

## Analysis of Pattern languages in Indian Context

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**Abstract--** Patterns in a physical realm are recognized as a repetitive occurrence of a set of objects. In architecture it refers to the idea of capturing a set of reusable solutions derived from human behavior, psychology and their relationship with the built environment. Pattern language can be understood as a rational and harmonious group of patterns referring to a particular problem. The concept of pattern language was first introduced by Christopher Alexander in his book "A PATTERN LANGUAGE". This paper includes a comprehensive literature review, analysis and its extent of viability with context to a particular geographical location of some of the patterns as conceived by Christopher Alexander. It focuses upon graphical representations of the theoretical ideologies on varied parameters scaled from micro to macro level.

**Keywords--** Pattern language, architecture, intimacy gradient, principle of least effort

### I. INTRODUCTION

The language of architecture connects people to their surroundings in an infinite number of ways, most of which are subconscious. 'A pattern of Language' derives the demystification of complex socio-spatial considerations through a simple building block format. It is marked as an enchiridion of specific design choices or arrangement of spaces depending on human psyche and their behavioral patterns. The pattern language codifies the interaction of human beings with their environment. It is a set of inherited tried-and-true solutions that optimize how the built environment promotes human life and sense of wellbeing. It combines geometry and social behavior patterns into a set of useful relationships, summarizing how built form can accommodate human activities. Architects can use these set of patterns with different combinations to define spaces accordingly and can further add to it or modify it. These set of core solutions can be used numerous times to deal with similar problems, without even doing it the same way. These patterns exist in an urban scale as well as in our day-to-day usable items but it has changed and evolved into a new form over the years. The paper analyses the feasibility of these solutions relating to the past and the present scenario and its evolution on the basis of cultural and socio-economical aspect.

### II. ANALYSIS ON A MICRO LEVEL

#### A. Intimacy gradient

Intimacy gradient shows or defines the transition of activity areas, progressing successively from public, semi-public and ultimately to the private or the most intimate zone. This

sequential arrangement of activity spaces is a significant consideration for designing a building corresponding to the required degree of privacy designated for the strangers, friends, guests, clients, family. It is essential to maintain an intimacy gradient in arrangement of spaces successively from public to the private realm avoiding any form of homogeneity to categorize the social interactions. Without the presence of this gradient the spaces are not categorized and hence results in uncomfortable spaces and disconcerted interactions (Joshi, 2009).

**Solution:** In any building we need an arrangement of spaces in an ordered hierarchical pattern according to the degree of intimacy required from the most formal and public spaces reaching out gradually through semi private areas to the most intimate and private zones (Venstra, 2016). In case of shops, the sequence of activity space may be the shop entrance, customer milling space, browsing area, sales counter, behind the counter, private space for workers. For a residential building the flow of formal to intimate spaces are gate, outdoor garden, porch, entrance, living room, common space and kitchen, bed rooms, private garden (Joshi, 2009). The movement between rooms is as important as the rooms themselves, and the arrangement of the spaces done following the intimacy gradient has a direct effect on the social interaction.

**Inference:** As individuals we share different relationships with different people. With our family members or very close relatives share an intimate bond, a friend might be a little lower on the scale and a stranger will be at the least point. This human psychology drives us to differentiate between spaces and arrange them based on hierarchy as a public, semi private and private.

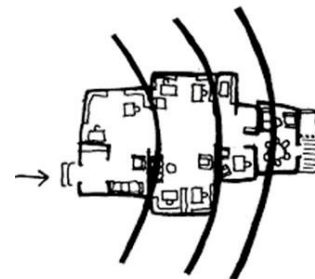


Fig.1. Intimacy gradient in an office

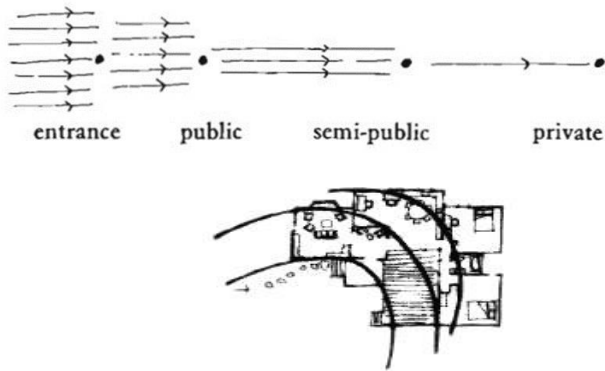


Fig.2. Intimacy gradient in a house Source: <http://www.iwritewordsgood.com/apl/patterns/apl127.htm>

Examples: As shown in Fig 1 the sequential arrangement of spaces maintaining the intimacy gradient are entry lobby, reception and waiting, workspaces and private lounges. In a stand-alone residential house the verandah or the entrance porch is a public area, drawing room is a semiprivate space while the bedroom is entirely a private domain as depicted in Fig 2.

Fig.3. Layout of zones following intimacy gradient Source: [www.kerryveenstra.com/2016/12/27/intimacy-gradient/](http://www.kerryveenstra.com/2016/12/27/intimacy-gradient/)

**B. Common areas at the heart**

Two segregated activity areas are connected visually or functionally by a third transitional space in between which is the common area (Ching, F. D. 2014). The location of the common area, its form and orientation are an important factor in making the design viable. The circulation path may be perceived as a link connecting the sequence of the spaces in a building governing the journey of the human beings starting from the entrance or through the corridors. The relation between the circulation path and the common space is vital and it should be determined by the human movement pattern through the space. This essential path- space relationship can be described in three distinctive conditions as follows.

1. The circulation path running tangentially to the common space or passing by the space independently maintains the integral form or program of each space concerned and the flexibility of configuration of the path. Also, people passing by the path are visually connected to the common space and therefore can settle down there if they wish to or can pass by.
2. The Circulation path may pass through the common space or a series of spaces axially, obliquely or along the edge of the space. Here, the space becomes too exposed and while cutting through the space the path establishes a pattern of movement and rest within it. This movement pattern on the other hand can interfere with and modify the feel of the space.
3. The path terminating in a common space at one end is determined by the location of the space itself. In this instance people are not likely to use it informally as it would require a deliberate effort to go at one end of the

corridor. This kind of path and space relationship is utilized to gain access to or proceed towards functionally or symbolically important spaces.

Solution: Common space should be located at the central part of the building as shown in Fig.4a with circulation path lying tangentially to the common space as shown in Fig 4b. The common space may be flanked by an open space and it should also house some community activities and can be acquainted with some furniture so that people moving through the space can pause and rest there a while and again continue their journey. Such arrangements will make the space livelier and more functional. The common area may be stepped up or down for creating emphasis.

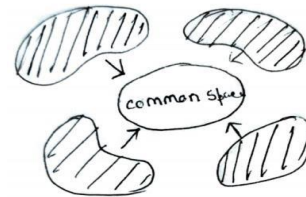


Fig.4a. Common space at the center of the built spaces

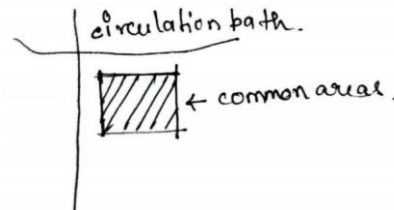


Fig.4b. Circulation path lying tangent to the common area

Inference: As social individuals we tend to flock together, stay in clusters. A family can survive when they can interact and spend time with its members. Hence, the need of a common space in a building is very important to create an environment for public interaction and exchange of idea and its location also plays a vital role. Common space at an end of a corridor will be unused as one needs to put an extra effort to reach there whereas, when placed in the middle of other built spaces with circulation area running tangentially will be a more effective one. This pattern is universally applicable for all types of buildings e.g. residential, commercial, assembly buildings. These common areas create community ties and thus creates a great impact on the urban living (Rupa, C. K. 2015)



Fig.5a. Traditional courtyard



Fig.5b. Atrium at City Centre

Examples: The traditional courtyard space in Indian courtyard houses (Fig 5a.) is a common area located at the centre of the building. The circulation path runs along the courtyard on all four sides connecting all rooms. As one travels through the circulation space, he can either go down or settle down in the courtyard space with his family or he can just simply pass through it. The central atrium in City Centre 2, Rajarhat (Fig 5b) acts as a common area placed centrally surrounded by retail shops. It is connected visually from the corridors in front of the shops. The corridors run tangentially to the central atrium.

C. Sequence of Sitting space

Along the intimacy gradient in any building a sitting space is required which may be in form of rooms or at the corner of some rooms. This arrangement of these sitting spaces also creates an intimacy gradient along the building and each one of these spaces has its own needs for comfort and enclosure (Allen, 2004). As human activity all through any building have a varied of degree of intensity and intimacy, the sitting spaces are required to be sequentially arranged according to their demand for the degree of enclosure.

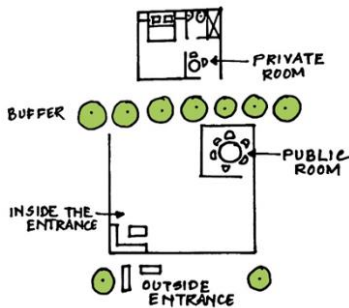


Fig.6a. Variety of degrees of intensity and intimacy

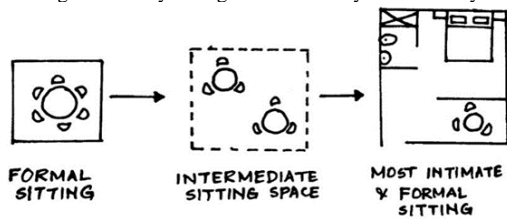


Fig.6b. Solution in a house

Solution: Arranging the sitting spaces sequentially in a house with respect to the degree of enclosures and intimacy is required (Fig 6b). Formal sitting space are enclosed within a room, the Intermediate sitting space is within a partial enclosure being connected with some larger space and at the same time maintaining its separate identity and the most

intimate and informal sitting space are the least formal spaces in corners of other rooms, without any kind of screening.

Inference: The following sketch (Fig. 7) illustrates the sequence of sitting space arranged along the intimacy gradient of a basic house where the intimacy level of sitting place is increasing from the living room to the dining cum kitchen and finally to the bedroom (left to right).

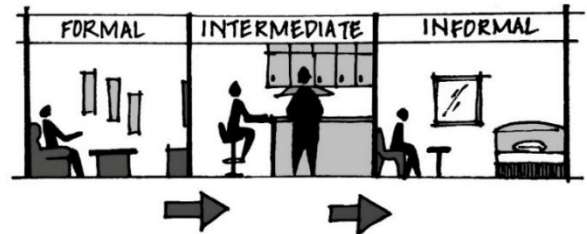


Fig.7. Living room, Dining-cum-Kitchen, Bedroom (Left-Right)

Example: Formal sitting space, intermediate sitting space, most intimate sitting space

III. ANALYSIS ON A MACRO LEVEL

A. Path Shape

In the modern cities the streets are used as thoroughfare only though it has been seen that in the past the streets just outside the houses were used by the public for interacting and social gatherings. Streets should play the role in such a way that the public are driven outwards on the walkways instead of being attracted inside the house and can spend time interacting.

Solution: Making bulge in the middle of the streets can be made to form an enclosure to accommodate social gatherings. This can also be accomplished by making the pedestrian paths slightly convex with trellis and arranging seating at the edges. Placing buildings without any setbacks from the path and setting the buildings back one by one will leave some room to accommodate some sitting, street food stalls, or other social activity.

Inference: The bulges alone cannot make the place an interactive zone. The space should be furnished with any design element around which the social activity can take place. The musicians are seen performing in the streets of London giving the street a character more than just a thoroughfare. Similarly, In Kolkata a “Fast Food stall” or even a large tree can contribute to create a social space on a street. Without any activity the vacant space will be used for dumping garbage.

Example: The chess club set up below Gariahat Flyover near Gariahat crossing has made the pedestrian pathway interactive using the unutilized space under the flyover

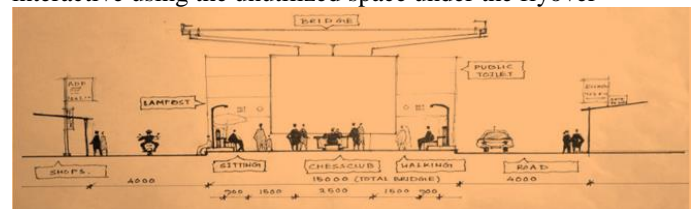


Fig.8. “Gariahat Chess club” below Gariahat flyover

B. Activity nodes

One of the greatest social issues faced by today’s communities is the absence of interaction and public life.



Studies of pedestrian behavior make it clear that people seek out concentrations of other people, whenever they are available. To increase social interconnection and relationship in a community resources and amenities can be grouped around small public spaces and squares which can play the role of nodal points or Activity Nodes. All the pedestrian pursuits and activities can be designed to pass through these nodes thus making the nodal points center of social activities (Alexander. C., et al. 1977). Such nodes should have four properties. Firstly, the main streets should meet on small squares or nodes with the secondary pathways channeling into the primary streets, to create the basic star-shaped pattern. Secondly, it is necessary to keep the nodes small to keep the activities concerted. Apart from these the activities centered on one node must function among communities with synergetic relationships in a collaborative way catering to the people having the same mindset and at the same times of the day. Lastly, these activity squares should be spread in an even manner across the community within 100 yards of any house or workplace avoiding large dead ends.

**Solution:** The activity nodes should be created distributing them 300 yards apart throughout the community after recognizing the existing spots in the community with concentrated action. The path layout is to be altered by connecting maximum number of these spots. A small activity square or zone is to be created at the central point of each node featuring combination of community amenities sharing a symbiotic relationship with each other.

**Inference:** Implementation of Activity nodes will enhance the social interaction and bonding possibilities among communities. There should be equal distribution of similar community facilities throughout the city otherwise in order to meet the practical needs of daily life the people will have to travel a long distance to access the different community facilities at different nodes. Thus, by uniform distribution of the activity nodes according to the need will create more impact impactful at the urban design level.

**Examples:** The grid iron city planning of Chandigarh is one of the examples of this kind of “busy & quiet” city life. There are nodes at every interval, but they are not fully pedestrianized. Whereas, Pondicherry has these pedestrianized roads with required activities around the node, but these again lack dense concentration of people. As a result, these activity nodes are quite free and tranquil in nature.

### C. Children in the city

If children cannot explore and investigate the world of adults around them, they cannot mature but the complexities of the modern cities are the main obstacles in their way of freedom. The absence of developed mindset and maturity pose a significant obstacle in letting the children follow the adult’s path.

**Solution:** Some widespread protected belts can be designed within the city where the children can explore freely various activities and lifestyles of the adult citizens. A network of safe cycle paths can be designed for the children which can help them to inspect different activities going around in the city.

**Inference:** As the children learn by watching and copying, they will gradually learn and acquire knowledge about

different spheres of life which is not possible by limiting their education only to schools.

**Example:** The children can learn through a knowledge circle by communicating, doing creative works, dance, music listening to stories enjoying each activity and this can be done both in school or at home.

If the children can cycle with their family, they will be able to explore their surroundings and learn about the real world safely and learn with the guidance of the elders. The cycle path can be laid out connecting different activities.

### D. Degree of publicness

This pattern aims to discover the typology of human settlements within the neighborhood depending on the living pattern which is not only influenced by climatic factors but also by the ideologies and emotions of the inhabitants. Some people want to live in socially active zones, in a lively environment being near different services, shopping areas and community spaces. Others want more isolated settlements staying away from major community zones and are not comfortable in the busy crowded areas with public activities all day long (Alexander C.W., 1977).

**Solution:** In order that different kinds of people like extrovert, introvert and ambivert can find habitats catering to their lifestyle and satisfying their emotions, each neighborhood or cluster should consist of three kinds of residential settlements in almost equal numbers (Fig.9).

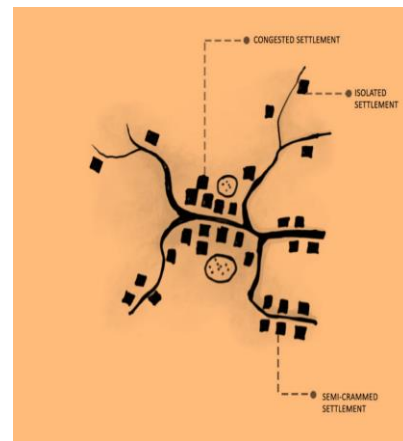


Fig.9. Three kinds of neighborhood settlement pattern

In congested settlements nearest to the activity nodes, wide and open paths motivating busy traffic and welcoming the crowd are placed along the services connecting all activities. In partially crammed settlements half-way between isolated and fully congested areas narrow and twisted paths placed remotely from services discourage through traffic and are mostly at right angles consisting of dead ends (Alexander C.W., 1977). In isolated settlements a main path linking the most remote places is a quiet one attached to the central and busy areas.

**Inference:** Settlements are formed according to the geographical location, the climatic conditions, the occupation, psychology and cultural and socio-economic background of the inhabitants. Clustered settlements are those grouped closely together, often around a central feature like a church, or an open space. New settlements that are planned often have

a nucleated pattern. Linear settlements often follow a road, a water feature, a railway track, etc. Isolated settlements are spread over a wide area and can be found in rural areas.

Examples: In Kolkata we can observe a congested clustered settlement in the northern part like College street, Shyambazar area, and these have been formed surrounding of some major activities like colleges, market areas etc. But in south Kolkata like Gariahat, Ballyguange, Dhakuria an informal semi-crammed type settlement is found and these areas are mostly residential zones formed separately without the influence.

#### IV. CONCLUSIONS

Architecture of built spaces are the response to human activities and psyche and their inter-relationship with the spaces as well as the intra-relationship among individuals. The study of the human-space relationship, their cultural background has resulted in the derivation of some general design parameters irrespective of the space or its scale. Geographical context and cultural and socio-economic conditions also play a vital role in designing of spaces which might have been overlooked by Christopher Alexander. The paper also includes a suggestive approach of a dynamic implementation of philosophical concepts in context of the present time. Although it might be a calculative approach, but its functionality depends majorly on climatic or socio-economic aspects and hence might not be workable at some points. Therefore, further studies regarding its possibilities on every context needs to be carried out for better understanding of the topic.

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