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Role of Interactive Spaces as Social Binding Agent and its Degree of Influence in Residential Cluster Development

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***Abstract*— Most of the housing projects made by state government sector are inclusive of various types of interactive spaces where these spaces have planned and unplanned interactive areas. These spaces are sound and vibrant in a community. This study aims to analyze the role of interactive space as a social binding agent in the housing community. This paper is about different forms, elements of interactive space in the residential complex of the state government sector, and their degree of influence that enhances the social aspects in the police quarters in the context of Tamil Nadu. The study mainly concentrates on the change and difference in space that acts as a social binding agent in people's daily livelihood. The qualitative method and case study method of research are adopted. The purpose of the study is to understand the importance of interactive spaces that behave as a relative component between the built environment and the social environment. These spaces have various elements together form these spaces. According to the differing time age usage, these spaces express various vibrant forms as active and inactive spaces with different components and degrees of influence on place and activity**

Keywords - ***Housing, Group housing, Government quarters, Interactive spaces.***

I. INTRODUCTION

In a world of increasing population and rapid urbanization, metropolitan cities create a demand for housing both in the public and private sectors. The need and demand for housing are satisfied with many group housing projects by both government and private sectors. On the goal of providing housing and creating housing communities, there is a decrease in providing natural interactive space and socialization in group housing and cluster housing both in the public and private sectors. On the basis of this point of decreasing places for socialization, the study was made on interactive spaces and their characteristics.

II. BACKGROUND STUDIES

A. Group Housing

Group Housing It is a building constructed with multiple floors which have more than one dwelling unit on every floor and they share the common service facilities. To accommodate a larger section of people in a particular area, Group Housing Concept projects are developed so that the demand for housing can be met. Group Housing is a new term in real estate would be unfair but yes with the popularity of apartments, townships, penthouses etc. on the rise, group housing is a less used term in common parlance. The reason is that people want privacy and group housing meets your basic need of shelter but without giving you the comforts of amenities which you can call your own. The residential projects under this category are built on the land parcel of 10-25 acres and depending on the data released by urban planners regarding the population density of a particular area, the approving authority of the state sanctions the land for the development of Group Housing in India Projects. Group housing projects were initially built by welfare housing organizations like Indian Railways, but now DLF, India Bulls etc. have started venturing into these housing projects as well.Population density of a particular area is the foremost governing factor behind the development of group housing because higher is the density, the availability of basic amenities for the masses will be a challenge and thus creeps in the idea of developing group houses. Thus, while Group Housing Architecture gives you the luxury of living in an independent home, it takes away the comforts of being independent. [1]

B. Cluster housing

Cluster housing refers to a development in which homes are situated in groupings relatively close together, while larger areas of open space within the development form a buffer with adjacent land uses. Often this is accomplished through small individual lots, with the remainder of the land becoming common ground. [2]

C. Interactive spaces

These are spaces were interaction between people happen in terms of activities , daily life style etc., with various sector of people of various age groups. The interactive spaces are also known in various terminologies such as neighbourhood spaces ,public space, community space, recreational space, open space etc., were all these spaces leads to the interaction between people. spaces in a residential development are unbuilt, open or semiopen

areas, which are in consonance with built areas that serve as facilities for interaction, community bonding, and other supporting activities.
Having a diverse nomenclature in varied contexts, they are indispensable yet often neglected and designated as leftovers of the built form that constitutes major living areas. Numerous scholars have emphasized that these neighbourhood spaces are crucial for the holistic development and overall comfort of residents. In the Indian context, these spaces are important because socially active, sometimes intrusive communities have lived, prayed, celebrated, and mourned together for years in an informal space arrangement of spaces. [3]

D. Pattern of interactive space

Cluster On the basis of interactive space the hierarchy of space and the connection between these spaces involves the type of interaction among people. According to the accessibility the space is hierarchy of the following category such as Public, Semi Public, Private and semi-private spaces.

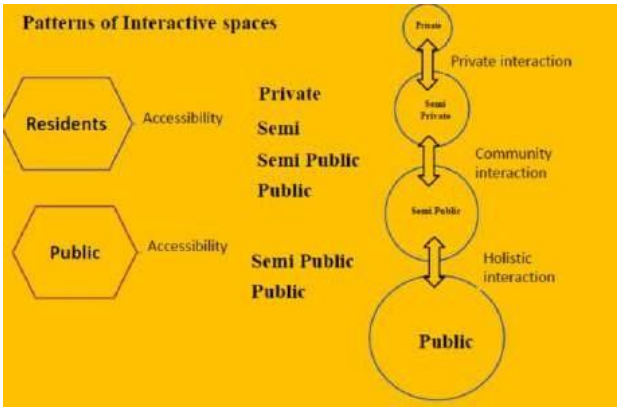

Fig 1 : Patterns of Interactive spaces (author)

III. CONSIDERATIONS FOR CASE STUDIES

"Outdoors, people always try to find a spot where they can have their backs protected, looking out toward some larger opening, beyond the space immediately in front of them" [4]

"Cars are dangerous to pedestrians; yet activities occur just where cars and pedestrians meet" [4]

"Just as it has been noted that automobile traffic tends to develop concurrently with the building of new roads, all experience to date with regard to human activities in cities and in proximity to residences seems to indicate that where a better physical framework is created, outdoor activities tend to grow in number, duration, and scope."[5]

"At the small scale – in the design of the outdoor spaces and adjacent facades – it is necessary to work with detailed and careful planning of the elements that generate and support life between buildings. Individual functions and activities should be evaluated on a case-by-case basis and allotted street frontage in accordance with their value as attractions and their importance for the functioning of the outdoor space. Based on the individual person's limited radius of action and modest sensory range, the design of each foot of street or facade and each square foot of space is of utmost importance." [5]

"When walking routes pass between buildings the street sections should be dimensioned in proportion to the number of prospective users, so that pedestrians move in an intimate, clearly denied space and do not "drift about" in a large, half-empty area. When some sections of the route are narrow, it is also easier to create worthwhile spatial contrasts. If the streets are 3 meters (10 ft.) wide, a 20-meter-wide (65-ft.) space will, in contrast, appear to be a square." [5]

"Hierarchical organization of residential area with clearly marked transitions between private and shared spaces. (From Oscar Newman, Defensible Space [41].)
A clear definition of borders is an important step in clarifying internal organization and solving local problems.
Clearly delineated entrances to housing groups (Byker, Newcastle upon Tyne.)" [5]

"The dappled background at the edge of the forest, under overhanging treetops, offers another quality desirable for stationary activities – the opportunity to be partly hidden in half shade while at the same time having a fine view of the space. Colonnades, awnings, and sunshades along the facades in city spaces provide comparably attractive possibilities for people to linger and to observe while remaining unobserved. For residences, niches in the facades, recessed entrances, porches, verandas, and plantings in the front yards serve the same purpose.
Protection is provided, but there is still a good view." [5]

"Life between buildings is discussed here because the extent and character of outdoor activities are greatly influenced by physical planning. Just as it is possible through choice of materials and colours to create a certain palette in a city, it is equally possible through planning decisions to influence patterns of activities, to create better or worse conditions for outdoor events, and to create lively or lifeless cities." [5]

"Pedestrian traffic is quite sensitive to pavement and surface conditions. Cobblestones, sand, loose gravel, and an uneven ground surface are in most cases unsuitable, especially for those who have walking difficulties.
Adverse surface conditions can also have a negative influence on pedestrian travel in general. People avoid wet and slippery pavements, water, snow, and slush whenever possible. Those with walking problems are particularly inconvenienced under
Such circumstances." [5]

"The opposite extreme is represented by the many paths placed in so called green belts in residential areas, which are located in the middle of the spaces, so that there are arbitrary little strips of "landscape" on each side."
"Establishing residential areas so that there is a graduation of outdoor spaces with semi-public, intimate, and familiar

spaces nearest the residence also makes it possible to know the people in the area better, and the experience of outdoor spaces as belonging to the residential area results in a greater degree of surveillance and collective responsibility for this public space and its residences. The public spaces become part of the residential territories and sense of belonging." [5]

"Also for interest tight spaces should be contrasted with the larger open areas. Contrast is a basic principle in medium density design; that is, making each area identifiable" [6]

"The spatial quality of each area, be it large or small, low or high, wide or narrow, has discernible characteristics relatable to feelings and reactions of human beings. The most important aspect creating the feeling of intimacy, protection, and security, as well as the definition of the residents' territorial boundary, is the degree of spatial enclosure and openness. It should neither be completely loose nor rigidly enclosed. The space should only be partially enclosed with paths or with some leading to other areas."[7]

"Proportion refers to mathematical relationships among the real dimensions of a form or space whereas scale refers to how we perceive the size of a building element or space relative to other forms" [8]

"Lynch and Hack, in their book Site Planning, mentioned that an external enclosure is most comfortable when its walls are one half or one third as high as the width of enclosed space, whereas the space ceases to be enclosed if the ratio falls below one fourth" (Lynch and Hack, 1984).[9]

"In areas with tropical climates, heat is a predominant issue, especially in outdoor areas where their location with respect to the sun, wind, and light determines the comfort levels at different times of the day and year. The semi built and un built spaces in residential environments are significant in the Indian context because the multifaceted expressions of built form in warm to hot climates open up to a varying degree of enclosures in contrast to the cold climates of the western world. As one moves out of the built form, it opens to a veranda leading to a courtyard and then a tree onto a terrace and so on to different definitions of spaces (Khan, 1987)."[10]

"The thick brick walls, brick paved streets; pedestrian ways, courtyards, balconies and terraces give overall impression of substance and shade" (Curtis, 1988). [11]

In 1970, I formed a small research group, The Street Life Project, and began looking at city spaces. At that time, direct observation had long been used for the study of people in far-off lands. It had not been used to any great extent in the U.S. city. There was much concern over urban crowding, but most of the research on the issue was done somewhere other than where it supposedly occurred. The most notable studies were of crowded animals, or of students and members of institutions responding to experimental situations— often valuable research, to be sure, but somewhat vicarious. - William H Whyte [12]

A. Methodologies For Case Study

• Questionnaire from residents

• Observatory data collection

To understand the space for similar income group and the police quarters comes under MIG group housing and this also act as similar community housing but with various cultural and social districts

B. Elements For Case Study

- Activity Mapping
- Proximity
- Scale & Proportion
- Shading
- Material & Texture
- Architectural /landscape
- Territoriality

C. Case Studies

•Case 1 - Police Quarters, Seelapadi

•Case 2 -Police Quarters, Karur

•Case 3 – Police Quarters, Chennai

IV. CASE STUDY 1

Seelapadi Police Quarters is located at: Armed Reserve Police Quotres, Seelapadi,Dindigul, Dindigul, Tamil Nadu 624005.

- Police Quarters Seelapadi , Dindigul
- Built year 1991
- Total area of site 99299 sq. mt.
- Total built up area 2250 sq. mt.
- Area of each block 250 sq. m
- Total number of building blocks : 9

Fig 2 : Plan Of Seelapadi Police Quarters

- The police quarters is completely divided into two segments and the old and new housing complex.

- The old complex has the residential zone and volleyball court. The new complex was in the form of apartment which consists of total 6 units per block 2 on each floor.
- Mostly the residing residents are of same income groups except few and mostly Hindu of 60%, Christian of 25% and Muslims of 15%.
- The building blocks are arranged opposite to each other on a linear main street and a sub street is formed between two building blocks.
- The distance between two opposite blocks on main street is 8m .The two sides of the main street is used for parking vehicles by the residents.
- There are two wheelers parked in the sub street. Each unit has its own residual spaces which are utilized by the residents for plantations and parking.
- As the main street is wide enough, the movement vehicle is smooth.

A. Activity Mapping

The activity of the people is observed with time basis to identify the interactive spaces in the housing community.

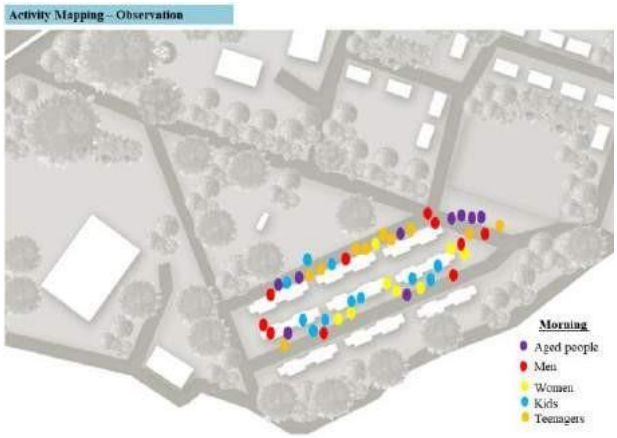

Fig 3 : Activity map – Morning (author)

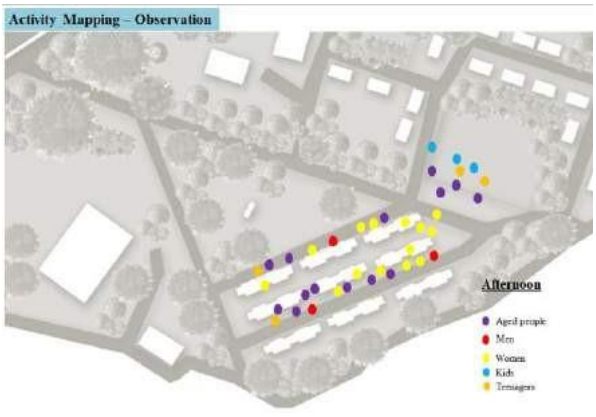

Fig 4 : Activity map –Afternoon (author)

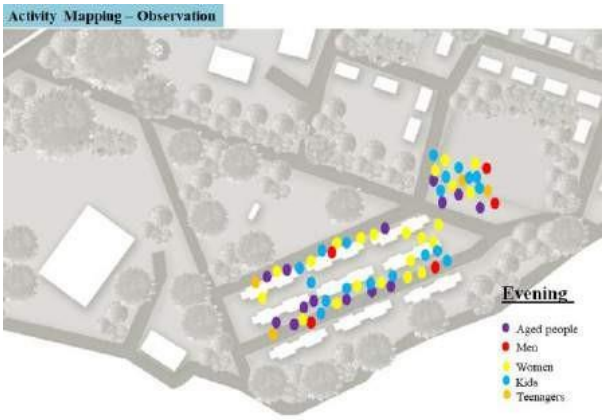

Fig 5 : Activity map –Evening (author)

Activity mapping is done with parameters on accordance with age group and their activity at various spaces and with various activities.

B. Identification of interactive space

Fig 6 : Identified interactive spaces (author)

- Space 1 : Children's park
- Space 2 : Main Street
- Space 3 : Common verandah / entrance steps
- Space 4 : Sub Street

Space 1: Children's Park

The children's park is of 70m x 60m which is a planned interactive space and provision of play area and walking pathways are included hence gives a place for activities for all group of people of the community .The space is observed and with help of survey the use of space and its parameters are noted which influence the space for interaction between people.

The following chart denotes the influence of the said parameters thus result us to find the degree of influence of these parameters in terms of activity and the percentage of interaction. Shown in *(chart 1)*

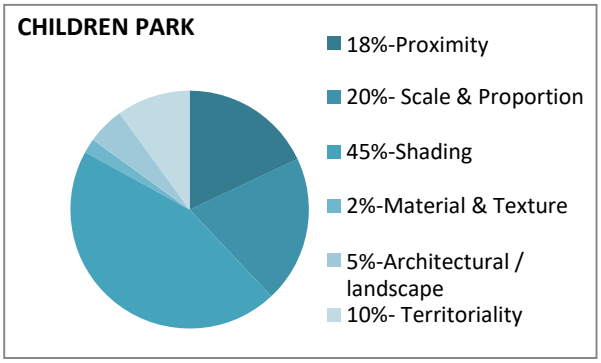

Chart 1: Children's park – parameter influence (author)

Space 1: Main Street

The following chart denotes the influence of the said parameters thus result us to find the degree of influence of these parameters in terms of activity and the percentage of interaction.

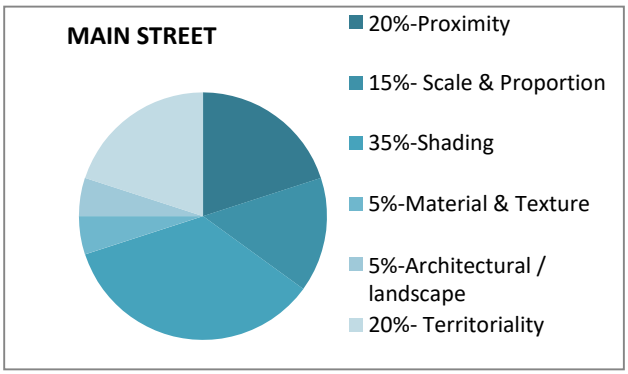

Chart 2: Main Street – parameter influence (author)

Space 3: Common veranda / entrance steps

The following chart denotes the influence of the said parameters thus result us to find the degree of influence of these parameters in terms of activity and the percentage of interaction.

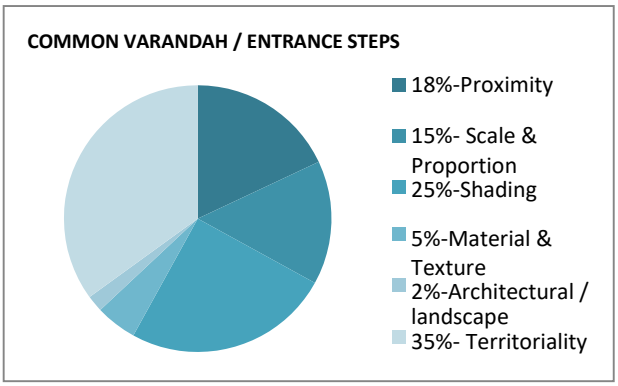

Chart 3: Common veranda / entrance steps – parameter influence (author)

Space 4 : Sub Street

The following chart denotes the influence of the said parameters thus result us to find the degree of influence of these parameters in terms of activity and the percentage of interaction.

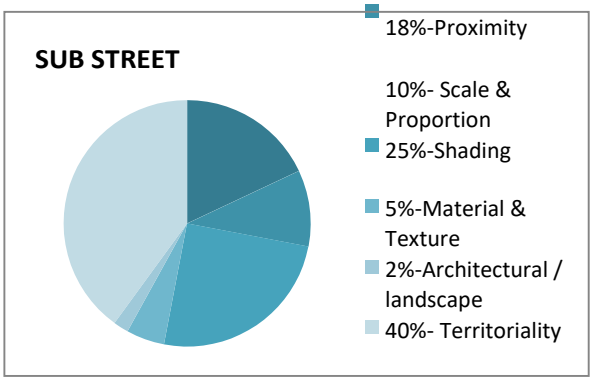

Chart 4: Sub Street – parameter influence (author)

C. Results of case study 1

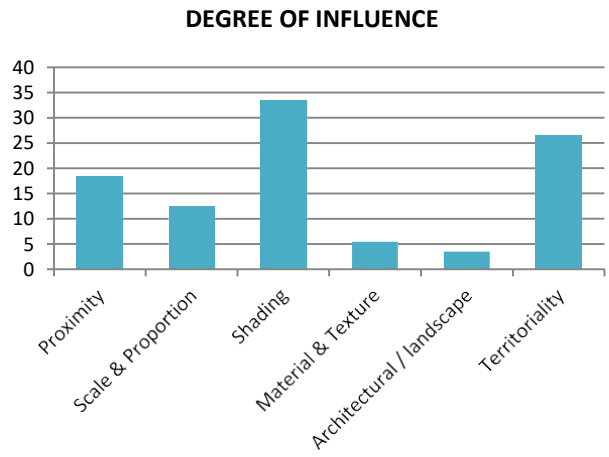

Chart 5: Case 1 – degree of influence (author)

Types of interactive spaces

Planned Interactive Space

- Children's park

Unplanned Interactive Space

- Main street
- Sub street
- Common Veranda/ entrance steps

Elements influence interactions

Space 1 : Children's park

i. Play area
ii. Pedestrian walkway
iii. Designed landscape
iv. Stone bench

Space 2 : Main Street

i. Enclosure with buildings
ii. Trees

Space 3 : Common veranda / entrance steps

i. Enclosure with building
ii. Landing space

Space 4: Sub Street

i. Enclosure with buildings

ii. Trees and small plants

V. CASE STUDY 2

Police Quarters Apartments, Veluswamypuram, Karur, Tamil Nadu 639002.

CASE STUDY 2

Police Quarters : Velayudhapalayam , karur

Built year : 2003

Total area of site : 22000 sq. mt.

Total built up area 3530 sq. mt.

Types of block size 4 types of blocks with various of units consisting of 1 bhk , 2 bhk , 3 bhk

Total number of building blocks : 9

- The complex consist of open park which has temple in it
- The residential complex consist of 4 types of housing units.
- The units consists of different typologies of units and according to the hierarchy of the officials the typologies differs
- Mostly the residing residents are of different income groups except few and mostly Hindu of 80% ,Christian of 5% and Muslims of 15%

The building blocks are arranged opposite to each other on a linear main street

Fig 7 : karur police quarters (author)

- The distance between two opposite blocks on main street is 12 m and 8 m streets
- The two sides of the main street is used for parking vehicles by the residents.
- Each unit has its own residual spaces which are utilized by the residents for plantations and parking.

As the main street is wide enough, the movement vehicle is smooth.

A. Activity Mapping

The activity of the people is observed with time basis to identify the interactive spaces in the housing community.

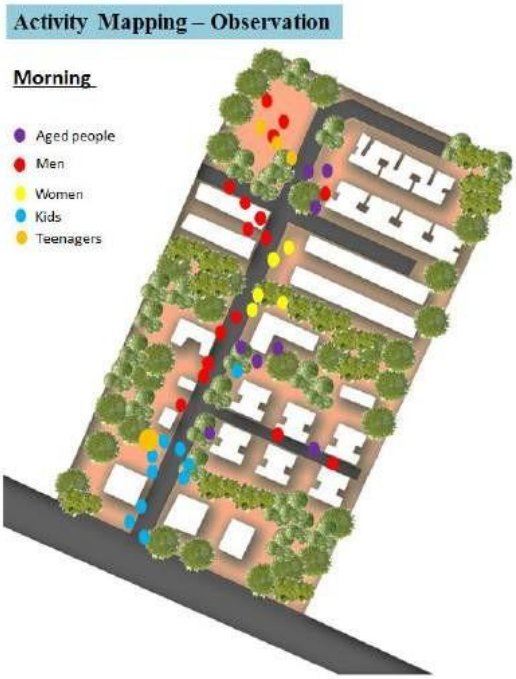

Fig 8 : Activity map – Morning (author)

Fig 9 : Activity map –Afternoon(author)

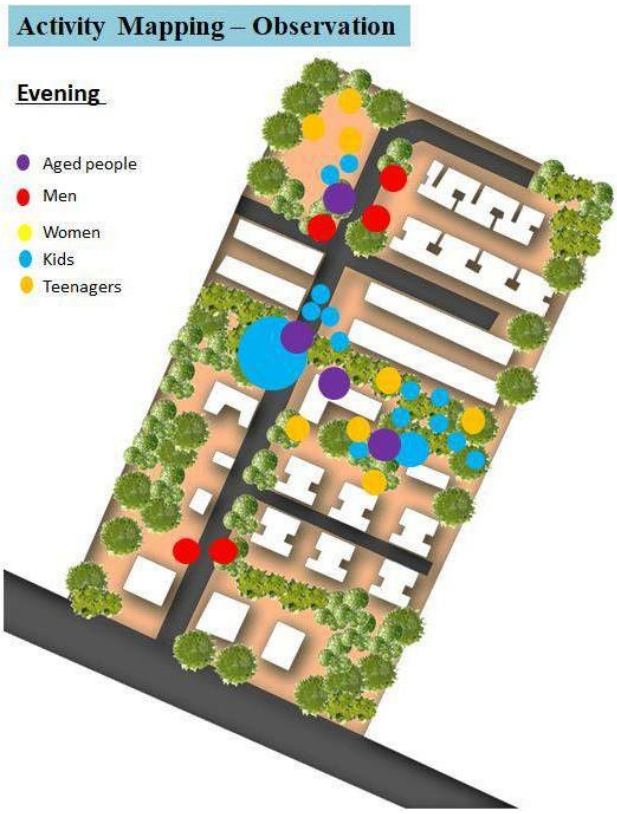

Fig 9 : Activity map –Evening (author)

B. Identification of interactive space

Fig 10 : Identified interactive spaces (author)

- Space 1 : Vinayagar temple
- Space 2 : Parking area
- Space 3 : Common area

Space 1 : Vinayagar Temple

The following chart denotes the influence of the said parameters thus result us to find the degree of influence of these parameters in terms of activity and the percentage of interaction.

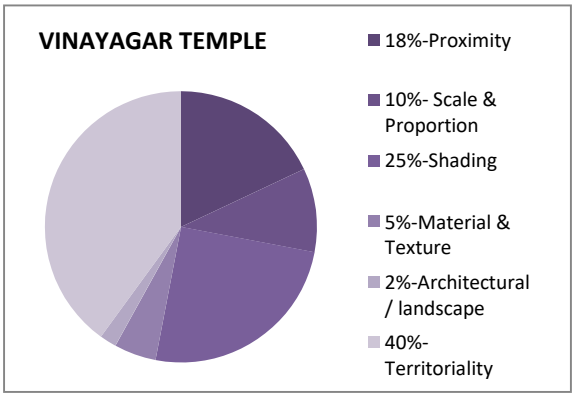

Chart 6: Vinayagar temple – parameter influence (author)

Space 2 : Parking area

The following chart denotes the influence of the said parameters thus result us to find the degree of influence of these parameters in terms of activity and the percentage of interaction.

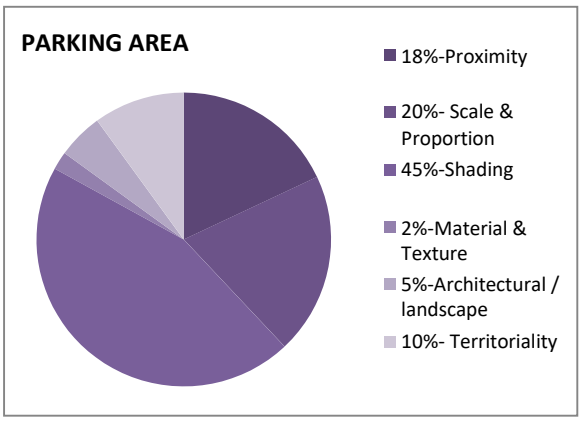

Chart 7: Parking area – parameter influence (author)

Space 3 : Common area

The following chart denotes the influence of the said parameters thus result us to find the degree of influence of these parameters in terms of activity and the percentage of interaction.

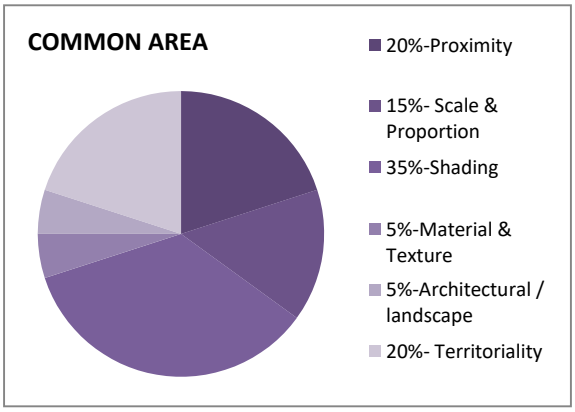

Chart 8: Common area – parameter influence (author)

C. Results of case study 2

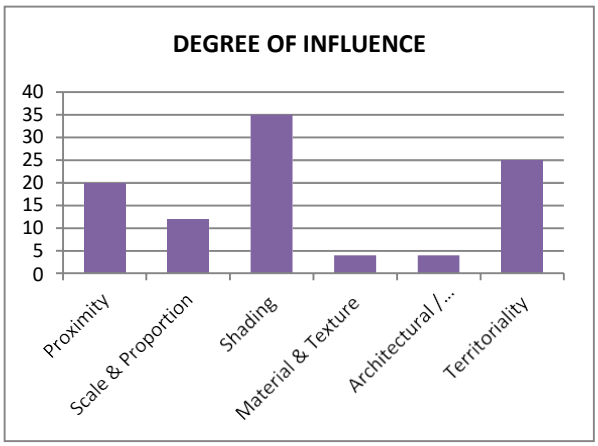

Chart 9: Degree of influence (author)

Types of interactive spaces

Planned Interactive Space

- Vinayagar Temple

Unplanned Interactive Space

- Parking Area
- Common Area

Elements influence interactions

Space 1 : Vinayagar Temple

i. Trees
ii. Religious activities
iii. Built open space
iv. Design open space

Space 2 : Parking area

i. Trees
ii. Cement platform

Space 3 : Common area

i. Trees
ii. Provisional store

CASE STUDY 3

Police Quarters Avadi , Chennai

- The building blocks are arranged opposite to each other on a linear main street
- The distance between two opposite blocks on main street is 12 m and 8 m streets
- The two sides of the main street is used for parking vehicles by the residents.
- The complex consist of open park which has temple in it
- The residential complex consist of 4 types of housing units.
- The units consists of different typologies of units and according to the hierarchy of the officials the typologies differs

Mostly the residing residents are of different income groups except few and mostly Hindu of 65% ,Christian of 25% and Muslims of 10%

Fig 11 : Avadi Police quarters – Plan (author)

D. Activity Mapping

The activity of the people is observed with time basis to identify the interactive spaces in the housing community.

Fig 12 : Activity map – Morning (author)

Fig 13 : Activity map –Atrernoon(author)

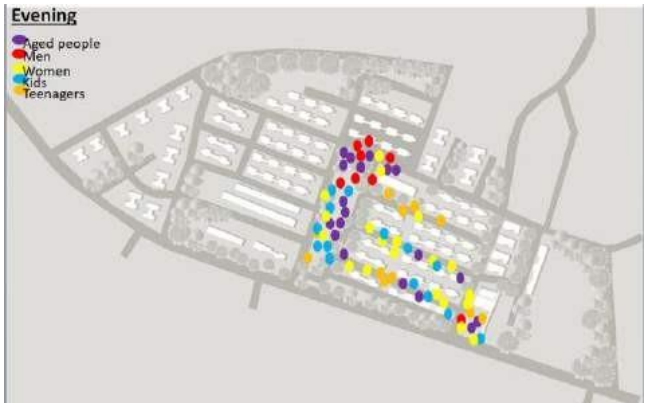

Fig 13 : Activity map –Evening(author)

E. Identification of interactive space

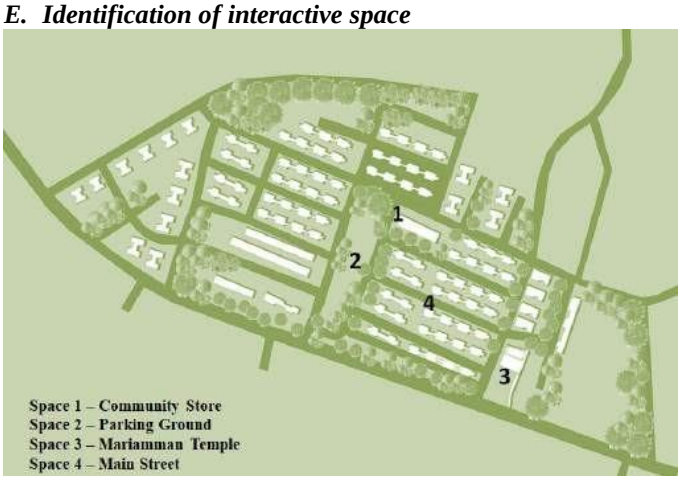

Fig 14 : Identified interactive spaces (author)

- Space 1 – Community Store
- Space 2 – Parking Ground
- Space 3 – Mariamman Temple
- Space 4 – Main Street

Space 1 – Community Store

The following chart denotes the influence of the said parameters thus result us to find the degree of influence of these parameters in terms of activity and the percentage of interaction.

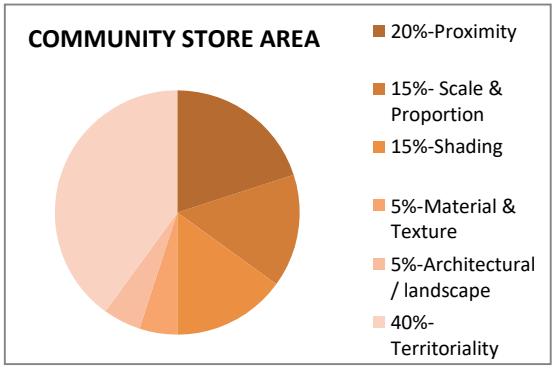

Chart 10: Community Store – parameter influence (author)

Space 2 – Parking Ground

The following chart denotes the influence of the said parameters thus result us to find the degree of influence of these parameters in terms of activity and the percentage of interaction.

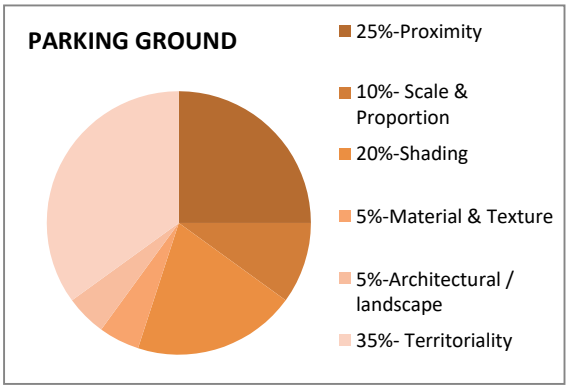

Chart 11: Parking Ground – parameter influence (author)

Space 3 – Mariamman Temple

The following chart denotes the influence of the said parameters thus result us to find the degree of influence of these parameters in terms of activity and the percentage of interaction.

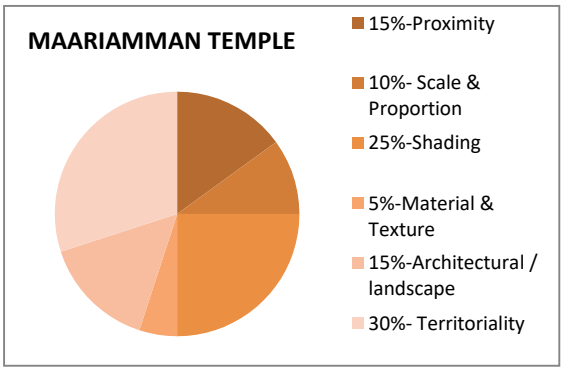

Chart 12: Mariamman Temple – parameter influence (author)

Space 4 – Main Street

The following chart denotes the influence of the said parameters thus result us to find the degree of influence of these parameters in terms of activity and the percentage of interaction.

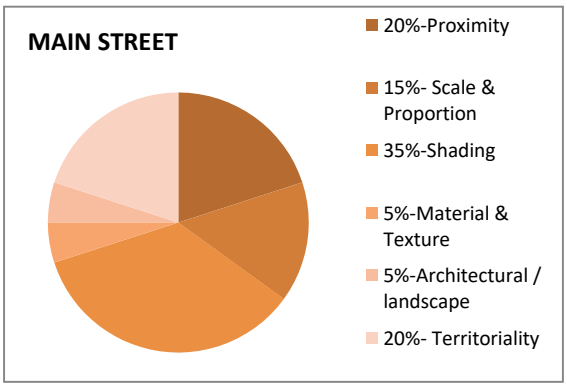

Chart 13: Main Street – parameter influence (author)

F. Results of case study 3

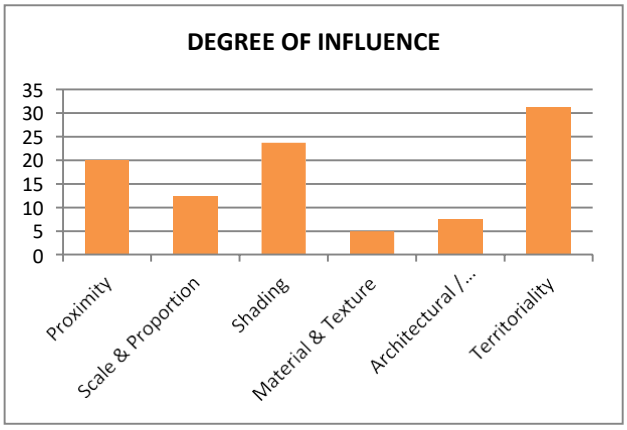

Chart 14: Degree of influence (author)

Types of interactive spaces

Planned Interactive Space

- Mariamman Temple

Unplanned Interactive Space

- Community store Area
- Parking Ground
- Main Street

Elements influence interactions

Space 1 : Community Store Area

i. Trees
ii. Provisional store
iii. Cement Platform

Space 2 : Parking Ground

i. Trees
ii. Stone Bench
iii. Play area

Space 3 : Mariamman Temple

i. Trees
ii. Religious activities
iii. Built open space
iv. Design open space

Space 4 : Main Street

i. Building Enclosure
ii. Trees

VI. Comparative Analysis

The comparative of the degree of influence on the space is done which gives the results for the research questions. The following chart denotes the influence of the said parameters thus result us to find the degree of influence of these parameters in terms of activity and the percentage of interaction.

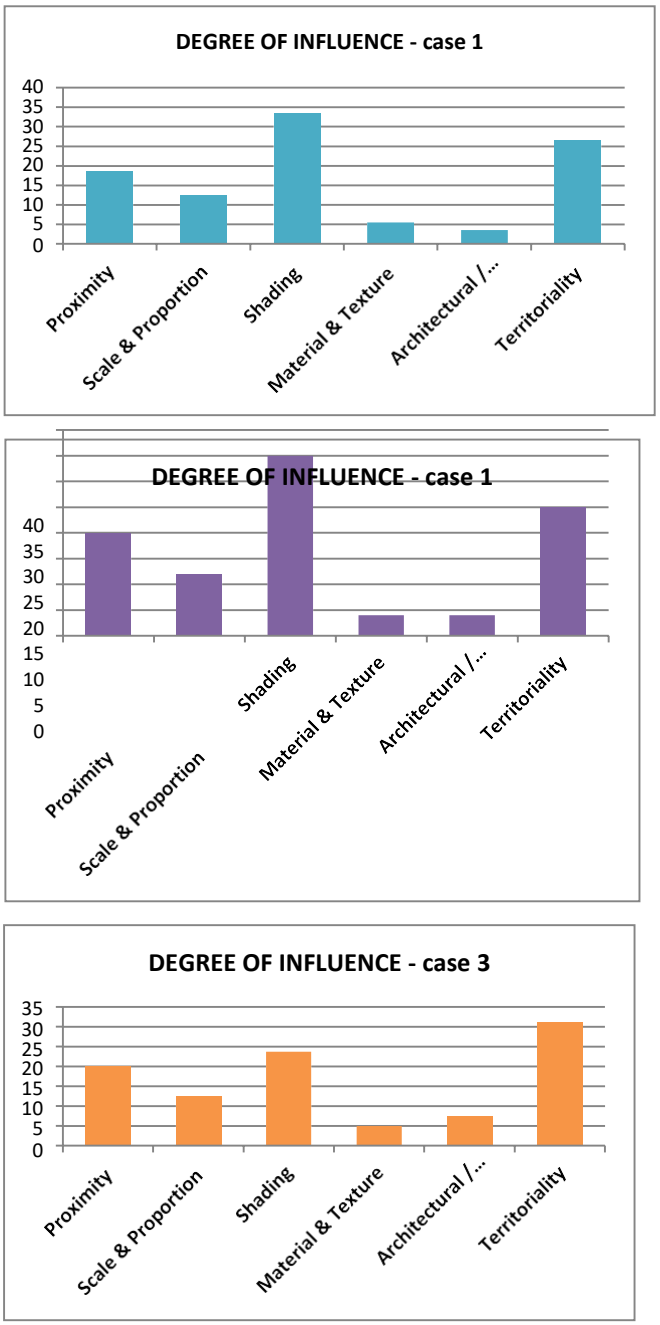

Chart 5, 9, and 14: Degree of influence (author)

VII. Results

DEGREE OF INFLUENCE ON INTERACTIVE SPACES

From the list of specifications considered for the study of interactive spaces shows that Shading, Territoriality and proximity plays a major role in the characteristic of interactive spaces . On the considered three characteristics the shade plays a major role that act as an very much important in the usage of outdoor open spaces other considerations such as scale and proportion plays an moderate role in interactive space. The considerations on this then comes to the material and texture & architecture and Landscape were they nearly play a very less role in terms of contribution towards interactive spaces.

TYPES OF INTERACTIVE SPACES

On the basis of the above study there are two types of interactive spaces were the interaction and socialization happens automatically and also it happens with a planned atmosphere or space which can be denoted as planned interactive space and un planned interactive space. From the inference of the case study the percentage of planned spaces provided for interaction is less and more of interaction is happened in unplanned interactive spaces were the space for the interaction happens on the basis of the activity and also the characteristics of that space which influence the degree of interaction.

ELEMENTS THET INFLUENCE INTERACTION

They study on these spaces conclude that these interaction and socialization of a community happens on the basis of few elements such as built form which includes community buildings such as community store , temples, shops etc.

Some are of open spaces such as park, grounds even streets and sub streets are used for socialization. Activities of people and their behaviour shows different space and different usage of such spaces. The elements are critical were it changes according to the type of users.

VIII. RECOMENDATIONS

Provision of planned spaces to encourage these sorts of interaction on the consideration of main three characteristics

The three major considerations are

- Shade
- Territory
- Proximity

The activity and people based study to create such spaces in group housing should be done

To decrease the use of space for interaction small tot lots in front of the buildings adjacent to streets can be used.

The most shaded areas can be provided with architectural fixtures which enhances these spaces

The provision of enclosures between buildings can be clearly defined with means of usage of spaces

IX. CONCLUSION

The above study tells that the life of people itself creates place for socialization were as the provision of designed space for socialization is always a forceful fit into a group housing were the design of space should have a considerations with the lifestyle of the community and the three characteristics for this interactive space is that proximity, territory and shade. The the study tells that the there is an exclusive life outside the built environment in a housing community. The understanding level of usage of space for interaction is completely based on the life and activity. The planned and unplanned spaces in residential clusters always act as an important element of socialization which exhibits a character as social connectors were these spaces engage people and form a holistic development leading to a safe and secured residential cluster.

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