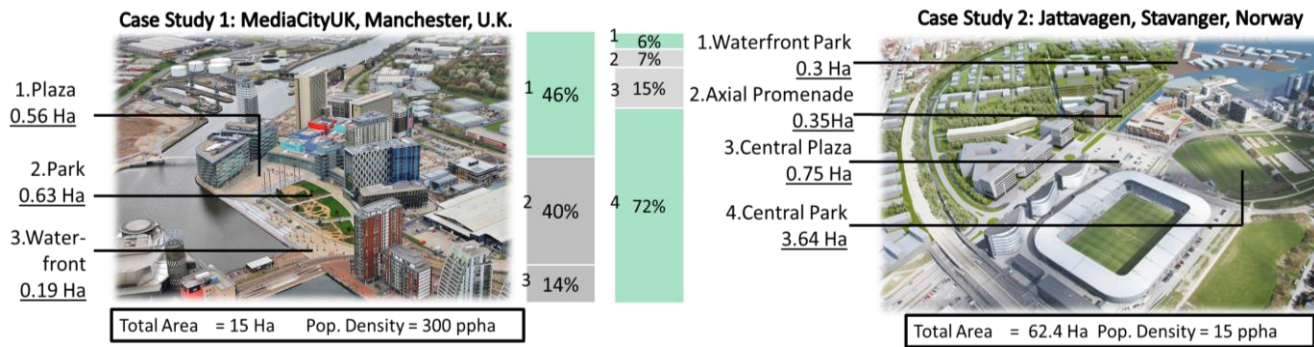


Fig. 1 Open Spaces in the chosen European neighborhoods

Table 2 Indicators, methods/ tools used to study Open Spaces in MediaCityUK and Jattavagen using Unitary Theory

Space	Criteria	MediaCityUK, UK		Jattavagen, Norway	
		Indicator	Method & Tool	Indicator	Method & Tool
PERCEIVED	Urban Reality			Building Height Building Type Surface materials	Typo morphological Analysis Land cover analysis
	Daily Routine	Intended Use – activity i) Sedentary ii) Walking iii) Vigorous	System for Observing Plan and Recreation in Communities (SOPARC)	Intended Use	Landscape features analysis- listing of site amenities
		Purpose of visit	Intercept survey	Connectivity	Accessibility analysis – i) Vehicular access points ii) Pedestrian access points
		Main purpose of using space			
		Relation to NH			
		Frequency of visits			
		Mode of transport			
Popularity					
CONCEIVED	Concepts	Planner’s Ideas	Professional Interviews	Competition Document	Document analysis: i) Urban Development in Stavanger: An Open Norwegian City Planning Competition 2000
	Codes	Plans	Document analysis: Local Zoning plans	Plan	Document analysis: i) Site and Landscape Analysis (Department of Culture and City Development (DCUD), 1999; ii) Municipal DP (DCUD), 2001
LIVED	Experiences	Gehl’s 12 quality criteria	On-site observation	Social Demographics	Survey
		Emotion experienced	Perception study- Questionnaire survey of users	Architectural Features of Home	
		Level of satisfaction		Transit Modality	Behaviour Observations
		Willingness to participate in design process		NH Perception	Qualitative interviews
	Images & Symbols			Art	Artist’s illustrations in DUCD (2001)

3 Indian Neighbourhood Open Spaces

Three Indian neighbourhoods are selected for comparison using the developed framework. The first, Jethabhai ni Pol [NH (A)] is a historic area within the city of Ahmedabad where open space has been perceived through a long period of time since the middle ages. The other two selected neighbourhoods [NH(B) and NH(C)] are a part of Aranya Low Cost Housing in Indore designed by Architect B.V.Doshi based on his study of traditional settlements of the sub-continent [21].

The Unitary Theory is used to create a complete picture of how spaces are conceived by the mental forces of planners and institutions, perceived through the spatial practise of the users and lived through everyday experiences. By comparing the neighbourhoods the study intends to weigh the difference in

production of the open spaces and its impact on social cohesion.

3.5 Jethabahi Ni Pol, Ahmedabad [NH(A)]

A *pol* is a residential neighbourhood with well-defined boundaries [22]. The boundaries defined the area of jurisdiction, binding the families together under set rules and regulations and thereby creating a sense of belongingness among its inhabitants. The common structure of the *pol* consists of a gated community of densely packed row houses looking inward onto narrow winding streets that usually lead to a dead end. The back of the houses on the outer edges form a blank wall onto the exterior. The neighbourhood open spaces can be hierarchized according to their openness to the rest of neighbourhood into: i) The outer chowk (O); ii) the

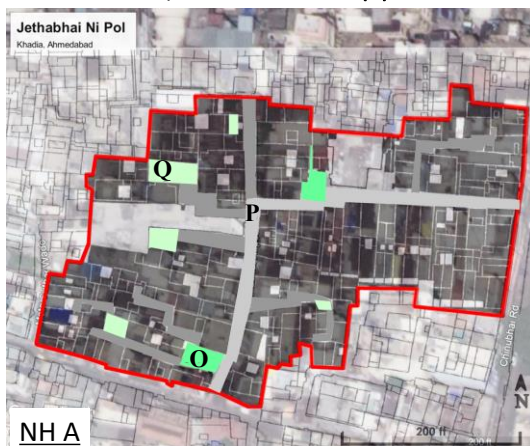
street space (P); and iii) the inner chowk (Q) (**Error! Reference source not found.**)

3.2 Aranya Low Cost Housing, Vijay Nagar, Indore [NH(B) & NH(C)]

In an attempt to address the problem of acute housing shortage, the Indore Development Authority and the Housing and Urban Development Corporation commissioned Aranya in 1981[21]. The Vastu Shilpa Foundation for Studies and Research in Environment Design under architect B.V. Doshi was entrusted with the task. The present research separates

two neighbourhoods within the housing settlement for the purpose of study. The neighbourhood, NH(B) consists of the first demonstration houses that were built by the Vastu Shilpa Foundation. The second neighbourhood, NH(C) consists of a designed housing scheme along one of the large streets that runs through the site. In NH(B), the neighbourhood open spaces include i) street (R); ii) chowks (S) formed on street R; iii) courtyard at cluster level (T); and in NH(C) the open space is restricted to the street (X) (**Error! Reference source not found.**)

Jethabhai ni Pol, Ahmedabad – NH (A)



Neighborhood	Open Spaces NOS	Area (sqm.)
NH A		
O	Outer Chowk	87
P	Street	295
Q	Inner Chowk	47
NH B		
R	Street	1019
S	Chowk	323
T	Cluster space	98
NH C		
X	Street	875

Aranya Low Cost Housing, Indore- NH(B) & NH(C)



Figure 2 Open Spaces in chosen Indian neighborhoods (NH) of Jethabhai ni Pol, Ahmedabad and Aranya Low Cost Housing, Indore

4 Analysis

4.1 Comparison of open spaces in Europe and India:

It is found that that in neighbourhoods in the western counterparts, large open spaces provided with various amenities are more conducive to social interactions. In both the chosen case studies the spaces are disconnected from the buildings around them and are thus used only for their conceived functions. Neighbourhoods are provided with grey spaces in form of plazas and promenades or green spaces in

form of gardens and parks. The open spaces in Indian neighbourhoods differ in their scale and function. Most are incidental spaces created by the opening of the built form onto the open space in a series of transition spaces such as *otla* or balcony. As in NH(A) and NH(B), these open space are extensions of the inside space of the surrounding houses and are used to live daily lives through a variety of activities such as reading the newspaper or washing clothes. Social interaction is poor in neighbourhoods where this connection is not established as seen in NH(C).

Table 3 Comparison of Neighbourhood Open Spaces in European and Indian Neighbourhoods

Neighbourhood	PERCEIVED	CONCEIVED	LIVED
MediaCityUK; U.K. Jattavagen; Norway	The residents use the spaces within their conformed functions within restricted time	Provision is made for either grey spaces in form of plazas and promenades or green spaces in form of gardens and parks. The open spaces are well defined large expanses.	The residents seek openness and surveillance for feeling of security. Protection from climate is not a big concern
NH A, B & C; India	The residents carry out their daily lives in the provided space as an extension to their homes	The spaces are grey/green incidental spaces or small plazas interconnected to each other and small in scale as compared to those in the west	The spaces are secured by the presence of 'eyes on the street'. The surrounding houses that provide shade from the sun and rain

4.2 Comparative study of Indian neighbourhoods:

The neighbourhoods are studied and compared (Table 4) in terms of perceived and lived space using a three point scale (1 Table 5). This is based on the researcher's perception.

4.2.1 NH(A): The open spaces are a product of social relationships that have developed through time helped by presence of well-articulated public space. The arrangement of spaces is responsive to the climate making them comfortable and pleasurable for the users. The private spaces of the surrounding houses extend through the transitional spaces of the *otlas* to the public open spaces creating a feeling of security and enhancing the sense of place.

4.2.2 NH(B): It is planned on the same lines as NH(A) and works well for social interaction. Daily chores and special functions provide ample opportunities to fraternize with neighbours[21]. The open spaces are safe and quite comfortable. The perceived space is strong but there are deficiencies in lived space due to the lower quality of experience provided to the user.

4.2.3 NH(C): The open space lacks opportunities for social interaction. It is unsupported by the built environment causing it to remain unutilized. The study shows that both perceived and lived space have been neglected while conceiving the open space here.

Table 4 Comparison of Perceived and Lived Spaces in the selected Indian neighbourhoods¹

Criteria	Indicator	Requirements	Findings				
			NH A	NH B	NH C		
PERCEIVED SPACE							
Urban Reality	Land use	3	Surrounded by land uses that contribute to social interactions at all times of day	Largely residential with presence of institutional, commercial and mixed use	Residential colony has evolved into mixed used	Residential area	2
		2	> Half surrounding land uses contribute to social interactions at all times of day				
		1	Surrounded by land uses that do not contribute to interactions				
	Building height	3	Provides shade and sense of enclosure	Two to four floor buildings provide shade and sense of enclosure	Unbuilt to two storey houses leave parts of the open spaces unshaded	Two storey houses with compound wall provides no shade	1
		2	Provides shade to only periphery and/or lacks sense of enclosure				
		1	Does not provide shade nor sense of enclosure				
	Building type	3	Presence of transition spaces such as balconies & porches that connects to open space	Incidental open and semi-open spaces present along street, including the <i>otla</i> -the entrance of the house	Incidental spaces along inner streets & platforms in front of houses extending into the chowk.	Compound walls prevent connection to open space	1
		2	Absence of same level transition spaces				
		1	Absence of connections to OS				
	Surface materials	3	Well maintained flooring conducive to walking and regulated speed of vehicular traffic	Kota stone road surface regulates speed and is comfortable for walking	Granite cobble stone surface discourage vehicles.	Tarred road not meant for pedestrian use	1
		2	Unmaintained or unsegregated pedestrian space				
		1	Rough/unmaintained flooring difficult to walk on and no segregation from vehicular traffic				
Daily Routine	Intended use	3	Inclusive to all groups of people	Used by all	Used by all	Not used	1
		2	Restricted to certain group of people				
		1	Intended only for commercial/ transport use				
	User activity	3	Used for variety of activities throughout the day	Commercial and household activities, children's play area	Commercial and household activities, children's play area	Vehicular traffic and hawkers	1
		2	Restricted to less than two activities/ deserted at certain times				
		1	Used only as passage between two points				
Accessibility	3	Pedestrian only space accessible within 10 min walk from all points in NH	Easily accessible. Inner chowks are pedestrian only spaces. But no footpaths along street.	Dead end streets provide pedestrian only spaces. Vehicular traffic is separated in chowks	No traffic segregation	1	
	2	Pedestrian friendly with light segregated traffic accessible in <10 min walk from all points					
	1	Heavy trafficked space not used by pedestrians					
LIVED SPACE							
Protection	Protection against traffic & accidents	3	Closed to the vehicular traffic	Slow moving traffic on streets and pedestrian only inner chowks	Dead end inner streets restrict traffic. Segregated traffic in chowks	High moving vehicular traffic	1
		2	Has slow moving traffic and predominantly pedestrian traffic				
		1	Has high moving vehicular traffic that dominates pedestrian traffic				
	Protection against crime & violence	3	All parts within sight of eyes on the street	Balconies allow residents to keep watch from above	Presence of unbuilt spaces leave blind spots	Unsupervised at all times	1
		2	Presence of periphery spaces which are not within observation				
		1	Remains unsupervised at all times				
Protection against unpleasant sense experiences	3	Places to hide both from rain and sun	<i>Otlas</i> provide protection from rain and projecting balconies give shade	Low height houses leave larger chowks unshaded	No protection from rain and sun	1	
	2	Places only to hide from rain but no protection from sun					
	1	No places to hide both from rain and sun					
Comfort	Possibilities for walking	3	Maintained surface for walking distinct from vehicular traffic	Inner paths leading to smaller chowks are pedestrian only spaces	Chowks divided into concreted vehicular area & rest in terracotta tiles.	No pedestrian path	1
		2	Presence of uneven surfaces and intrusion by vehicular traffic				
		1	No distinct space for pedestrians				
	Possibilities for standing /staying	3	Provides interests and opportunities to stand and stay	Presence of transitional spaces and pedestrian only chowks	Presence of transitional spaces and pedestrian only area	No possibility for standing/ staying	1
		2	Provides standing spaces but no interest to make people stay				
		1	Creates only possibilities for walking				
	Possibilities for sitting	3	Various possibilities to sit comfortably	Incidental seating arrangements along the street	Work platforms in chowks and <i>otla</i> spaces along street	No possibility for sitting	1
		2	Sitting spaces present but not comfortable				
		1	No possibilities for sitting				
	Possibilities to see	3	Well lit	Certain dark spots on inner paths	Presence of unlit spots at centre of chowk	Poor lighting	1
		2	Lit, however the lighting creates an effect of a glare				
		1	Not lit				
Possibilities for hearing/ talking	3	Affected by noise <60 dB	Restricted traffic keeps noise down	Restricted traffic keeps noise down	Traffic causes loud noise	1	
	2	Affected by noise 60 - 80 dB					
	1	Affected by noise >80 dB					
Possibilities for play/ activities	3	Provides a permanent possibility for playing or other activities	Safe areas for children to play	Safe areas for children to play	No safe area for children to play	1	
	2	Provides a temporary possibility for playing or other activities					
	1	Does not provide any possibility for playing or other activities					

Employment	Scale	3	Low buildings, vibrant urban OS	Low to middle height buildings that are highly permeable	3	Low buildings with connection to open space	3	Low buildings but no connection to OS	2	
		2	Middle-high buildings, semi-vibrant urban OS							
		1	High buildings, not a vibrant urban OS							
	Possibilities for enjoying positive aspects of climate	3	Possibility to be shaded from the sun and rain	Balcony projections and same level transitional spaces provide shade	3	3	Balcony projections and same level transitional spaces provide shade	3	No possibility to be shaded from sun and rain	1
		2	Shaded from rain and sun but no possibility of enjoying rain							
		1	No possibility to be shaded from sun and rain							
	Aesthetic quality/ positive sense experiences	3	Use of natural material and greenery	Use of natural materials and preserving of heritage buildings	3	3	Use of natural materials and colors. Trees in chowks	3	Lack of natural material and greenery	1
		2	Use of natural material or greenery							
		1	Lack of natural material and greenery							

¹ Table 5 Scale description for observed data

3	2	1
Good	Average	Poor

In Table 4 the identified criteria (Table 1) are adapted for Indian conditions. From the understanding gained in Table 4 it is found that users in India lay more emphasis on i) climate protection, ii) connection of surrounding houses to the open space, and iii) security through eyes on street, These indicators are thus included.

Values for perceived and lived space generated in Table 4 are compared in Fig. 3. This provides an understanding of the suitability of the open spaces in the neighbourhoods for social cohesion.

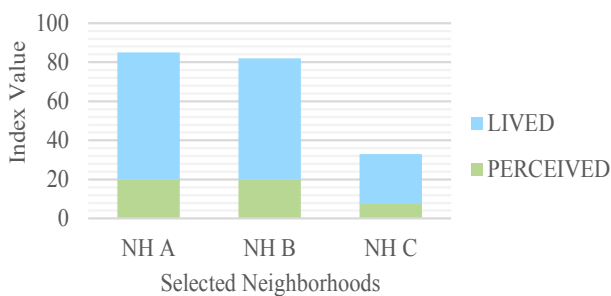


Fig. 3 Comparative index values of NH (A), (B) & (C)

5 Conclusion

Through a comparison of case studies it is understood that neighbourhood open spaces are produced by forces termed by Henri Lefebvre as perceived, conceived and lived.

The neighbourhood open spaces seen in the case studies from U.K. and Norway differ from those seen in Indian neighbourhoods in all three dimensions of space. The comparison of the Indian neighbourhood open spaces reveals that the Ahmedabad *pol* NH(A) provides the most suitable spaces for social cohesion. The first neighbourhood considered in Aranya NH(B) also provides conducive open spaces but the second neighbourhood NH(C) fairs poorly. This concludes that the neighbourhood open space needs to be planned, designed and constructed in coordination to provide positive experiences to the users.

The Unitary Theory is used to develop a framework for the study of neighbourhood spaces. The criteria for study are derived from case studies and indicators are identified for each. A three point scale is developed for the measurement of these indicators. Smart Cities provide opportunity for better data collection and people's participation through technology advances. This can be used to produce neighbourhood open spaces through proper coordination between the three spaces that will create opportunities for social interactions.

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