PUBLIC PERCEPTION OF URBAN SPACES

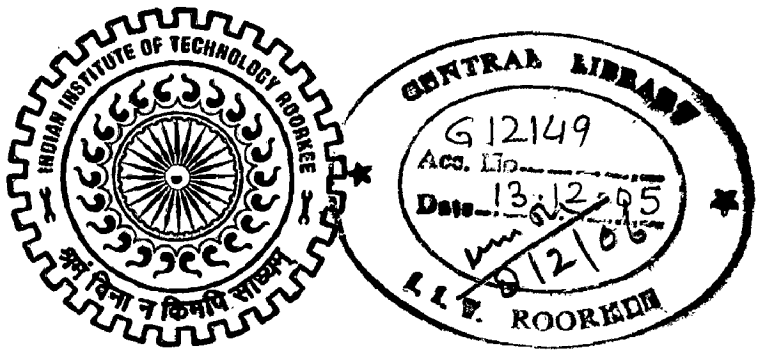
A DISSERTATION

Submitted in partial fulfillment of the requirements for the award of the degree of

MASTER OF ARCHITECTURE

By

ASHOK MISHRA



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CANDIDATE'S DECLARATION

I hereby certify that the work, which is being presented in the dissertation, entitled **PUBLIC PERCEPTION OF URBAN SPACES** in partial fulfillment of the requirement for the award of the Degree of **MASTER OF ARCHITECTURE** submitted in the **Department of Architecture & Planning** of the Indian Institute of Technology, Roorkee is an authentic record of my own work carried out during the period from August 2004 to May 2005 under the supervision of **Dr. Pushplata.**

The matter embodied in this dissertation has not been submitted by me for the award of any other degree.

Place: Roorkee
Dated: June 26th, 2005

(ASHOK MISHRA)

CERTIFICATE

This is to certify that the above statement made by the candidate **ASHOK MISHRA** is correct to the best of my knowledge.

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ABSTRACT

Urban spaces are the public spaces (open or semi open) framed by buildings with in an urban settlement. Urban spaces create that image of the city which always remains in visitor's mind. The image of an urban space is a result of not only its built form (massing, form, facades, and character of the buildings) and enclosed space but also the activities that are held in that space. But today's urban spaces in cities do not convey a sense of place, have poorer visual and aesthetics quality, they lack of strong architectural character, with which they can be associated. This requires a deep study into the various aspects of aesthetics of urban space.

Creation of the visual chaotic urban spaces can be avoided through the proper knowledge factors influence the perception of urban space & aesthetics and visual quality of the total built space. In perception of an urban space, the role and background of the perceiver becomes equally important as the visual physiology and characteristics of built form in the perception urban space. Therefore, there is a need to know how people perceive an urban space and the significance of built forms and its visual and aesthetic quality in the perception of an urban space need to analyzed from the point of view of users.

This thesis is an attempt to understand the various factors which affect the perception of built environment through various case studies (from literature and live case studies) and public opinion about the selected case studies. Analysis of the public opinion, and framing out the most important indicators through various indicators.

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Source: Self Photographed

Self made

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INTRODUCTION

1.1 BACKGROUND

Urban spaces are the public spaces (open or semi open) framed by buildings with in an urban settlement. The urban spaces in a way are the expression of total character of the city and an area designed to exhibit the buildings to the greatest extent. In any city, urban spaces are hubs of various social, commercial, recreational activities and become social interactive places as well as meeting places. Mostly people (either residents of the town or visitors) go to these places either because their work places are located there or for shopping or for entertainment and relaxation. These areas are therefore, generally display the affluence and power of the society/ rulers/ govt. Hence they exhibit the best of building and public art of that place.

Urban spaces create that image of the city which always remains in visitor's mind. The image of an urban space is a result of not only its built form (massing, form, facades, and character of the buildings) and enclosed space but also the activities that are held in that space. The very first thing which comes into a visitors or viewer mind after seeing any urban space is its physical appearance, i.e., its physical form and façade of the buildings in that space and treatment of that space. Other important aspects like its functional aspects, services, safety and security aspects become important only when they are used.

1.2 NEED OF THE PROJECT:

Urban space of most of the important cities/ towns through out the history of human settlements are considered as an excellent example of urban design that provide great urban experience and strong image of that place as well as the city in the mind of viewer or visitors. As we see the most popular urban spaces in history of human settlements, where no. of buildings are put together in such a way that a drama is released. In most of the cases, urban space acts as the landmark for the city and important node that affect the imageability of that place. Till now these are popular centre of attraction through out the world which is known for their aesthetics and visual quality.

As against this, inspite of much larger number of urban spaces being built now days, today's urban spaces in cities do not convey a sense of place, have poorer visual and aesthetics quality, they lack of strong architectural character, with which they can be associated. This is an outcome of the individualistic approach that has cropped today's architecture. This is reflected in the statement given by Cliff Moughtin in his book "**URBAN DESIGN, STREETS AND SQUARE**." i.e, *today, the visual (architectural) appearances of the typical modern urban spaces are looking like "the noise produced at county fairs by many orchestras simultaneously playing different tunes." is* true for today's scenario. It shows the lack of sensitivity towards these issues in the designer's mind, or, he is not thinking from the view of the user, who is ultimately going to use it. This requires a deep study into the various aspects of aesthetics of urban space.

Every urban space in the city- planned or unplanned is ultimately going to be used by people and its failure and success depend on them. What we perceive is more than seeing; the physical environment becomes more than a setting. We make it into an extension by our own actions and life.

It is often observed that inspite of every aspect in the individual buildings being up to the mark when the groups of such buildings are seen as a whole through urban space, but it does not impart such visual and aesthetics quality, which they should have. Though all aspects are important in design of urban spaces, the visual appearance is also very important, as it create the very first impression in the visitor's mind before they use it.

Buildings put together in proper relationship can give visual pleasure which none can give separately. But if these are not properly planned, it can have disastrous results for that place/town/ city. Creation of the visual chaotic urban spaces can be avoided through the proper knowledge factors influence the perception of urban space & aesthetics and visual quality of the total built space. In perception of an urban space, the role and background of the perceiver becomes equally important as the visual physiology and characteristics of built form in the perception urban space.

Therefore, it become crucial to know how people perceive an urban space and the significance of built forms and its visual and aesthetic quality in the perception of an urban space need to analysed from the point of view of users. For urban space to continue to act as a landmark for the city, there is need to produce physical forms

and systems or tool that are rational, coherent and the end product based on those tools or system must responsive to the needs and expectations of those who use them.

1.3 AIM AND OBJECTIVES:

The main aim of this dissertation is to find out various factors which affect the perception of an urban space by viewers, use of which ultimately result in creation of the visual and aesthetically attractive having a sense of place.

1.4 METHODOLOGY:

1. Review of literature study to
    i. Study the phenomenon of perception of built form and spaces and visual physiology.
    ii. To study the salient visually attractive urban spaces of historical and modern cities in India and abroad, in order to demonstrate the applicability the factors and elements that are responsible for perception of any built space in the light of the fundamentals of perception.

2. Surveys- to find out most visually attractive urban spaces in selected cities

3. Detailed study of the identified urban space in the light of factors that influence the perception of built space.

4. Detailed survey to identity aspects and elements which people find more attractive and like most in all the urban spaces.

5. To identify various factors/ elements which affect perception of urban space that can be used as a tool for designing the urban spaces which not only create the feeling of sense of place but also meet the requirements of those, who use it.

1.5 SCOPE OF THE PROJECT:

Study of perception of urban spaces will be limited to finding out the factors/ elements that affect the perception of urban space based on the response of public. Case studies will be also limited to well known planned urban spaces mostly visited by the people for it's visually attractiveness.

"You can not construct pleasing sentences in English unless you have a thorough knowledge of grammatical ground rules. If you abandon these basic principles of grammar the result is discordant and inharmonious. Good architecture should be like good manner and follow a recognized code. People should be involved willingly from the beginning in the improvement of their surroundings.... But participation cannot be imposed: it has to start from the bottom up." (HRH Prince Charles, Ref. book – Urban Design, Streets and Square, 1992, p.11)

ornamented and ordering structure like a body of a human activities, based on simple and identified rules such as *Relation between form and surrounding façade having similarity or variety of them, proportion of façade to wideness and length of space, the situation and place of buildings, fountains and other 3D elements that we can emphasis on them.*

2.2 TYPOLOGY OF URBAN SPACES

There have been a number of attempts to classify the typology of urban space. However, Urban Spaces are generally categorized in term of their function as Civic, Commercial and residential. Two of the most influential theories were outlined by Paul Zucker and Camillo Sitte. From his work on squares **Zucker** (1959) was able to distinguish five archetypal forms as enclosed square, dominated square, grouped square, nuclear square and amorphous square.

The closed square where the space is self contained, overriding quality of this spatial type is sense of enclosure and is

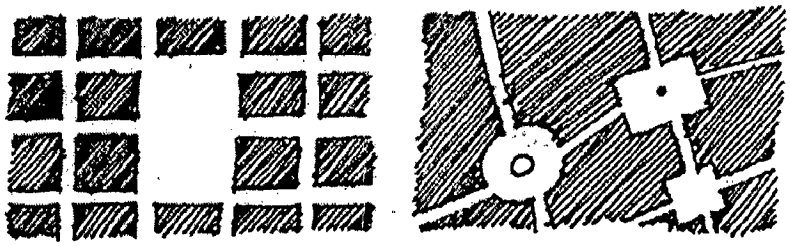


Fig. 2.1 Space Formed By the Built Masses

the purest expression of a sense of place. Other important qualities of enclosed squares and their surrounding buildings affect the degree of enclosure. These include the nature of the enclosing building roofline; height of building with relation to the size of the space plays a great role in experiencing the space.

The dominated square is characterized by one individual structure or a group of buildings toward which the open space is directed and to which all other surrounding structures are related. It has directional emphasis. All the main views lead towards the dominating structure. Sitte also discussed again about the dimension ratio of the building and space around it.

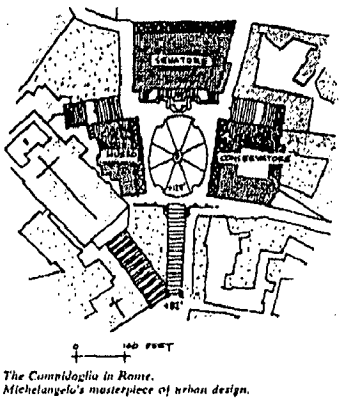


Fig. 2.2 Dominated square
(Piazza Del campidoglio. Rome)

There are numerous methods by which links between squares may be formed. A public square may be of complex shape so that it consists of two or more overlapping or interpenetrating spaces; a series of spaces may be physically connected by streets or alleyways; one or two major public buildings may be surrounded by a series of spaces.

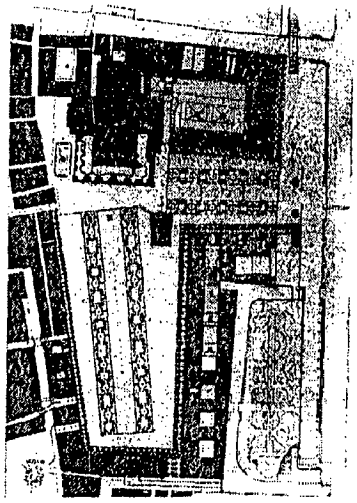


Fig. 2.3 Linked square
(Piazza De San Marco, Venice)

The spatial shape of the Nuclear square is of definite order, although not so tightly knit .... An entity, even without the frame of a continuous row of buildings or without the domination of frontal structure. As long as there is a nucleus, a strong vertical accent – a monument, a fountain, an obelisk- powerful enough to

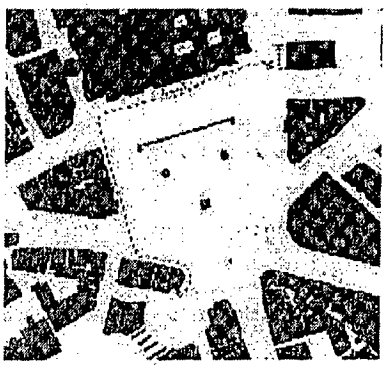


Fig. 2.4 Nuclear square

charge the space around with a tension that keeps the whole together, the impression of a square will be evoked. For example the piazza di Ss Giovanni e Paolo in Venice. Amorphous square where space is unlimited having a little or no shape.

According to Camillo Sitte (1890) each city has a number of squares but one square at its centre is the most important and is larger than the rest, so that the community displays to greatest effect of its public art. The important and most decorative buildings are located.

Rob Krier sees the city itself as formed essentially of urban spaces in the form of streets, squares and other open spaces. In Krier's analysis he shows that the urban spaces generally fall, pure or compromised, into three main forms: square, circular or triangular. Each of these occurs on its own or compromised against others. Each may be twisted, divided, added to others, penetrated, overlapped or alienated. Each can be regular – a precise geometry in itself or irregular according to the site. He not only talked about the various shapes of urban spaces but also the various facades that can be formed around the urban spaces. He writes' of course the streets and squares of the city are lined by buildings; literally they are framed by facades. What is more the facades themselves can take many forms from solid, unrelieved masonry, to masonry with openings of different sizes : windows, doors, arcades, colonnades, to fully glazed façade.

According to Krier, the physical form of the city is determined by relationship between the streets and the open spaces, the elevations and sections which enclose them.

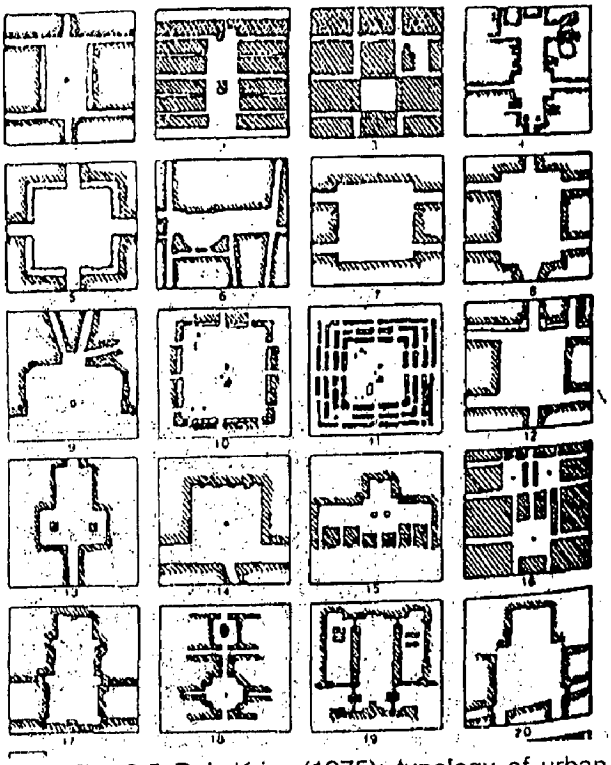


Fig. 2.5 Rob Krier (1975): typology of urban space; square urban spaces. Source. Broadbent G., Emerging concept in urban space deign

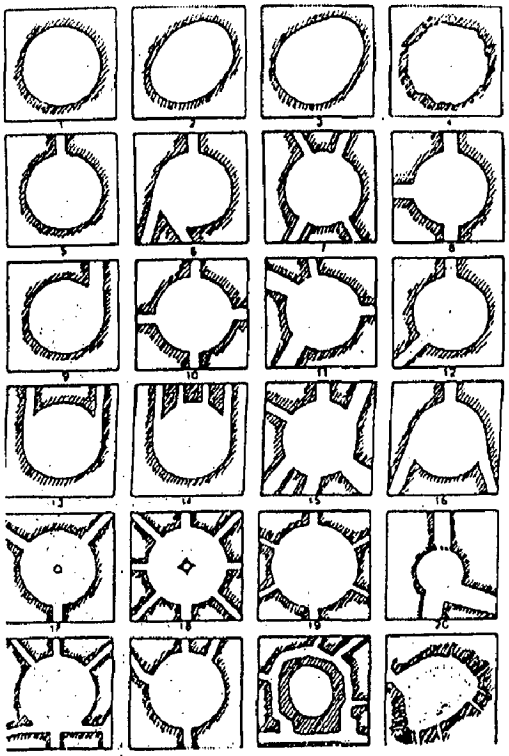


Fig. 2.6 Rob Krier (1975): typology of urban space; Circular urban spaces. Source. Broadbent G., Emerging concept in urban space deign

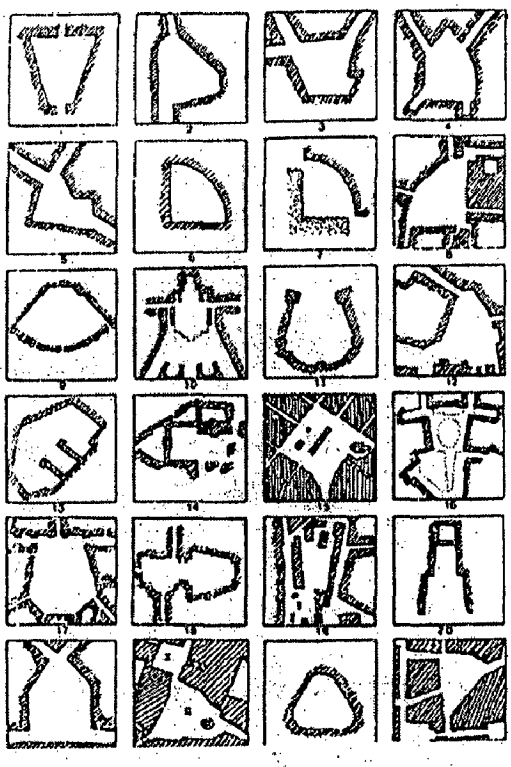


Fig. 2.6 Rob Krier (1975): typology of urban space; Triangular urban spaces. Source. Broadbent G., Emerging concept in urban space deign

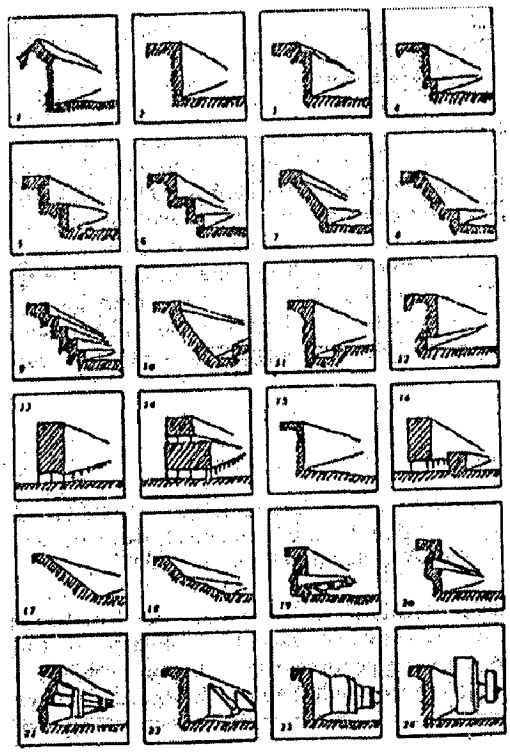


Fig. 2.6 Rob Krier (1975): typology of urban space; different façade sections. Source. Broadbent G., Emerging concept in urban space deign

2.3 Basic Design Principles for Urban Spaces:

No.s of concepts have been used to analyze architectural composition in order to gain an understanding of the qualities which determine 'Good' or beautiful form. But the ways in which these basic concepts are used and their importance differ from architect to architect. Some important basic design principles to have a better visual experience in an urban space-

- **Order**
- **Unity**
- **Proportion**
- **Scale**
- **Symmetry, Balance,**
- **Rhythm**

2.3.1 ORDER

Order, the first quality on the vitruvian list appears to have universal acceptance. Vitruvius defines order as ' ... due measure to the members of a work considered as separately, and symmetrical agreement to the proportion of the whole. It is an adjustment according to quantity.' Writers of the renaissance follow Vitruvius in their definition of order, for example, Alberti defines order as ' ... the form and the correspondence of the whole, w.r.t. several parts with each other, and of these again to the whole. That the composition may appear an entire and complete body.' In general, Order means the sequence, hierarchy in which the different elements of forms and facades have been used. Since most of the building are seen from the

streets and squares or civic landscape then the public face of the building is prime consideration.

Any building can break the order or may be in order; it is depend on designer how he places his building with the surroundings, so that it is in the order of whole composition. Failure of some large scale city projects may have resulted from neglect of this important principle linking beauty, utility and durability. City order is related to the ways in which people perceive or read and understand the environment. This perceptual order is related to the legibility of the environment or the ease with which its parts can be recognized and organized into a coherent pattern.

2.3.2 UNITY

First and most imp. In the grammar of formal architectural composition. It means Composition is complete in itself. Every element is in its correct position and is of a predetermined or almost pre- ordained size . . . a building that appears as nearly pure volume as a Greek temple. For Unity,

Alberti stated: *'I shall define beauty to be harmony of all the parts, in whatever subject it appears, fitted together with such proportion and connection, that could be added, diminished or altered.' 'All serious architecture aims at an effect of unity.'*

2.3.3PROPORTION

Proportion is characteristics of a unified composition, i.e., to the manner in which components may be arranged in a coherent manner. Elements are arranged to form a coherent visual statement. The apparent proportion of an architectural element is

affected by the context in which it is placed, that is the way in which it is related to adjacent elements.

The proportion of a room or a public square means the relation to the height to width to length. The definition says 'it is the relation of the parts to each other and to the building as a whole.'

2.3.4 SCALE

Scale is related to human size. In any city, in any time, moving at any speed, the factor that has given constancy to the objectives of urban design, is man himself. Physiological needs are constants. Innovation can enlarge the scale of our daily world, so our thoughts about world in general. But they can not change our fundamental ability to see the sizes of things and to feel at ease in a particular urban place.

The intimate space spaces of a city are usually not much greater than 80 feet across; and the Urban space, no greater than about 450 feet.

It is at this scale that man fully appreciates the visual qualities of his environment. In urban design, we use the term 'Scale' meaning that a city and its parts are interrelated and also related to people and their ability to comprehend their surrounding- to feel – in place.

Enclosed urban space formed by facades wall of different buildings. But then how much enclosure is necessary? In a plaza we must be sufficiently closed on all sides so that our attention focuses on the space as an identity. Our normal frontal view in a space determines the degree of enclosure – sense of space- which we feel. A fundamental requirement of urban space is actual physical enclosure or its strong articulation by urban buildings forms.

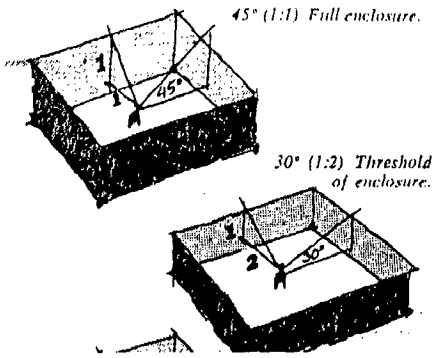


Fig.2.7 sense of enclosure

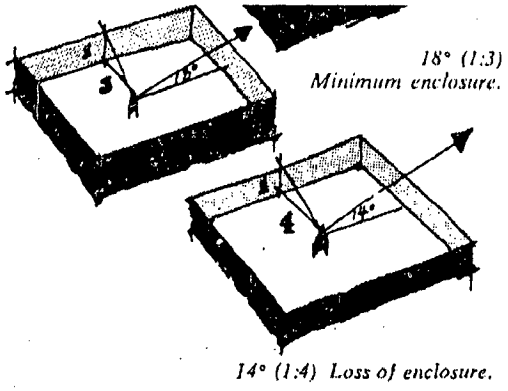


Fig. 2.8 Sense of enclosure

2.3.5 SYMMETRY, BALANCE, RHYTHM

Symmetry has come to mean the identical disposition of elements on either side of an axis. Vitruvius provides the key to understanding the use of this particular conception of symmetry in architecture. 'Symmetry is a proper agreement between the members of the work itself, and relation between the different parts and the whole general scheme, in accordance with a certain part selected as standard. Balance is what can be Visually experienced. A building which achieves balance is well adjusted, exhibiting a reasonable distribution of its components parts giving equal weightage on both side of axis.

Rhythm in architecture is the product of the grouping of elements; of emphasis, interval, accent and direction. It is the sense of movement achieved by the articulation of the members making up the composition. Rhythm is a product of grouping of elements of emphasis, interval, accent and direction which gives the sense of movement and direction to the space as well as to the eyes of viewer. It can be achieved articulation of repetitive elements to making up a composition.

Contrast is opposite to monotony, related to interest and variety. It can be between Vertical to horizontal, Form and anti form, Mass and space, Soft and hard, Colour

and texture, Solid and void, but it should produce a unified effect when seen as a whole.

2.4 VISUAL APPRECIATION OF URBAN SPACE

As aesthetic is also known as one of the physiological need, to appreciate the visual quality of any place or space, the concept of beauty and aesthetics should be well understood. Aesthetics is the branch of knowledge dealing with the sensory aspects of phenomena. The total amount of data received by an individual that is inherent in an object is it's aesthetic value. This must be differentiated at the very outset as being very different from beauty. Aesthetics can be divided into the philosophy of art and the philosophy of beauty. The beauty of an object lies, physiologically, in the mind of the beholder, since beauty is a match between a preferred image of an object and the sensory data provided by the object, where as aesthetics is the sum total of sensory data, while beauty is what a person tends to like about it. To understand our aesthetic responses to the environment we need to understand how we experience it. There are three types of experiencing of the elements of the environments that gives us pleasure: the sensory, the formal, and the symbolic.

Experiencing urban space nevertheless involves all our senses and in the some situations, hearing, smelling and touch can be more important than vision. Visual appreciation of urban space is also a product of perception – i.e., how we perceive them, process them, interpret and judge them and how it appeals to our mind and emotions.

Smith (1980) argues that our intuitive capacity for aesthetic appreciation has four distinct components that transcend time and culture. These components are Sense of rhyme and pattern, Appreciation of rhythm, Recognition of balance, and Sensitivity

to harmonic relationship. **Nasar (1998)** also observe while talking about the visual appreciation of urban space that while interest increases with the complexity of an urban environment, our preferences increases only upto a point, beyond which it decreases.

2.5 CONCLUSION

Some of the concepts for the analysis of architectural composition have formed the subject matter of this chapter. Order, unity, balance, symmetry, scale, proportion, rhythm, contrast and harmony are among the important tools used to define good architecture. These concepts can be used to analyze the aesthetic qualities of urban form though they are not the only one which is used for large urban developments. From the topic "visual appreciation of urban space, it was found that the visual quality and aesthetic expérience in the urban space by a viewer or user is not only because of its built space but also some thing else like it is sum of all the reaction of all our senses and our perception to these places. Then question arises' how these urban spaces are being perceived by the user? What are the other factors other than these concepts are responsible which affect the perception of urban space. Therefore, in the next chapter, various theories and factors which affect the perception of the urban space have been discussed. This chapter can be understood as the basic study of urban spaces, various concepts used to design urban spaces and then other factors which affect the visual experiences in urban space, i.e., our perception and aesthetics experience.

CHAPTER- 3

PERCEPTION

3.1 INTRODUCTION

Think for a moment about how you respond when you see a building or place. You look at it, experience its spaces, perhaps run your fingers across parts of it, walk through it, and see the light as it interacts with surfaces and volumes. Your primary interaction with any environment is experiential; by necessity your senses are your means of awareness.

The perception of spaces has been considered as an important dimension of urban design by Author Matthew Carmona in his book 'public places- urban spaces'. According to him 'awareness and appreciation of environmental perception, and, in particular, of perception and experience of 'place', is an essential dimension of urban design. Since the early 1960's an interdisciplinary field of environmental perception has developed, and there now exists a significant body of research on people's perception of their urban environment. The interest in environmental perception has also been reinforced by a body of work focusing on the experiential 'sense of place' and 'lived- in' experiences associated with urban environments.

We affect environment and are affected by it. We each have our own perceptual world developed within the boundaries of the social group to which we belong and how we raised. But everybody has a common limit to ability of their senses to acquire information. E.g. vision, hearing, smell and touch. These four are the most valuable senses in interpreting and sensing the environment. But is there a scientific method

by which man's perception of the man made physical environment can be calibrated? Exploring how people perceive environments and experience places, this chapter, various topics related to the perception of any thing like from form of any object to the total environment have been discussed. Broadly, whole chapter is divided into two sections. In first section, general perception, vision physiology, various processes of perception and related theories given by different writers has been discussed. In second section, architectural perception of different forms and spaces and components of any urban spaces.

3.2 PERCEPTION

Perception means the act of perceiving, to see or know through the senses or by mind, to observe, to understand. It involves the gathering, organizing and making sense of information about the environment Perception is related to the physics of vision, the physiology of the eye. It is a function of our eyes and brain simultaneously. We see images as a whole rather then in parts. However, images can be broken down into their visual elements: line, shape, texture, and color. These elements are to images as grammar is to language. Together they allow our eyes to see images and our brain to recognize them. Perception is not only related to the vision physiology but also a subject- object relationship in which subject being the perceiver and the object being anything within or outside the subject, which holds his attention in a given time and space.

Three main factors which affect the perception of any built environment are as follows-

1. Visual Characteristics

2. Visual conditions

3. Visual perception by the viewer

Visual Characteristics means its physical forms - its geometry, form façades, roofscape, landscape, activities held in that space. Three major space defining elements for all built are surrounding structures, floor, imaginary sphere of sky overhead. "Visual character of the any space is derived not only from its spatial qualities, but also from the colour, texture and detailing of its defining surfaces. Like, Facades of an urban space can be appreciated in terms of their visual **richness** -the interest and complexity that holds the eyes. **Rasmussen** has tried to show how we react to internal and external space and ways in which we appreciate form, colors and texture in his book "experiencing architecture". There is a general tendency to perceive any shape with the maximum of simplicity, regularity and symmetry.

Visual condition includes at which time and duration of viewing, shades and shadows and the distance from where it is seen. **Visual perception** includes the viewer itself in which **vision physiology**, type of viewer, socio- economic and cultural background of the viewer.

3.3 VISUAL PHYSIOLOGY OR PHYSIOLOGY OF VISION

Visual perception is not just an activity of the eyes. Rather, it results from using a visual system: The eyes-in-head-on-the-body-resting-on-the-ground.

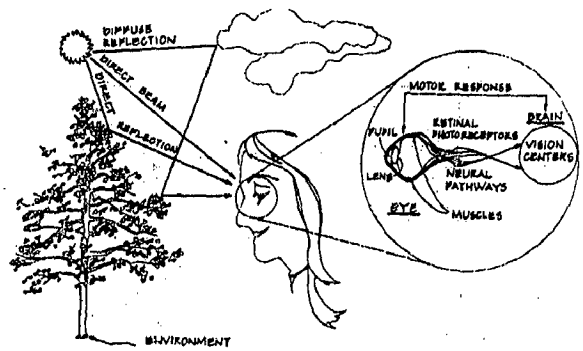


Fig. 3.1. Process of perception through vision
Source. Smardon, etal, foundation for visual project analysis, 1986

The location of our eyes with in the skull

provides a unique geometrical configuration for the stimulus inputs. We are continuously bathed in a sphere of direct and reflected incident light. The energy flows from the environment to the brain as depicted in the figure.

Each eye has a field of vision of approximately 166 degree (head stationary, eye moving). Skull position creates a central area of 124 degree where the image overlaps. This is called binocular field.

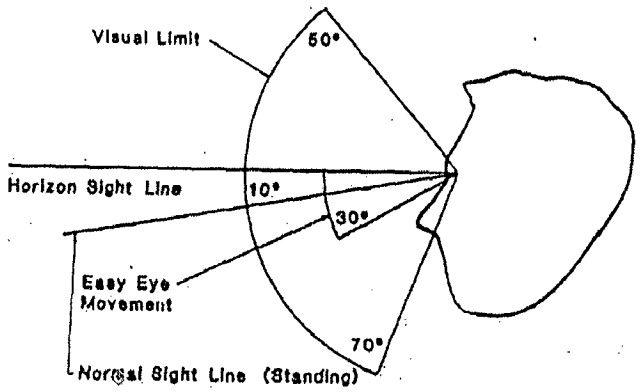


Fig. 3.2. Physiology of vision
Source. Smardon, etal, foundation for visual project analysis. 1986

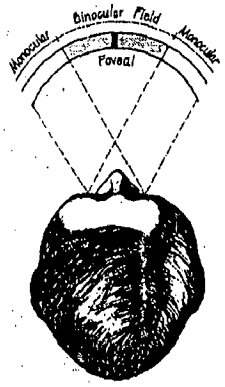


Fig. 3.3. Physiology of vision
Source. Smardon, etal, foundation for visual project analysis. 1986

For pedestrian analyses, it is assumed that the avg. eye ht. is 5 feet above the ground and for vehicle driver it is 3.75 feet.

Description of viewing	**Max. Distance**
Maximum distance for seeing people	4000'
Maximum distance for discerning action	450'
Maximum distance for recognizing face	80'
Maximum distance for discerning facial expression	40'

Maximum distance for conversational distance	10'
Maximum distance to observe	3'

Fig. 3.4. Chart showing our limits of vision
Source. Spreiregen Paul. D , the architecture of towns and cities, 1965

We cannot see an object which is farther from us than about 3500 times in size. To perceive the unity and wholeness of a building, it is should be perceived in single glance, then this theory is desirable. The maximum angle at which a building can be seen is at 27 deg. Or at a distance which is about twice its height. In case of monumental building the maximum distance from which it can be seen is beyond 1.5 km. Of course, eyes, head and body can all move. Under normal conditions, a viewer is continuously sampling a much broader portion of the environment.

3.4 PROCESS OF PERCEPTION

Perceptual process begins when viewer finds an object that stands out and is different from the background, then that object begins to assume a shape, after that the Outline of the object is perceived, then it perceives its features like colour, textures and other details which at last begins the process of classification and identification. There is a general tendency to perceive any shape with the maximum of simplicity, regularity and symmetry.

3.4.1 COGNITIVE MODEL FOR PERCEPTION

The brain is idealized as an inference engine, and the memory as the database. A host of influences such as socio- cultural factors, education (formal or otherwise) and

the media shape the manner in which our primary learning system functions in the early stages of development. At a later, more mature stage, the learning system functions primarily through the inference engine. Perception is the use of memory to make sense of observed phenomena. The three functions of the central nervous system that contribute to the totality of perception are:

- Motivation
- Memory
- Learning

3.4.1.1 MOTIVATION

The external environment has reality only because the brain specific needs and has learnt that certain combinations of light, texture and perspective have a three dimensional probability in relation to these needs. Needs produce motives, man have learnt the rules of primary perception – those of perceiving basic three dimensional spaces with respect to time. Certain portions of the brain are particularly concerned with the affective nature of sensations, i.e., whether they are pleasant or unpleasant. These affective qualities are called reward or punishment.

3.4.1.2 MEMORY

There are three kind of memory storage:

- Short – term
- Medium
- Long – term or permanent memory

When considering types of memory, it is sufficient, for present purposes, to reduce the problem to short-term and long –term. The former is vital to the process of perception, since the brain can only concentrate on a small attention fragment at one time. The eye makes rapid scanning movements and the brain holds the information from these attention fragments for a short time. It is this holding effect that enables the brain to perceive coherence in the environment.

For the process of perception, the ability of the short-term memory to piece together fragments forms the basis of how man familiarizes himself with his environment. Long-term memory on the other hand, is established by connections between neurons that form patterns. Thus, a long-term memory may be described as a permanent trace on the brain, which consists of the physical connection of perception fragments to form a coherent memory pattern.

The three dimensional nature of memory is further complicated by the fact that information from several sensory organs may be stored in a highly interwoven network. Thus, a specific memory may have a strong centre, but it may be correlated to other, weaker sensations distributed all over the cerebral cortex. This overlapping of sensory information is why smells and sounds may invoke memories of places or people and vice versa.

3.4.1.3 LEARNING

Perception is almost exclusively a matter of learning. Past experiences enable the mind to establish probabilities about the visual array that it might be expected to negotiate. A particular event is recognized because the memory has established a pattern of cell connections and linking pathways that are encoded version of the essentials of that event.

3.4.2 COGNITION PROCESS

All sensory experience is the human means of gathering information about the world around us, it is not the means by which we think (and by extension, how we feel..... but more on that later). We see that reaction to any data input is a function of both the database implicit in the system, and the external influences. We are only concerned with discovering the resultant indicators of the reaction to the data input. Once we can identify these indicators, we can infer the reasons for their disparate nature among different individuals. The heads under which architectural aesthetics are organized by the learning systems are called Indicators. **These indicators are representative of what a person (or inference engine) feels about a building.** These indicators are the notion of the building in the database of the inference engine.

3.5 THEORIES OF PERCEPTION

Perception (sometimes, confusingly referred to as 'cognition') concerns more than just seeing or sensing the urban environment. It refers to the more complex processing or understanding of stimuli. Ittelson (1978, from bell *et al.*, 1990, p.29) identified four dimensions of perception, which operates simultaneously.

- Cognitive dimension which involve thinking about organizing and keeping information
- Effective dimension which involves our feelings, which influence perception of the environment and vice-versa.
- Interpretative dimension – to draw the inferences through the memory.

- Evaluated dimension - determination of good and bad from the interpretative.

3.5.1 GESTALT THEORY OF PERCEPTION

The whole is different than the sum of its parts.

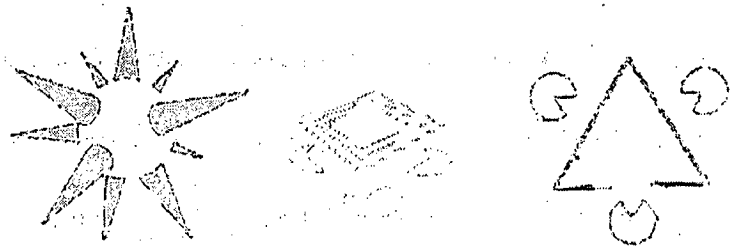


Fig. 3.5 Gestalt Theory of Perception
(The whole is different than the sum of its parts)

At the beginning of the twentieth century, the school of Gestalt psychology emerged in Germany as a reaction to structuralism, another school of thought. The Gestalt school of thought believed that our perception is the result of the relation between stimuli, rather than the existence of the stimuli themselves. The word Gestalt means "form," "shape," or "whole configuration" in German. For example, the figures below illustrate Gestalt perception. In each of them, the perception we get is the result of the relation of the existing dots, lines, and shapes to one another rather than the sum of their individual sensory effects. The idea of Gestalt perception applies not only to the visual sense but also to other senses such as hearing.

3.5.1.1 Gestalt Grouping Principles

Fig. 3.6 Gestalt Grouping Principle

We will not cover many aspects of Gestalt psychology here because the subject is rather large. Instead we will discuss the Gestalt principles that explain our perception. Gestalt grouping principles are the classifications of the pictorial properties that allow us to perceive different forms.

3.5.1.2 Proximity or Nearness

The principle of proximity or nearness enables us to group what we see according to closeness. Visual stimuli that are close together are grouped together. In the figure below, the circles are seen as arranged in pairs.

3.5.1.3 Similarity

If the distances between elements are the same, the ones that are physically similar will be grouped together, according to the principle of similarity. Therefore, green and red dots in the following figure seem to be organized in columns (in Figure A) and in rows (in Figure B). The similarity between elements can also group them in terms of form (shown in Figure C) and size (shown in Figure D).

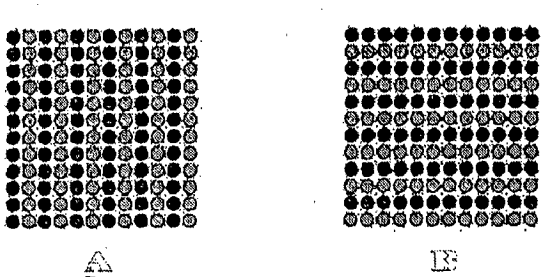


Fig. 3.7 Gestalt Similarity Principle

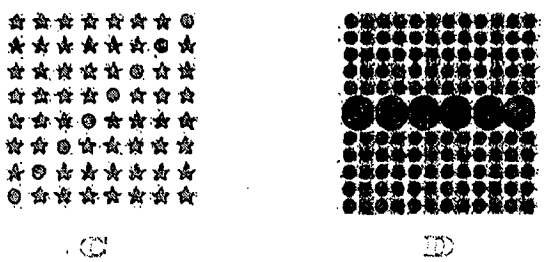


Fig. 3.8 Gestalt Similarity Principle

3.5.14 Uniform Connectedness

We perceive elements as a single unit if they are connected to one another, according to the principle of uniform connectedness. This principle sometimes overrules the principle of proximity and the principle of similarity as shown below on the left and right sides respectively.

3.5.1.5 Good Continuation

According to grouping on the basis of good continuation, elements that appear to follow the same direction are grouped together. Directions can be a straight line or a curve. Two examples of this grouping principle are shown below. In Figure A, we tend to see two curves from A to B and from C to D, rather than from A to D or A to C. In figure B, we tend to see two separate lines, rather than separate unfamiliar shapes.

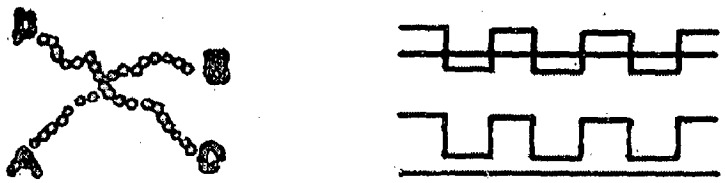


Fig. 3.9 Gestalt Good Continuation Principle

3.5.1.6 Common Fate

Elements moving in the same direction and at the same speed tend to be grouped together. This principle is similar to the similarity principle except it works for moving elements. One example of this is the "wave" created by the arm movement of sports fans. Similarly, the figure below illustrates the principle of common fate.

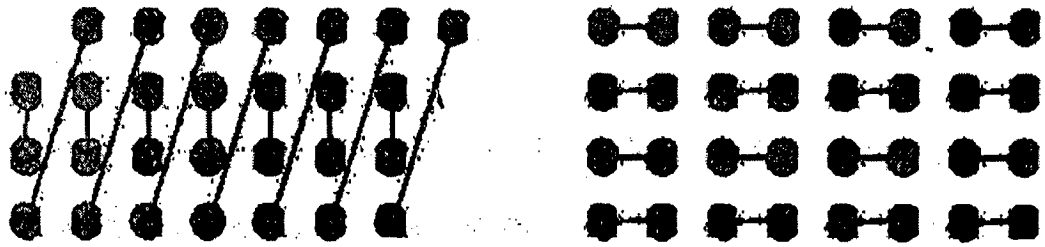


Fig. 3.10 Gestalt Common Fate Principle

3.5.1.7 Symmetry

Grouping on the basis of symmetry refers to the perception of the more natural, balance, and symmetrical figure as the same unit. The figures below show that perceptual organization follows the symmetrical pattern.

Source: Schiff man (2000) Sensation and Perception, Wiley: NY

Fig. 3.11 Gestalt Symmetry Principle

3.5.1.8 Closure

The enclosure of complete figures occurs even though the stimuli are incomplete, according to the grouping principle of closure. For example, we tend to see complete figures from fragmentary ones, such as those displayed below.

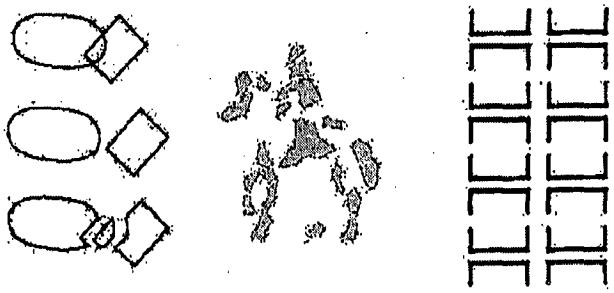


Fig. 3.12 Gestalt Closure Principle

There are number of operations by which perceptual organization works.

- Proximity Principles – eyes tends to group together or classified stimuli that are physically close to each other.
- Similarity Principles – eyes tends to group together or classified stimuli that are similar to each other.
- Closer Principles – gaps in incomplete or ambiguous patterned of stimuli are filled in a ways which make them meaningful.

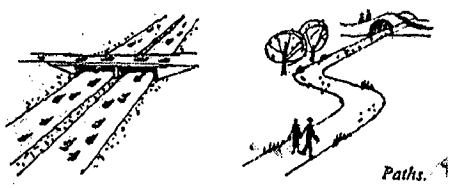
The 'environment' can be considered as a mental construct, an environmental image, created and valued differently by each individual. Images are the result of processes through which personal experiences and values filter the barrage of environmental stimuli. For Kevin lynch (1960, p.6) who has worked a lot on perception of city expressed as ' environmental images resulted from a two way process in which the environment suggested distinctions and relations, from which observes selected, organised, and endowed with meaning what they saw.

Rather than being simply a biological process, perception is also socially and culturally 'learnt'. While sensations may be similar for everyone, how individual filter, react to, organise and value those sensation differs. Differen and lifestyle and on the physical, social and cultural environment in which a person lives and were raised. Three important works on the perception of cities appeared in the late 1950's and early 1960's. First one was 'Experiencing architecture' by Rasmussen, in which he

tried to show how we react to internal and external space and ways in which we appreciate form, colors and texture.

The key work in the field of urban imagery is Kevin Lynch's the image of the city(1960) based on cognitive mapping techniques, and interviews with residents of Boston, Jersey city and Los Angeles. Initially interested in legibility, Lynch argued that the ease with which we mentally organise the environment into a coherent pattern or 'image' relates to our ability to navigate through it. Lynch called 'imageability', 'that quality in a physical object which gives it a high probability of evoking a strong image in any given observer. ces in the environmental perception depend on factors such as age, gender, ethnicity,

He argued that 'workable' environmental images required three attributes as Identity, Structure, and meaning. Identity means an object's distinction from other things, as a separable entity; structure means the object's spatial relation to the observer and other object; Meaning means the object's meaning for the observer. Since meaning was less likely to be consistent at the city level and across disparate groups of people, Lynch separated meaning from form, exploring imageability in terms of physical qualities relating to identity and structure. Though mental mapping exercises, he aimed to identify aspects of the environment that left a strong image in observer's mind. Aggregation of individual images would define a public or city image. From his research, Lynch derived five key physical elements:



1. **Paths** – channel along which observer move i.e. streets, canals, pathways.

2. **Districts** – medium to large part of a city, which observers mentally enter or which have the identifying physical character.

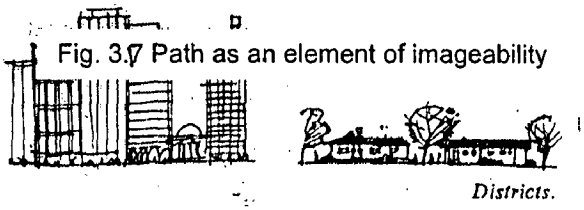


Fig. 3.17 Path as an element of imageability

Fig. 3.18 District as an element of imageability

3. **Edges** – linear elements that are either not used or considered as path and often form boundaries between areas or linear breaks in continuity.

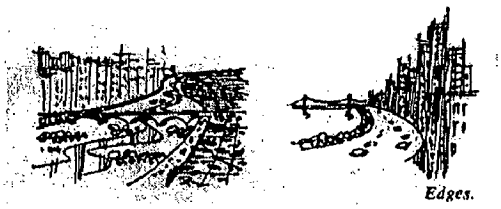


Fig. 3.19 Edges as an element of imageability

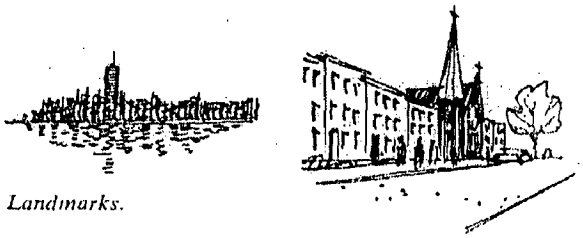


Fig. 3.15 Landmark as an element of imageability

4. **Landmarks** – point references to the observer. Landmarks with a clear form contrasting with their background, and having a prominent spatial location.

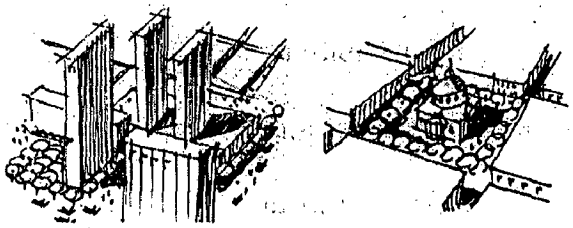


Fig. 3.16 Node as an element of imageability

5. **Nodes** – strategic spot in the city into which an observer can enter.

The ideal is that image of city causes visual utilization of people and people share and participate themselves in that visual perception. Legibility is an important factor in the image of city and every urban space that have not legibility cause unsafely and confusing in the environment. Legibility is an important factor in feeling safety and also enriches the sense of orientation and finding the way. According to Lynch, legibility is not the only feature of the beautiful city, but if we notice the living environment of people by its size, time, so this factor will be very important.

Gorden Cullen says that we should connect buildings, trees, water, traffic, signboards and so on with each other in a manner that create a " demonstration of art of city" because city is an exciting happening. He also says that "if finally the city looks spiritless and gloomy so this city hasn't answered the requests of people and is a failed experience." So cullen knows the solution of this problem in enriching the visual sense of people, because according him people percept their environment by visual ability or visual sense.

As our experience of urban space is a dynamic activity involving movement and time, this dynamic activity is very important. For this kinaesthetic experience **Gordon Cullen (1961)** give a concept of **serial vision,** i.e., he considered that the urban space should be designed from the point of view of the moving person, for whom the whole city becomes a long lasting experience, a journey through pressure and vacuums, a sequence of exposures and enclosures of constraints and relief.

Appleyard (1980) extended Lynch's work by identifying four ways in which building and other elements in urban environment were known.

- By their **imageability** or distinctiveness of form.
- By their **visibility** as people move around the city.
- By their role as a **setting for activity.**
- By the **significance of a building's** role in the society surroundings.

Most of the work done by different authors in the field of perception of the built environment is based on the public perceptions. Many theories, concepts and principles have been worked out to create a better built environment in the city which would give a long lasting impression in the mind of the users.

Camillo Sitte (1890) also wrote in his books **"city planning according to artistic principles"** that city must be planned artistically which also give visual pleasure as well as satisfaction. Various types of movements had come to give the visual quality of city or to enhance it. Such as City beautiful movement, Garden city concept, redesigning of the urban spaces according to the principles of URBAN DESIGN. As Urban Design mainly deals with the arrangement of many buildings and spaces between them, so that they form a single composition. It may cover more than one site and involve many owners, users and govt. agencies. As the theories given by different authors about the visual quality, their main concern was only the public places- where people gathers i.e., urban spaces

In **Urban design** also, **the main actors in the play are streets, squares and the buildings that make up the public face of our town and cities.**

Lynch also talk about the public participation in designing the urban spaces. He says that 'city is a place for people to live, and people give meaning to urban spaces. So urban designers design city for society and people both of them and people should participate in this designing.'

Edmond beckon knows the process of design in interfacing between society and designer and processes two conditions for this:

1. Both designer and society understand this process.
2. Both should be ready to involve completely, full participation and accept the disciplines of this participation.

Over the past thirty years, the concept of urban design that has become dominant is one of making places for people. In 1953 itself, Frederick Gibberd argued that the 'purpose of town design is to see that composition not only functions properly, but is pleasing in appearance.'

3.6 ARCHITECTURAL PERCEPTION

Perception of architecture takes place through three channels of cognition. They can be loosely classified as values, Symbols and Aesthetics.

Values are the material associations that are analysed in a comparative manner based on established knowledge. the responses to values are almost analytical in nature.

Symbols are the hidden meanings that are projected or understood and communicate more than what they physically are. Symbolism too, is understood in terms of previous experience and established patterns.

Aesthetics, often used in the broader sense of the Greek from which it is derived, refers to perception of beauty by all the senses. For instances, if we study the experiential phenomena of viewing the Taj Mahal, we can say that the knowledge that it is in Agra, that it was built by Shah Jahan, etc. is value-based information. The knowledge that it is a monument of love is a symbolic overtone. Aesthetics – what we are primarily concerned with – is the effect that viewing such a building has on the observer. His accumulation of all sense data and the processes they are subject to inside his brain to produce a reaction is his aesthetic response.

3.7 VISUAL PERCEPTION OF ARCHITECTURAL ELEMEMTS

3.7.1 LINE

A line is the path made by a pointed instrument, such as a pen, a crayon, or a stick. A line implies action because work needs to be done to make it. Moreover, the impression of movement suggests sequence, direction, or force. In other words, a line can be seen as a distinct series of points.

Line is believed to be the most expressive of the visual elements because of several reasons. First, it outlines things and the outlines are key to their identity. Most of the

Fig. 3.18 Perception of Line

time, we recognize objects or images only from their outlines. Second, line is important because it is a primary element in writing and drawing, and because writing and drawing are universal. Third, unlike texture, shape and form, line is unambiguous. We know exactly when it starts and ends. Finally, line leads our eyes by suggesting direction and movement.

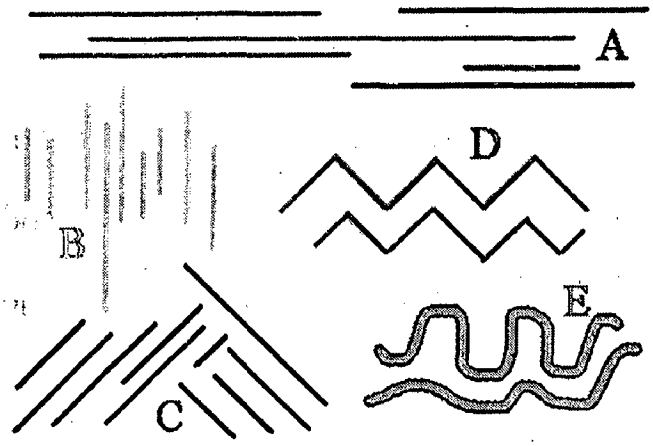


Fig. 3.18 Perception of Line

It is not easy to categorize lines because there are so many aspects to them. One can group them by using thickness, smoothness or origin. However, for the purpose of art education and communication, we categorize lines into five groups. There are horizontal lines which run parallel to the ground (figure A), vertical lines which run up and down (figure B), diagonal lines which are slanting lines (figure C), zigzag lines which are made from combining diagonal lines (figure D), and curved lines which do not fall into the first four categories. Curved lines (figure E) are used to express natural movement.

Line has been used a lot in art work. Even though most of the art we see uses line only to form shapes, some artists allow line to call attention for itself in the art piece. One of those artists is Paul Klee (1879-1940). This is a very interesting piece of art that has several lines as the main focus..

3.7.2 SHAPE

Shape is related to line. Closed lines become the boundaries of shapes. The shapes

made objects. Like with lines, there are many ways of categorizing shapes. We can use their dimensions, for example, distinguishing between two-dimensional shape and three-dimensional shape. Or we can use their style (realism, abstraction, etc), or their origin (organic or geometric) to classify them.

Geometric shapes look as though they were made with a ruler or a drawing tool. The five basic geometric shapes are: the square, the circle, the triangle, the rectangle, and the oval. Organic shapes, which are also called *Free Form* shapes, are not regular or even. Their outlines are curved or angular, or a combination of both. However, there is no clear-cut line to separate the geometric and organic categories. In the figure below, on the left side is a perfect geometric shape; while on the right side is an organic shape.

Fig. 3.19 Perception of Shape

Shape, like line, has been used a lot by artists. Sometimes, shape is used by itself to create art works. For example, a work by Theo van Doesburg, *Composition: The Card players* consists only of geometric shapes. Surprisingly, these shapes are used to represent two men playing cards.

3.7.3 TEXTURE

Texture is an element of art that refers to the way things feel, or look as though they might feel, if touched. For example, sandpaper looks and feels rough; a cotton ball looks and feels soft. The connection between visual and tactile sensation is very well developed.

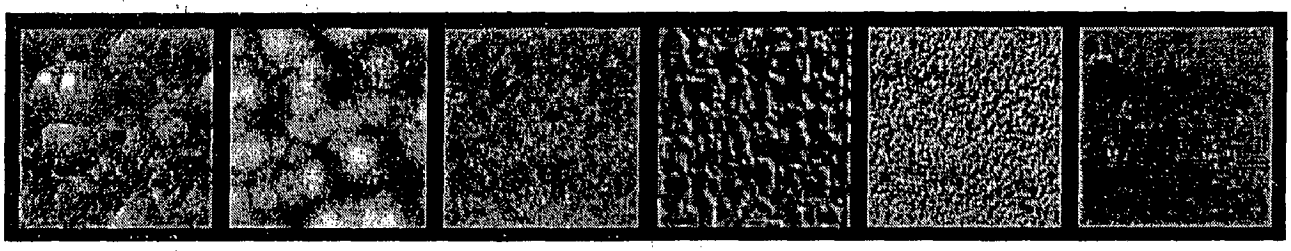


Fig. 3.20 Perception of Texture

The next question is what are the tactile properties of surfaces that enable us to see them. In the other words, why do we see texture? We see texture because of the light-absorbing and light-reflecting qualities of materials. These qualities are together represented by light and dark patterns. The light and dark patterns give us the appearance of texture. Like the other elements discussed above, texture has been used a lot in art work.

3.7.4 COLOUR PERCEPTION

Our sensations of colour are within us and colour cannot exist unless there is an observer to perceive them. Colour does not exist even in the chain of events between the retinal receptors and the visual cortex, but only when the information is finally interpreted in the consciousness of the observers (Wright, 1963, p. 20).

Nature of color

What we perceive as color is primarily the wavelength the light stimulation. The shortest viewable wavelength (about 380 nm) is what we see as blue and the longest wavelength (about 760 nm) is what we see as red. The other wavelengths that fall

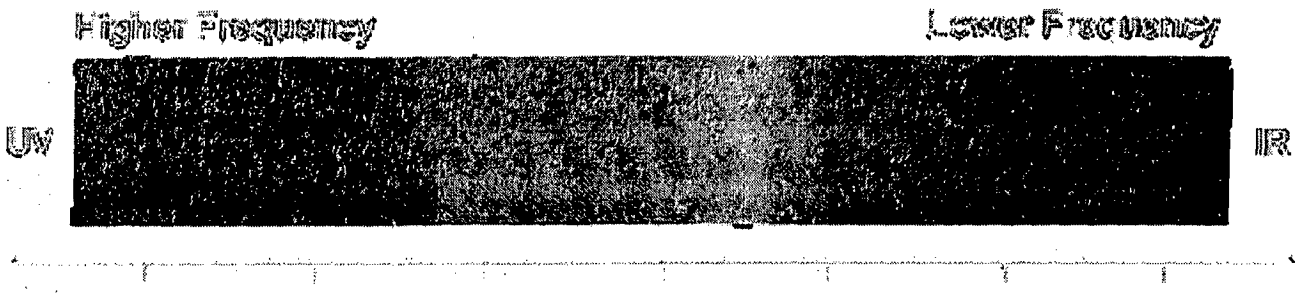
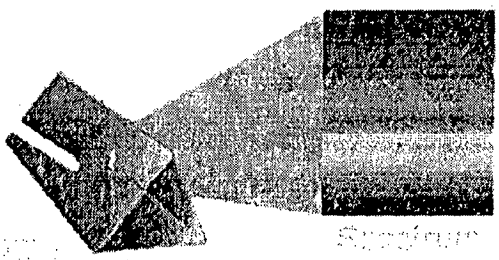


Fig. 3.21 Perception of colour

between them are what we see as other colors, as shown in the figure below. However, color perception is very subjective. We do not have a way of proving that two different people perceive the same color, yet we refer to 760-nm wavelength as **RED** and 380-nm wavelength as **BLUE**.



Source: http://www.photo.net/photo/edscott/vis00010.htm

We see color in the objects around us because they absorb most of the wavelengths from the sun, called white light; and they reflect only a particular wavelength into our eyes. For example, a red apple absorbs all but the 760-nm wavelength. Therefore,

we see it as red in color. Objects that are white in color are objects that do not absorb any viewable wavelengths; while objects that are black absorb almost all viewable wavelengths. We know that the white light from the sun consists of many different wavelengths because of Newton's prism (shown below). Because of the prism's refraction, the white light is split into rays, emitting different colors of light, each of which has a different wavelength. The same phenomenon happens in nature, as we can see in rainbows.

3.7.5 PERCEPTION OF FORM

Form is an inclusive term that has several meanings. It may refer to an external appearance that can be recognized. In the context of this study, form suggests reference to both physical and relational outline and the principle that gives the unity to the whole. As we always perceive objects in three dimension, i.e., form of the object.

3.7.5.1 Properties of Form

Physical Properties of any solid form are their Shape, size, colour , texture

3.7.5.2 Relative Properties

1) **Position** – location of form relative to its environment or visual field within which it is seen.
2) **Orientation** – direction of form relative to ground plane to the person viewing the form.

3) **Visual Inertia** - degree of concentration & stability of form. It also depends on geometry as well as its orientation relative is ground plane.

All the properties of form are in reality affected by conditions under which we view them, like, changing perspective, angle of view different shapes, aspects of form to our eyes, our distance from the form, to determine its apparent size, viewing conditions, visual field that surrounds it. Our perception of shape depends on the degree of visual contrast that exist along the contour separating a fig, from its ground or between a form and its field.

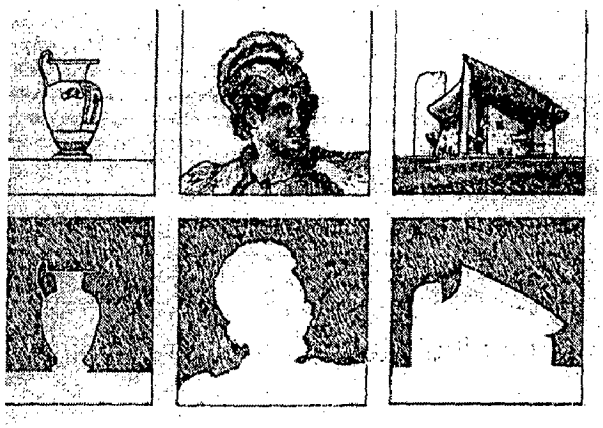


Fig. 3.21 Perception of Form
Source. Ching, D.K.Francis, Architecture- form, space and order

Gestalt psychology affirms that mind will simplify the visual environment in order to understand it. Given any composition of form, we tend to reduce the subject matter in our visual field to the simplest and most regular shapes. The simpler and more regular a shape is the easier it is to perceive & understand.

Primary shapes that make the forms are circle, triangle, and square. Circle is centralized, introvert, self-centered in its environment. Triangle is an extremely

stable fig. Square represents the pure & the rational. It is Static & neutral fig. when resting on side and Dynamic when resting on corners.

3.7.5.3 Types of Forms

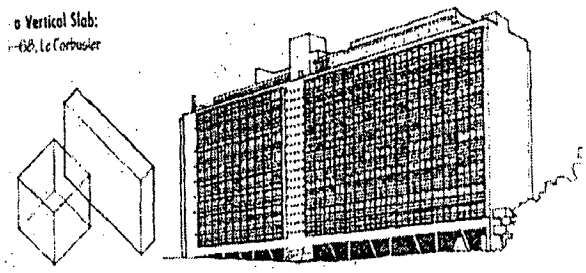
Regular forms – are those forms whose parts are related to one another in a consisted and orderly manner and which is Stable & symmetrical about one or more axis.

Irregular forms are those forms whose parts are dissimilar in nature & related to another in an inconsistent manner and are generally asymmetrical & more dynamic. In architecture, regular forms can be contained with in irregular forms & vice versa.

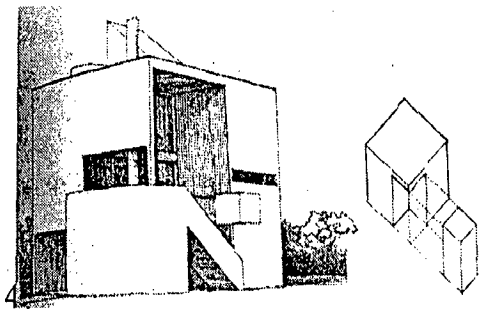
3.7.5.4 Transformation of forms

All other forms can be understood to be transformation of primary solids, variation which are generated by the manipulation of one or more dimension or by addition or subtraction of elements.

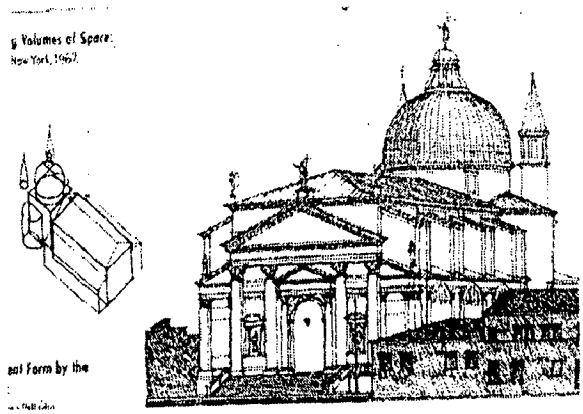
1. **Dimensional Transformation**



2. **Subtractive Transformation**



3. Additive Transformation



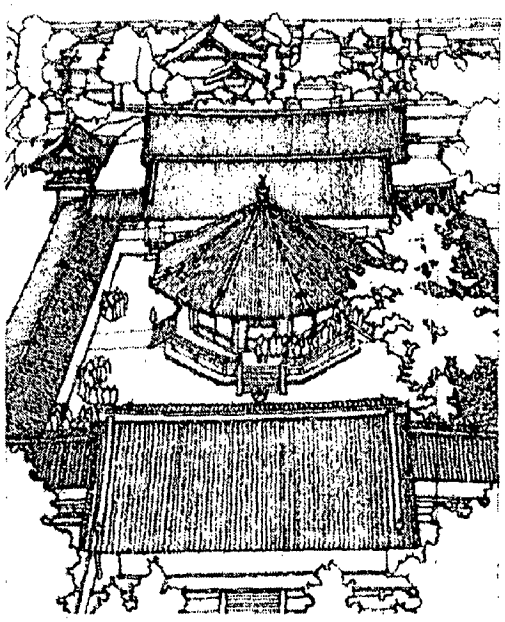
We search for regularity and continuity in the forms we see with in our field of vision. If any of the primary solids is partially hidden from our view, we tends to complete its form and visualize it as if it were whole because the mind fills in what the eyes do not see. In a similar manner, when regular forms have fragments missing from their volumes, they retain their formal identities if we perceive theme as incomplete wholes.

Ambiguity regarding the original identity of a form will result if portion removed from its volume erode its edges & drastically alter its profile.

Additive forms:

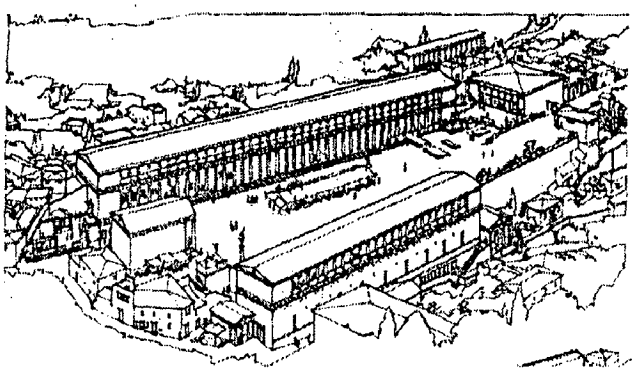
4. Centralized Form

It requires the visual dominance of a geometrically regular centrally located form, sphere form, sphere, cone, and cylinder. They are ideal as free standing



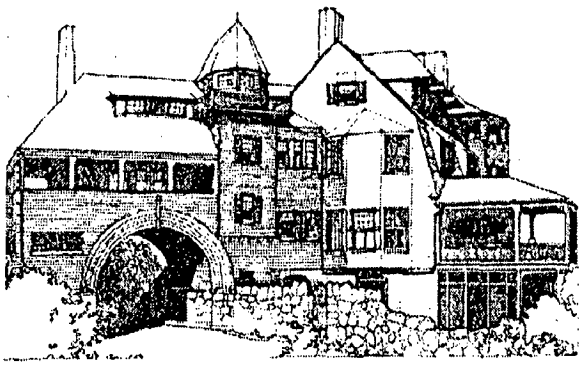
structure, isolated with in their context, dominating a point in space.

5. Linear Form



6. Radial form - a radial form consists of linear forms that extend outward from a centrally located core element in a radiating manner. It combines the aspects of centrality and linearity into a single composition.

7. Clustered Form



8. Grid Form

A grid form is a system of two or more intersecting sets of regularly spaced parallel lines. It generates a geometric pattern of regularly spaced points at the intersections of the grid lines.

8. Articulated Form

An articulated form can be said as articulated if it is differentiating adjoining planes with a change in material, colour, texture, or pattern. Lighting the form to create sharp contrasts in tonal value along edges and corners.

9. Surface Articulation

Our perception of shape, size, scale, proposition & visual weight of a plane is influenced by its surface properties as well as its visual context. Color can be used as clarifying the shape, elements of known size with in the visual context of a plane can did our perception of its size and scale, directional or oversized optional pattern can distort the shape or exaggerate the proportion of a plane. To better comprehended the structure of a visual field, we tends to organize its elements into opposing groups, +ve elements which perceived as fig & -ve.

3.8 PERCEPTION OF FACADES OF URBAN SPACE

Urban space (square) can be said as a junction of many paths which terminate at that point. It is a node of activity, or May be portal or centre of a district, town or city. Places where people gather and rest before continuing the journey. Therefore it provides an opportunity for the urban designer to display the art of city decoration in which façades play a vital role, as any square or space is surrounded by walls of facades of different buildings.

Location of decoration of facades in squares follows many of the principles so far outlined but the concentration of such ornament to particular positions in the square depends upon the physical properties of spaces. The facades are analyzed in terms

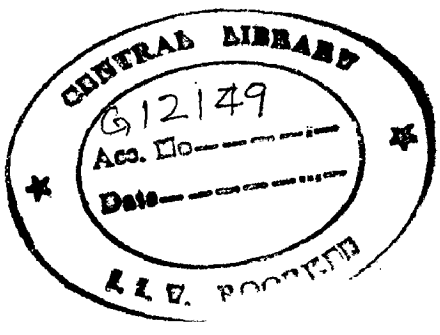
of formal, functional & symbolic Qualities. Facades are considered to complete three main formal horizontal divisions.

1. Base, podium or Ground floor.
2. Middle zone or main floor
3. Roof or attic

People can choose different visual expression from the fixed menu of urban environment either by changing their focus of attention in a given scene or by moving to another location and opening up a completely new vista or picture.

Facades are the means by which a variety of visual expressions are introduced to the viewer for his or her enjoyment & perception. This quality is sometimes called Richness. Visual richness depends upon "Contrast" i.e, contrast of elements such windows or wall, Contrast of building materials, their colour, tone & texture, Contrast of light and shade.

Simultaneously, It also depends on the no. of elements in the viewer's field of vision. Too few elements despite a strong contrast give little choice of object at which to look. Here the composition of the elements in facades may look boring. When an elevation conditions too many identical visual elements they coalesce and read as a single object with a tendency to also bore the viewer.



It has been seen that five distinct elements appear to be the lower limits where choice of the object to view is sufficient to stimulate. Composition contains more than 9 elements may diminish in richness. An elevation is said to be Rich, if the five to 9 elements are distinctly seen. (Bentley. El al., 1985)

Classical approach to the façade design is the based upon "order of Architecture". Facades being subdivided horizontally and vertically by the main elements of the order, the entablature, the column. Each floor emphasize and distinguished by use of different order. – Like external façade of colosseum, Rome. The decoration emphasize the elements in this structural pattern of superimposed arcades subdivided into bays by massive pillars which stretch from the floor to vault where they branch into elegant patterns of graceful arches to support the weighty roofs.

A building may be said to consist of three main sections.

1. Foundation or base that connects the building with the ground or basement:
2. Middle section having the main demerits of façade & possibly contain "Piano Nobile".
3. Roof zone which connects the building to the sky by silhouette.

These three sections of buildings are common universally. Relative weight age is given to each section or zone. Weightage will depend upon the location of building in relation to viewer, its height, mass and location of its most important function.

For example: In the crescent in Bath, John Wood the younger expressed these three (first 7 second floor) elements with great clarity. He combined the first and floor with one gain order. In this way he unified and differentiated the middle section of Crescent both from the ground floor with its rhythm of doors & window, and also from the attic, with balustrade & small dormer window. Visual elements may be emphasized by a more distinctive treatment of colour & textures.

Base connecting the building to the ground is the most important part of the façade, and most often noticed by the viewer. I.e. around the main entrance and parlour window, or other visual elements receives most attention to detail. Important part of zone of facades in Commercial Street is ground floor. E.g. entrance, arcade as a unifying element of continuity.

Middle Zone - Finer articulation of middle zone of the façade consists in its relief. Elements are – cornices, string course & vertical edging. Defining the zone. With in the zone the articulation is largely achieved through- Detailing around the window openings, Projecting bays, corridors and stairwell.

Often ornamental work is done in contrasting colour. In overall composition, one or other of the materials, background or decorative material should be seen to clearly dominate the composition. Other important considerations for the location of visual elements are the distance of viewer from the façade , angle at which is viewed (enclosure), time and duration of seeing that façade.

The closer the viewer is to a building the greater the opportunity to see and appreciate intricate detailing. Above it, become more difficult to see with comfort, the head to be fitted considerably and a conscious effort made to appreciate detailing on a wall higher than about 12m or at an angle of 45 deg to eye.

To appreciate building detailing:

-12m of distance, from there only 6m of height can be easily seen; above it is have to tilt your head.

- Distance greater than 24m, larger areas of the façade can be seen as a pattern but elements, has to be bolder to be observed and all the features grouped to form more dominant object in the fields of view.

Problem of fore sighting in perspective, that is , the apparent loss size in objects at greater distance from eye. For them, it was common practice to increase in size the mouldings which was furthest from the eye to have a complete sense of composition.

Good facade not only gives the movement to the whole composition but also direct the viewer to move in that space. Building from & façade should show great respect for its context. i.e. windows shapes, details, materials, gable and colour blend to form a highly decorative and unified street scene.

The small scale of architecture and the sense of tight enclosure maximize the decorative effect of the shop, window, sign board, paving. Building alone cannot be appreciated said as pleasant, it is the whole environment which defines every elements and building is one of them. Avoiding monotony is the first step in making any space or façade pleasurable.

Emphasis point /focal point should be there, which integrate the whole composition of the urban spaces. It is important to note the location where decoration should be avoided, sculpture, foundation and other city ornaments should not be placed highly decorative facades. Such city ornaments are best seen against a vertical or plain ground & vice versa. Building façade is the feature of the urban realm where the appropriate use of ornament and decoration is vital to the creation of a rich and interesting environment. There must be a rationale for the decorative design of urban facades. This rationale, it is argued here, is developed from an understanding of the way in which we look at buildings.

3.9 PERCEPTION OF OTHER COMPONENTS OF URBAN SPACE

3.9.1 CORNERS

Another prime location for architectural decoration is at the external corners of buildings, particularly if the corner is at the junction of several streets. The design of the corner, where two planes meet is a visual problem giving scope for expression in the design of almost any artifact.

Handling of corner is often indication of the quality and mastery of the designer. E.g.: Georgian building – Britain

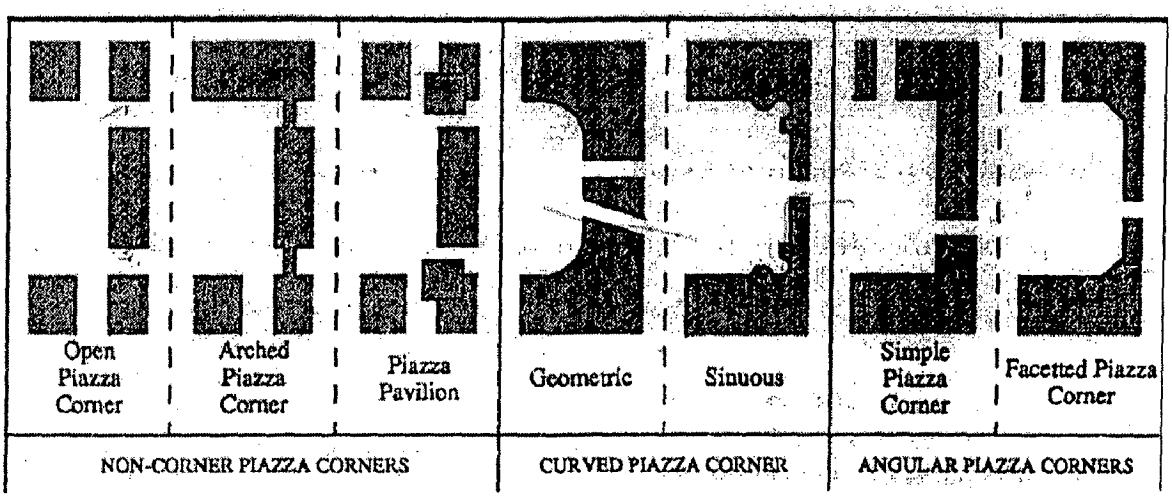
There are two types of corners has been classified, which are as follows_

1. Internal corner – where two planes meet and tend to enclose space. For example square or pizza.

2. External corner – where two planes meet and present a 3-d view of the building. E.g. any junction of street.

3.9.1.1 CORNER TYPOLOGIES

Classification based on physical form rather than usage or function



i. Non corner

ii. Curved corner

iii. Angular corner

Quality of any square is having the sense of enclosure and the Key to enclosure in the square is the treatment of its corners.

i. Non corner

1. Open piazza corner

When the walls of facades do not meet, no actually physical corner.

eg. Piazza Del camidoglro, Rome -physically open but visually closed.

2. Arched piazza corner:

Use of an arch to connect the two adjacent facades of a square is a highly decorative method of closing an otherwise weak corner. Arch itself is a highly decorative feature, an ornament of the city. Its potential of framing a spectacular view adds a further dimension to the appreciation of an urban space. Where two roads leave a square at the same corner, the gap in the public space can destroy the enclosed quality of square.

3.9.2 Skyline & Roofscape

It is the relationship between skyline and ground form is most easily established when studying the settlements built on flat or steeply sloping sites. Quality of skyline is not the result of the subtle placing of a single imposing building, but the result of total built form in harmonious relationship with terrain. Roofline is that part of the skyline which is seen from the urban space with in the city.

As skyline, a silhouette is seen from a distance the roofline, although also a silhouette is seen from relating short distance. Roofline is the profile or the topmost boundary of the wall of a street or urban/public place. It is the meeting place of sky and building. As the edge of a main building element, it is a position where decorative has been traditionally placed. But now, today, modernist architect to finish the building facades in a crisp unadorned edge.

There are four types of rooflines has been classified as,

1. plain crisp edge – modern building

2. Product of natural growth of town and is made up from a series of gables facing onto the street or square.
3. Horizontal ornamental edge to the building façade.
4. Baroque building groups. Roofline on both sides of space, steps up to the climax at the need of the plan.

Roofline emphasizes movement and decides the overall form of the building. In the past, buildings with domes, minarets and tower has been the main decorative features of traditional city skyline. Roofline is that outline of buildings seen from the pavements in the city. It present the changing profile of the city as the citizen moves around below.

3.9.3 Changing level at the entrance

Steps, ramps, platforms and long sloping planes contrast with horizontal plaza, the place for rest, conversation & meditation. By that contrast the sense of drama is enhanced. Emphasizing the variation in level, using ornamental staircase and ramp. Add to the quality and grandeur of the urban scene.

3.9.4 Landmarks, sculpture & furniture

Building should be dominated square.

- By symmetry of design elements to make a balanced composition about one or more axial lines.
- Closing of vistas by the careful placing of monumental buildings, obelisks or suitable imposing statues, at the ends of long straight streets.

3.9.5 Color

Colour should used to strengthen the image of the city by giving emphasis to features such as landmarks, by developing colour schemes which are associated with particular districts, streets and squares and by the colour coding of street furniture. It is not advisable that all places of city decorated but some should be decorated, so that it creates an image of the city.

CHAPTER- 4

FIELD STUDY

4.1 INTRODUCTION

Field study gives the clear analysis of the work done in the literature study. It has been done to understand the various factors which affect the perception of urban spaces on the viewer's mind. Before going for the survey to find our various factors, there was a need to analysis the most popular urban spaces in terms of their visual characteristics, viewing conditions, viewing environment and then various surveys have been done to find out the public opinion.

Keeping this in mind, this chapter is an attempt to understand the various factors which affect the perception of built environment through various case studies (from literature and live case studies) and public opinion about the selected case studies. Analysis of the public opinion, framing out the most important indicators through various indicators will be framed in next chapter. In this chapter, analysis is limited to the first three factors which affect the perception of any built environment, i.e., visual characteristics, viewing environment, viewing condition.

4.2 CASE STUDY-1 (Literature Study)

Piazza De San Marco, Venice (828-1810 A.D)

Piazza DI San Marco is chosen because it is world famous piazza and most popular tourist destination in Venice. Piazza as a tourist magnet and provides a living and working environment for thousands of people. It is also Known for its visual

attractiveness in terms of urban design and architecture. Not only visitors describe it as a place to listen to music, a place to shop, a place to eat, to see the world one of the best architecture. But also great architects like Napoleon's called this as "The Finest Drawing Room in Europe." Even Saarinen also wrote about this place as "correlation of individual buildings into a magnificent architectural ensemble ....into ... a lasting symphony of architectural forms." Camillo sitte also described it as "..... No painter ever conceived an architectural background more perfect ..... No theatre ever created a more sublime tableau'.

Though the work has been done by different architect in different ages but each architect responded to the work of his distinguished predecessor by deciding to blend in with or to react against it, according to the taste of his time. Saarinen also this place as "correlation of individual buildings into a magnificent architectural ensemble ....into ... a lasting symphony of architectural forms."

Plan Of Piazza San Marco (Through different ages)

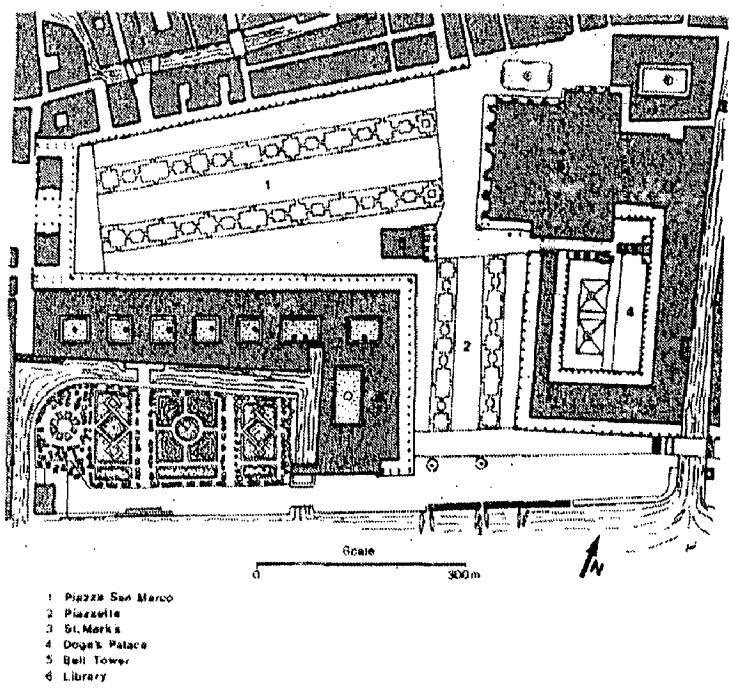
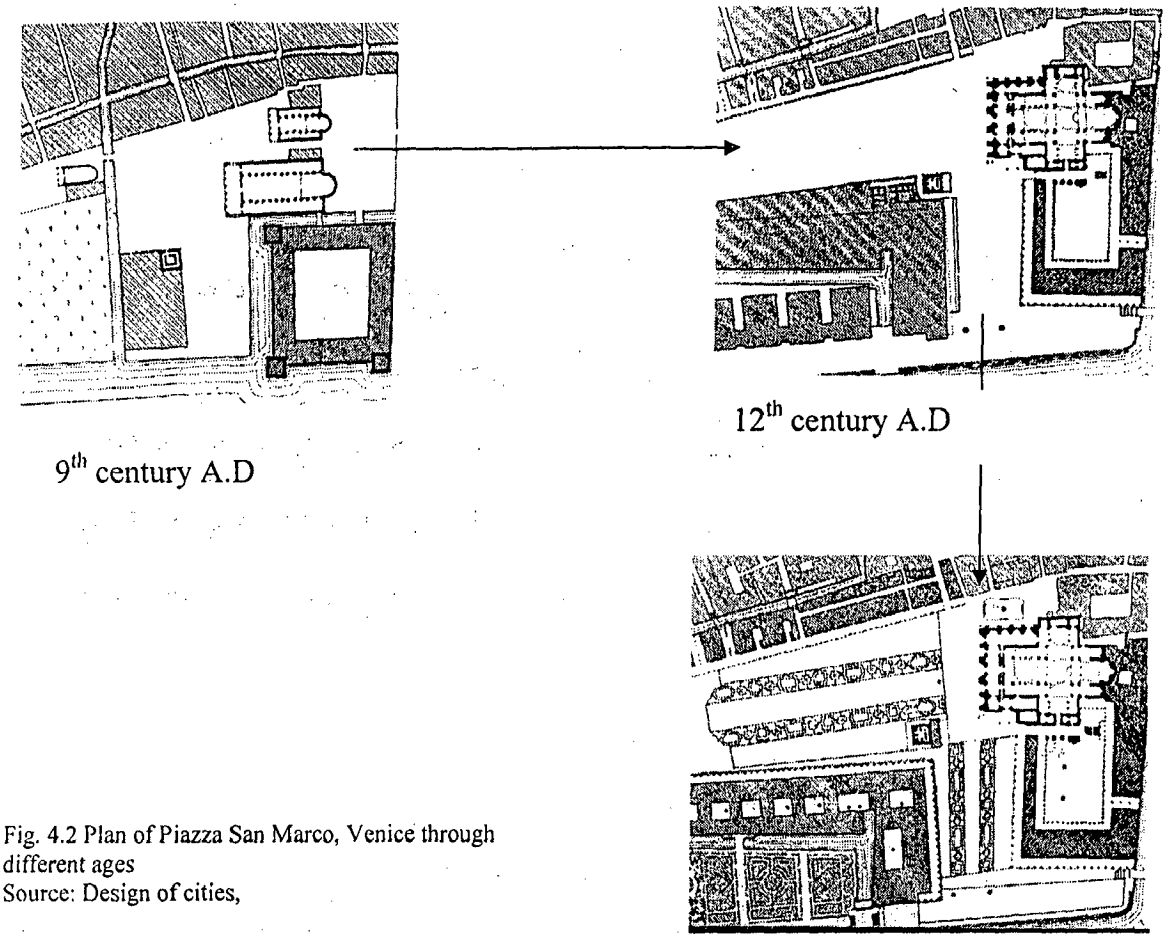


Fig. 4.1 Plan of Piazza San Marco, Venice
Source: Design of cities,

Stages of development

Piazza was developed in 30 phases from 828-1810 A.D



9th century A.D

12th century A.D

Present form

Fig. 4.2 Plan of Piazza San Marco, Venice through different ages
Source: Design of cities,

4.1.1 VIEWING CHARACTERISTICS

4.1.1.1 Analysis of Piazza Shape

Piazza san Marco is an enclosed urban square as well as has the quality of dominated square. The Main shape of piazza is trapezoidal from west to east. But it is overlapped by other trapezoidal shape from south to north. Over the overlapping the two dominating masses are projecting out to break the continuity of vision, to create the sense of curiosity as well as sense of suspense. Its shape, which flares outward from its enclosed end, makes the piazza appear even more spacious when viewed from the *Ala Napoleonica*.

Entrance is an attractive feature and is well defined and welcoming and strategically placed – imparting the Sense of arrival.

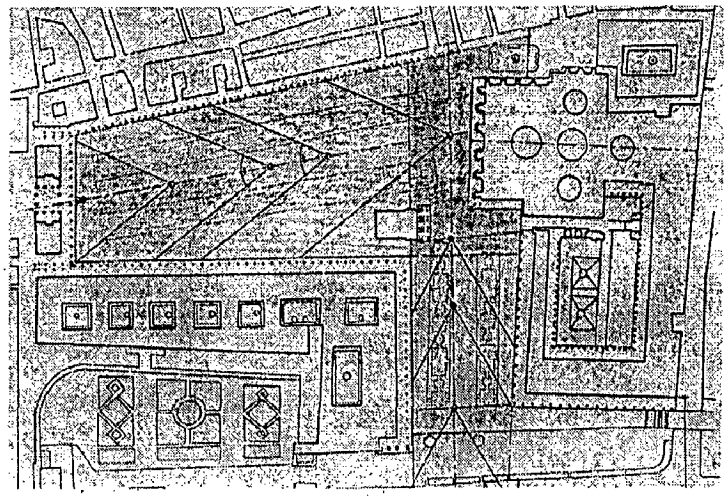


Fig. 4.3Two different shapes overlapping in Piazza San Marco, Venice through different ages
Source: Author

4.1.1.2 Analysis Of form and facade

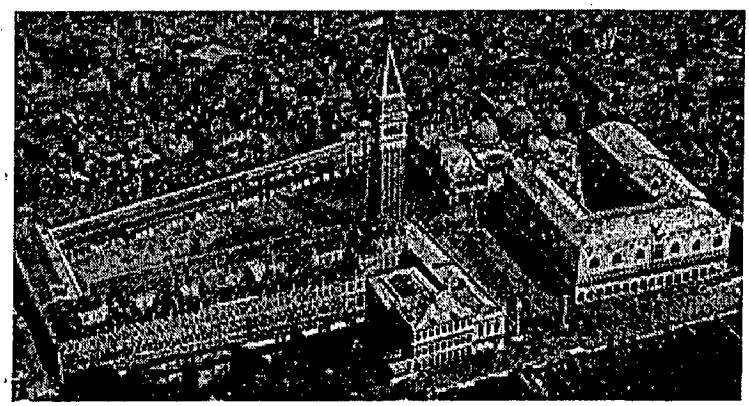


Fig. 4.4 View showing different forms club together at one space
Source: internet

There is Variety of forms of building in the piazza. But most of them are regular forms, Stable and symmetrical. Cathedral alone is having a lot of varieties of forms itself. Inspite of having a great variety of forms in the space, it is imparting the Sense of unity, whole massing looks like a single mass. Placing of these various Forms are

strategically and intelligently selected but again imparting the Sense of unity. This gives Movement to eyes through different Forms as well as giving the direction to move the feet of visitors without inquire anybody.

4.1.1.3 Analysis Of façade

Fig. 4.5 View showing variety of facades element gives the direction to move eye and feet
Source: internet

There is a great Variety in the facades of buildings in the Piazza San Marco but all the facades have Regular geometry of elements in façade and all are imparting the Sense of unity when viewed as a whole.

Cathedral having a lot of varieties of façade element itself, making heavy contrast with its surrounding facades but act as an integral part of whole composition. Sense of unity comes from repetitive use of some elements (colonnades, arches, roofscape,etc.) in throughout the composition. Height is same all through, due to which continuity does not break. Variety in facades elements imparts Movement through facades which giving the direction to move eye from one point to another, having different experiences from every side.

DOGE'S PALACE (Started in 814, Rebuilt – 976, 1105, 1309, 1404)

It is Venetian gothic form having 36 columns of massive arcades. It has Pointed arches at ground level. Three bronze pylons in front of basilica in 1505.

At first floor, there are 71 columns which are pointed arches & fretted. Quatrefoil opening and above it blank façade of pink & white marble, laid in diagonal pattern.

This façade is preceding by large pointed windows, -which is frame by fretwork marble cresting.

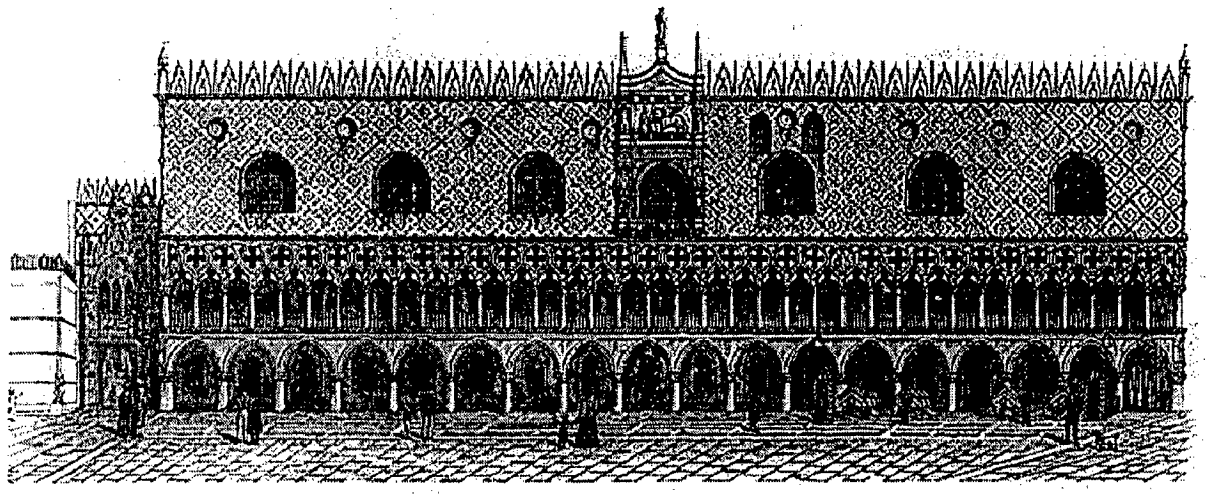


Fig. 4.5 View showing variety of facades element Doges palace
Source: internet

Basilica of S. Marco (church- 828 A.D)

It is Centralized, Additive and subtractive form, elaborately carved ogival pediments which surmounted each bay of facades, Turrets, Four gilded copper bronze horses over central arch. It is a grandiose and magnificent hodgepodge of Byzantine domes, mosaics, and plundered treasure from the near east and Asia.

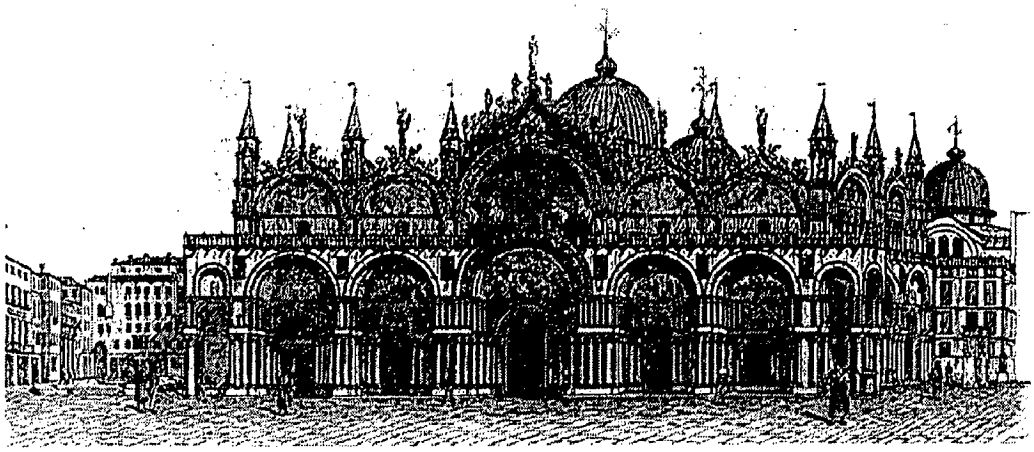


Fig. 4.5 View showing variety of facades element Basilica San Marco
Source: internet

Procuriatie Vecchia

This building has three superimposed Renaissance arcades in three floors having Fifty arches, Other two floor hare-100 arches.

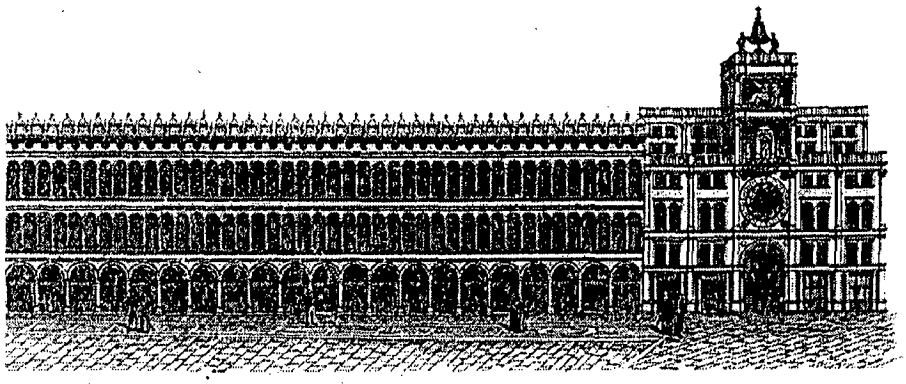


Fig. 4.5 View showing variety of facades element of Procuriatie Vecchia
Source: internet

Library (1536)

It was Designed by Sansovino and completed by Scammozi. It has Strong horizontal emphasis, elaborately carved entablatures over both ground & first floor colonnades. Horizontality is emphasized by open balustrade at first & roof floor level. While each bay is also emphasized along the roof line by a standing statue.

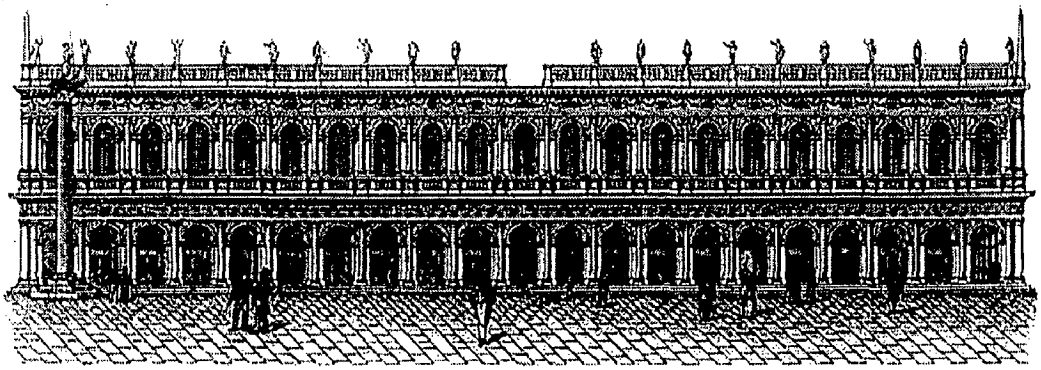


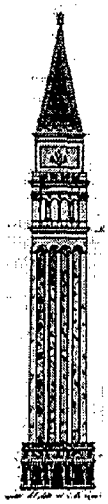
Fig. 4.5 View showing variety of facades element of Library
Source: internet

4.1.2 VIEWING ENVIRONMENT

Piazza is surrounded by buildings from all four sides. Piazzetta is surrounded by buildings from two sides and act as passage to the main piazza and have the main and welcome entry to visitor – defined entry. It is also surrounded through canal entrance; the fore ground to the pizza is created hard paving followed by water. Middle ground created by the built mass and background is sky and punching campanile. In the main piazza, the fore ground is created by hard paving. Middle ground created by the built mass and background is sky and punching campanile.

Campanile of height – 323 feet.

Vertically is emphasized by buttress surmounted by square stone bell chamber and that in its turn by a pyramidal spire. Act as a focal point , which unifies whole piazza, i.e. irregular plan of piazza, and disparate forms of the building which surrounds them.



4.1.3 VIEWING CONDITION

Piazza have rush all the hours of the day, but mostly visited in the day in summer season and every weekends. Building does not have any glare, because of material used. Night view is also very pleasant and memorable, showing the intricate details of each form and façade of the space. Size of the piazza is quite relative and comfortable to see the whole composition, creating various viewpoints in the piazza itself to feel the space and total environment.

4.1.4 ANALYSIS OF PHYSIOLOGY OF VISION AND PERCEPTION

Cone of vision: 60 deg.

Series of vision that one will get while coming from the canal side.

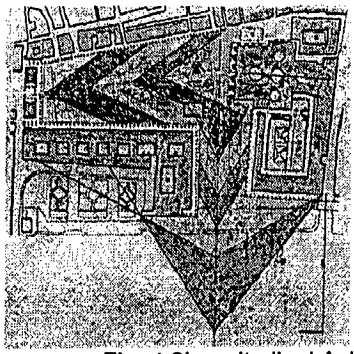


Fig. 4.6Longitudinal Axial Section

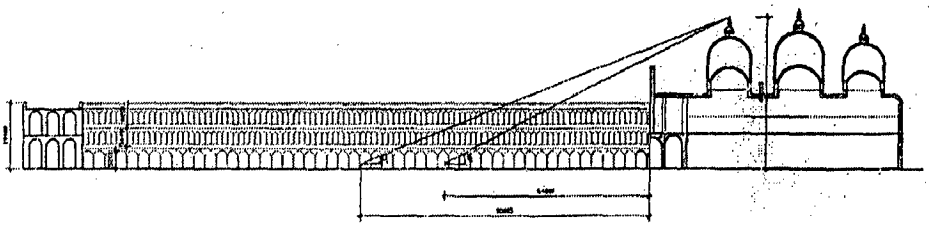


Fig. 4.7 West Side Elevation

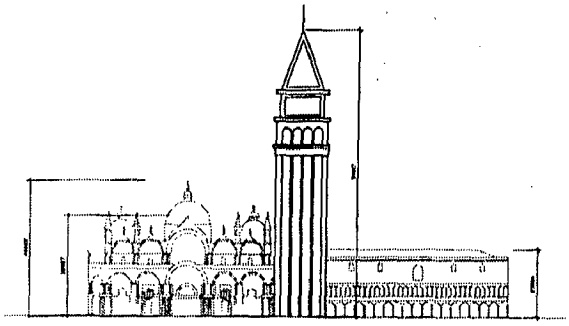


Fig. 4.8 South Side Elevation

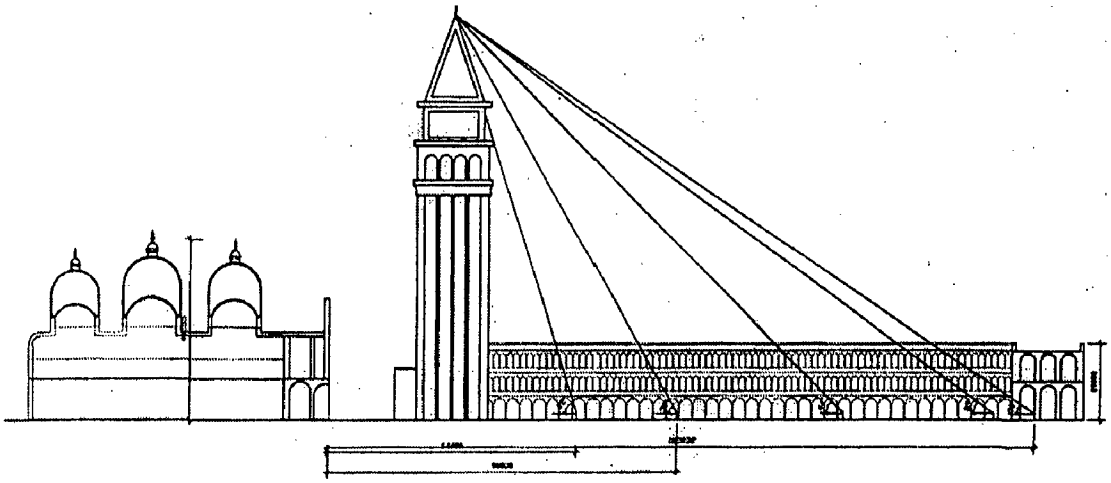
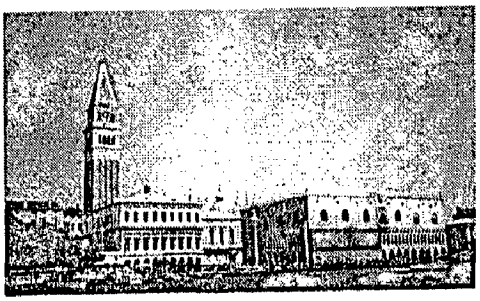
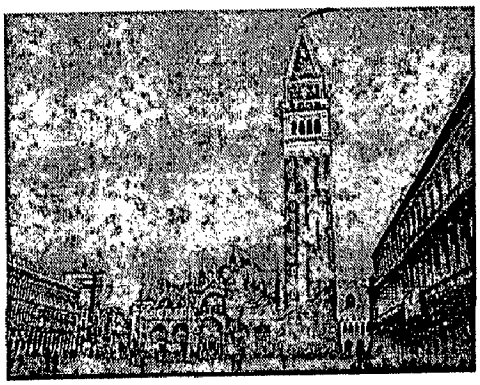


Fig. 4.9 south side section

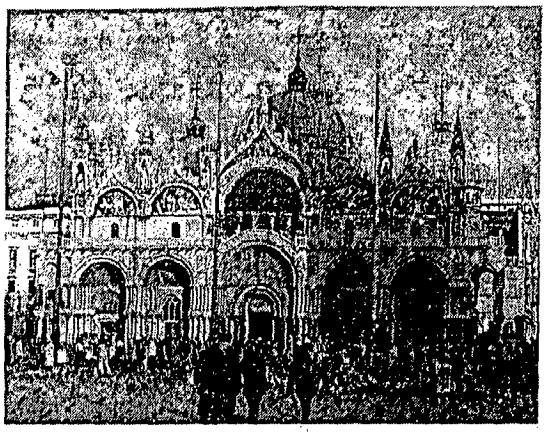


View1. From canal showing the dominating campanile. (first striking feature in process of perception)

View2. From at the entrance showing different forms and facades and giving the direction to the movement (st. Mark's church is first striking feature in process of perception)



View3. From piazza showing different forms and facades and giving the direction to the movement (campanile is first striking feature in process of perception followed by St. Mark's Church)



View4. From piazza showing different forms and facades elements and details (dome is first striking feature in process of perception followed by main entrance and then turrets)

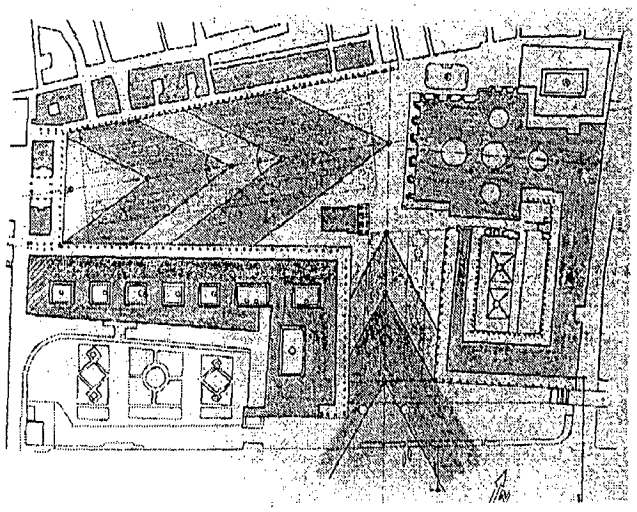
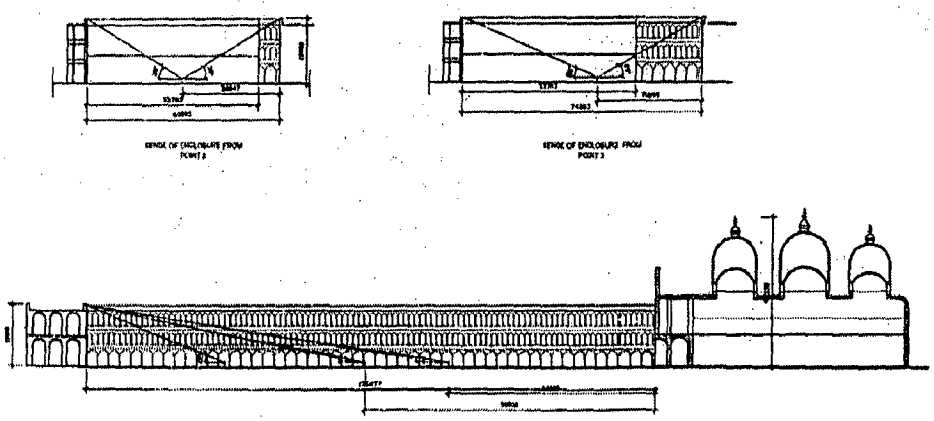


Fig. 4.10 view points



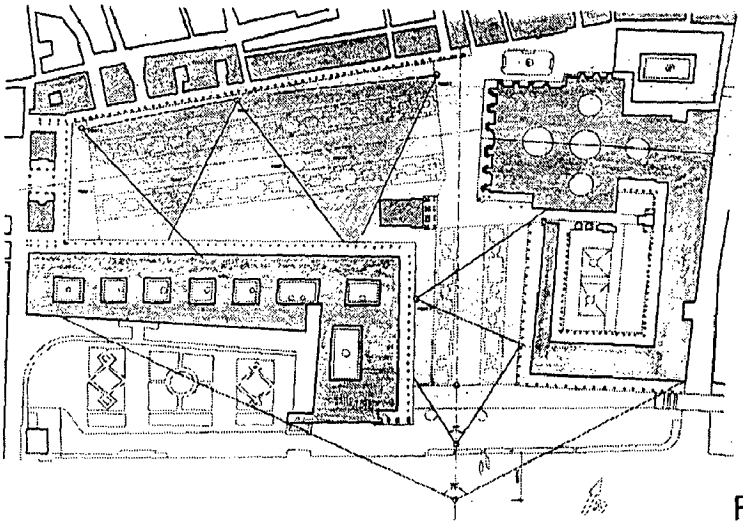
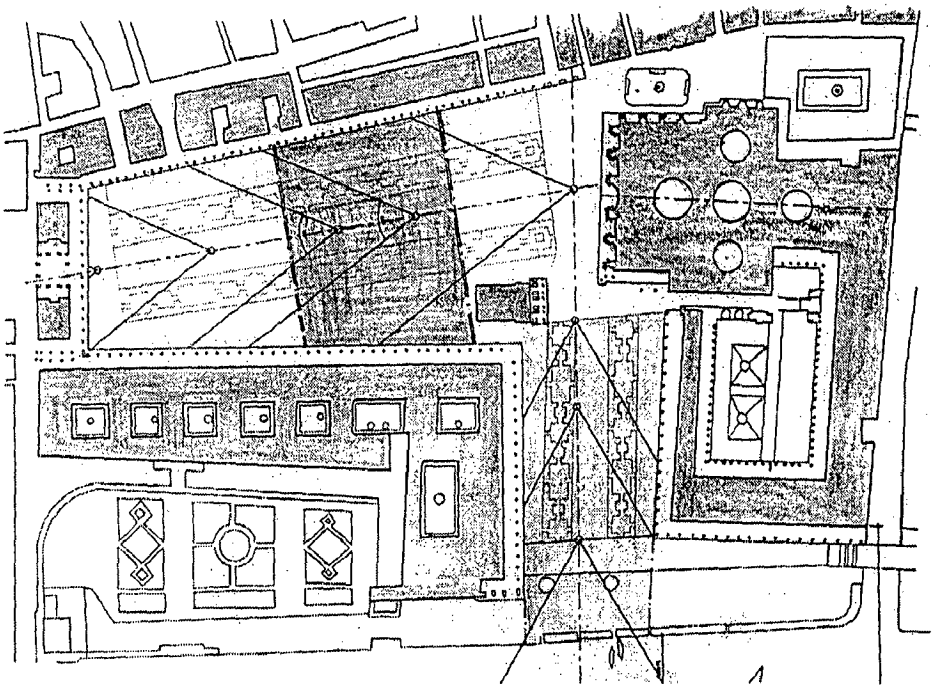


Fig.4.11 Other view points

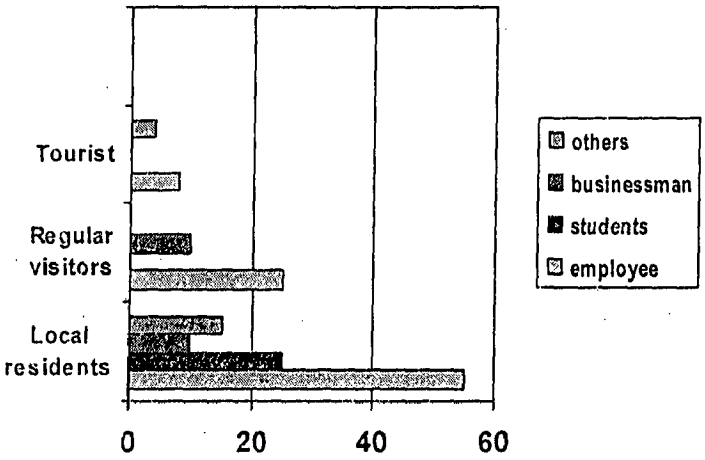


area which is dark shaded is of the prime concern for designer, because it is found that from this place one can have whole view of piazza with all detailing and without losing the sense of enclosure.

4.2 Survey Done In New Delhi to Identify the Most Attractive Place Because of It Built Environment

It was oral random survey done in New Delhi (north & south Delhi). Approximately 135 – 140 persons of different age groups were surveyed. The questions that were asked Randomly to them were about the most frequented and famous to visit in the city, places which they usually visit and for what purpose and out of those urban centers, Which commercial places do they like the most attractive, because of the buildings located there?

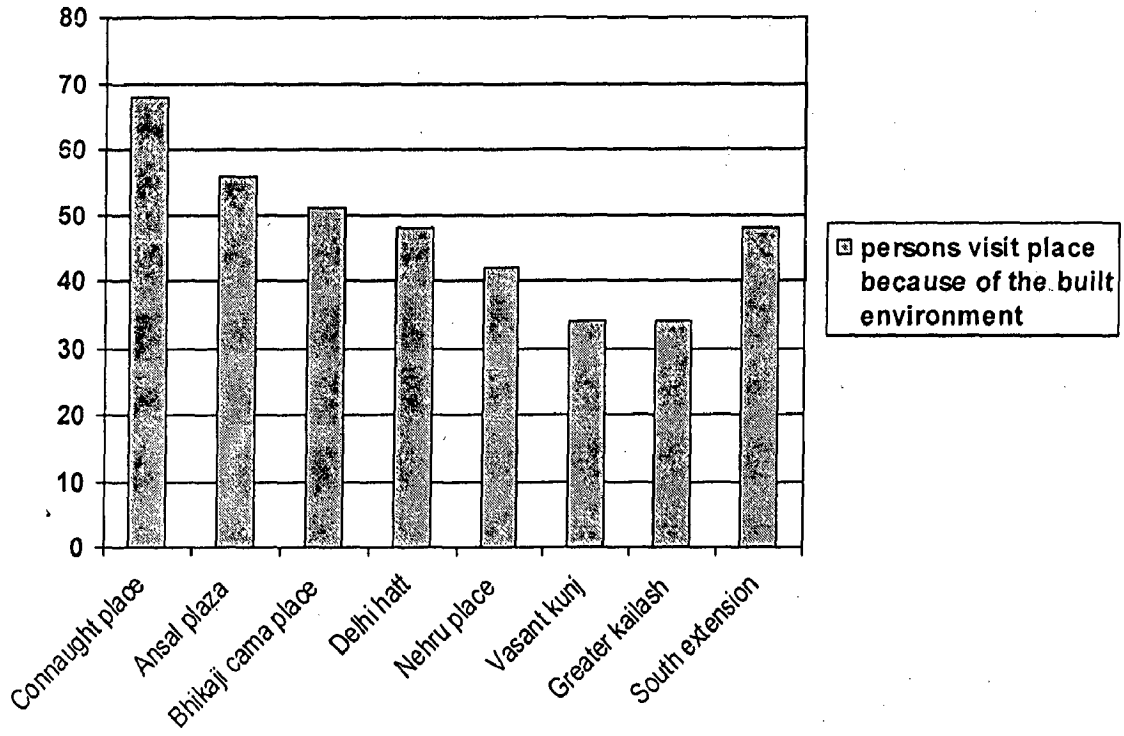
Persons which were questioned and their background



Most Frequently Visited and Well Known Commercial Places in the City framed after the survey was conducted.

1. Connaught Place
2. South Extension
3. Nehru Place
4. Bhikaji Cama place
5. Delhi Hatt
6. Ansal Plaza
7. Lajpat Nagar Market
8. Vasant Kunj Market
9. Greater kailash –I Market

Most Frequently Visited Commercial Place in the City framed after the survey was conducted because of the built environment -



Out of the above urban centers, the first three (Connaught place, Ansal plaza, South extension market have been chosen as a case studies and will be analyzed on the factors which affect the perception of any built environment, because they got the good percentage of responses through the opinion poll)

4.3 CASE STUDY – 2

CONNNAUGHT PLACE, NEW DELHI

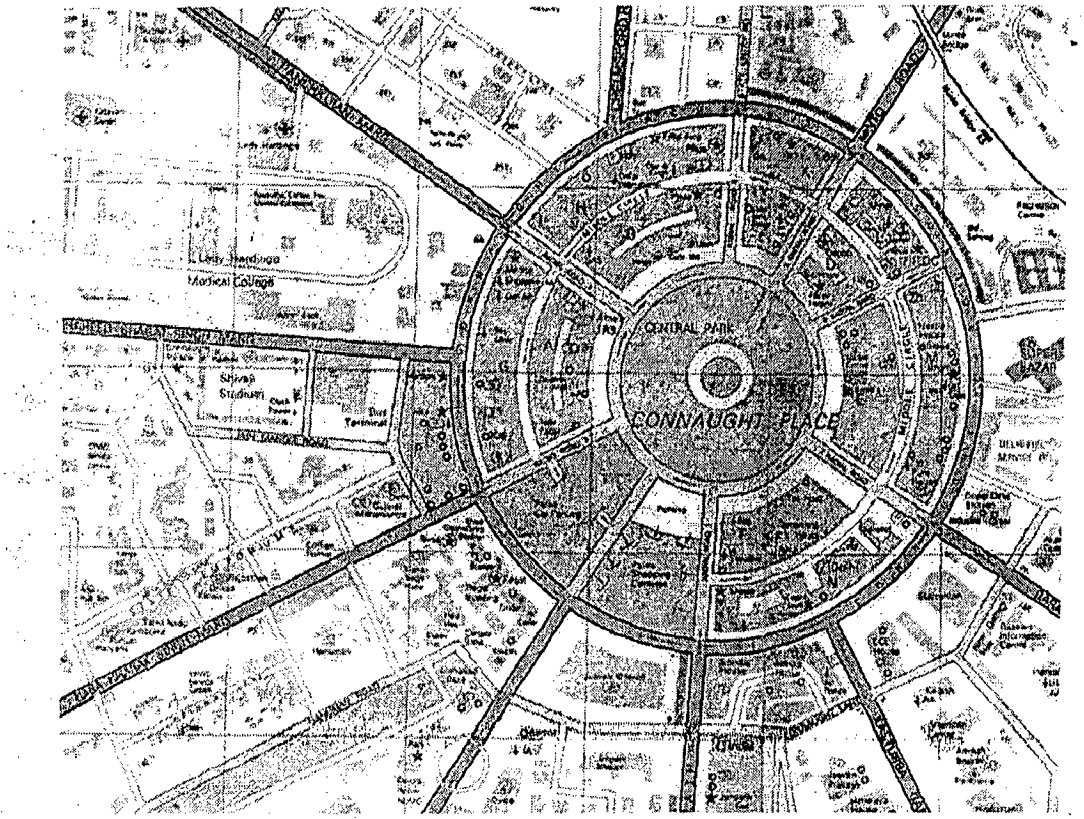


Fig. 4.12 Map of Connaught place, New Delhi

Year of construction – 1931

Architect – R.T. Russel

The market got the name Connaught Place in honour of the Duke of Connaught who visited Delhi in 1921. By this time, R.T. Russel (formerly assistant to Lutyens on the New Delhi project), Chief Architect in the Central Public Works Department was ready with an exciting plan for Connaught Place.

4.3.1 ANALYSIS OF SHAPE

Main shape of Connaught place is circular having radial roads projecting out to different part of the city. It is an enclosed urban square by its shape as well as have the quality of dominated square. It has Colonial architecture.

The Diameter of Central Park is 240 m surrounded by the 18 m road all around and then 25 m of hard paving for walk and sitting. Now it is used as parking area.

Fig. 4.13 Top view of Connaught place, New Delhi

4.3.2 ANALYSIS OF FORM AND FACADE

There is a Unity in the form as well as façade throughout the stretch. It has Regular form that is imparting the sense of unity. Whole Connaught place is Stable and symmetrical, but horizontality is more dominating than verticality- hence loss of enclosure. It imparts Movement to eyes through repetitive Forms and various facades elements.

Fig. 4.14 View of Connaught place through road, New Delhi
Source: internet

Fig. 4.15 View of Connaught place through road, New Delhi
Source: internet

4.3.3 ANALYSIS OF FACADE

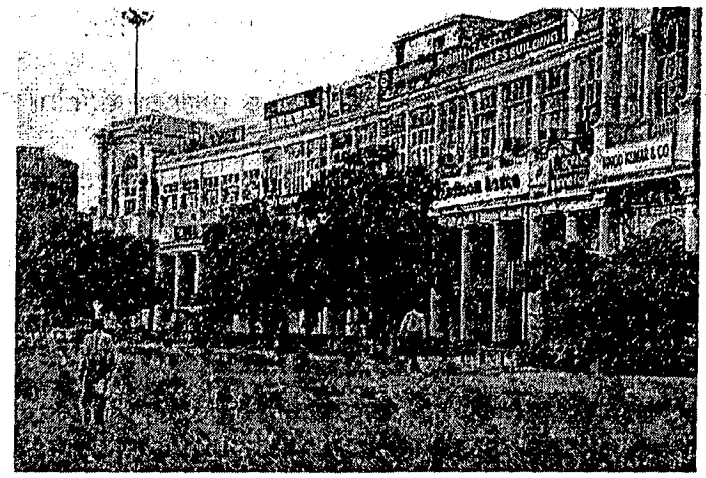


Fig. 4.16 View of Connaught place through road, New Delhi
Source: Author

Regular geometry of elements of façade and Continuity in façade makes it as a single unity. Ends of each block are more dominating than the middle portion. Two storied building that creates loss of sense of enclosure. Movement through facade gives the direction to move eyes from one point to another, but having more or less same visual experience from all side other than the palika side. White coloured lime plastered building; Repetition of elements makes the rhythm and unity. Horizontality is prevailing throughout the facades of the buildings which have no focal points to guide the people. Total Height of Connaught place is 11m, 6m on ground floor and 5m at first floor.

4.3.4 VIEWING ENVIRONMENT

Connaught place is surrounded by tall buildings from all four sides, and all buildings have different character due to tallness and façade treatment. Because of that it has lost its identity. It can not be seen because of the background prevailing/ dominating. It is best viewed from the palika bazaar park that is part from where you can see the whole Connaught place, but don't have any feeling of enclosure. Foreground is

created by hard paving with small patches of greenery having sitting areas. The ratio of the height of the shopping and viewing distance is less than "1" which need at least adding of two more stories thus it will form a proper enclosure. Skyline of Connaught place from distant places produces an effect of unorganized development. Although many buildings when analysed individually satisfy the principles of aesthetics i.e., rhythm, balance, scale etc., in design but when buildings are observed in groups the essential quality of built environment i.e., art of relationship is lost. Trees exist in Connaught Place but are haphazardly planted. No well defined hierarchy regarding types of plant forms exist. Pedestrian accessibility hindered due to fast flowing vehicular traffic at the inner circle.

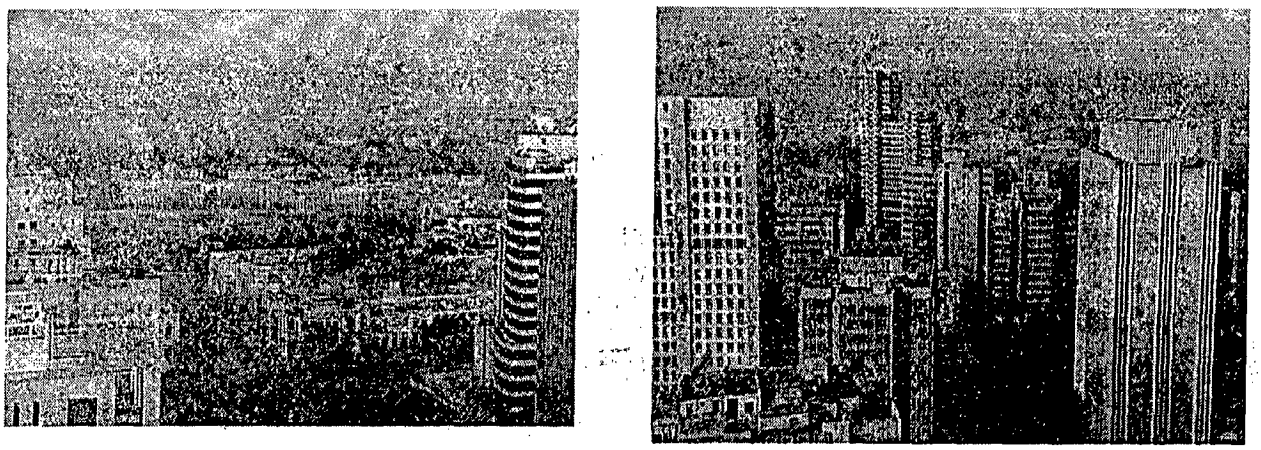


Fig. 4.17 Top View of Connaught place through road, New Delhi
Source: Internet

4.3.5 VIEWING CONDITION

Connaught place have rush all the hours of the day, but mostly visited in the evening and every weekends. Building does not having any glare, because of the material used. Its large scale form and long façade does not reveal its intricate details.

4.4 CASE STUDY – 3

ANSAL PLAZA, NEW DELHI

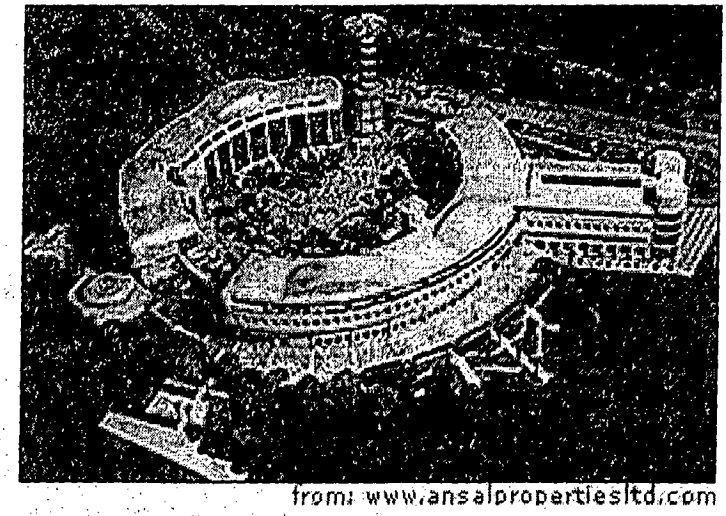


Fig. 4.18 Top View of Ansal plaza, New Delhi
Source: Internet

Year of Construction – 1999

Architect – Jasbir Sawhney

4.4.1 ANALYSIS OF SHAPE

Main shape of plaza is circular having surrounded by two identical semicircular blocks opposite to each other. It is an enclosed urban square as well as have the quality of dominated square. The diameter of Central amphitheatre is 60 m and height of the block is approx. 18m.

4.5.2 ANALYSIS OF FORM AND FAÇADE

There is a Unity in the form as well as façade throughout the stretch. It has Regular form that is imparting the sense of unity. Whole place is Stable and symmetrical, but horizontality is more dominating than verticality- hence loss of enclosure. It imparts Movement to eyes through repetitive Forms and various facades elements.

4.4.3 ANALYSIS OF FACADE

Regular geometry of elements of façade and Continuity in façade makes it as a single unity. Ends of each block are more dominating than the middle portion. Four storied building that creates loss of sense of enclosure. Movement through facade gives the direction to move eyes from one point to another, but having more or less same visual experience from all side other than the podiumside. Red coloured building; Repetition of elements makes the rhythm and unity. Horizontality is prevailing throughout the facades of the buildings which have no focal points to guide the people. Whole massing looks like a single mass from the amphitheatre

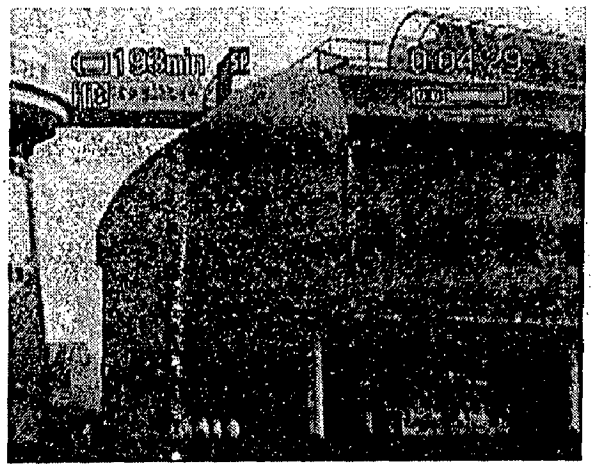


Fig. 4.19 View of Ansal plaza, New Delhi
Source: Internet

Fig. 4.20 View of Ansal plaza, New Delhi
Source: Internet

Roofs cape is not dominating as it is champhered from the corners and made it round, don't know why. It gives a ugly skyline because of the AC plant provided at the roof level. It is a four storied building but look as the single storied building from outside. Window openings are at height that's no body could not notice it.

Variety of materials have been used like brick tile cladding, steel sheet cladding on column, sand stone paving on floor in the amphitheatre, glazed façade. Repetition of elements makes the rhythm and unity.

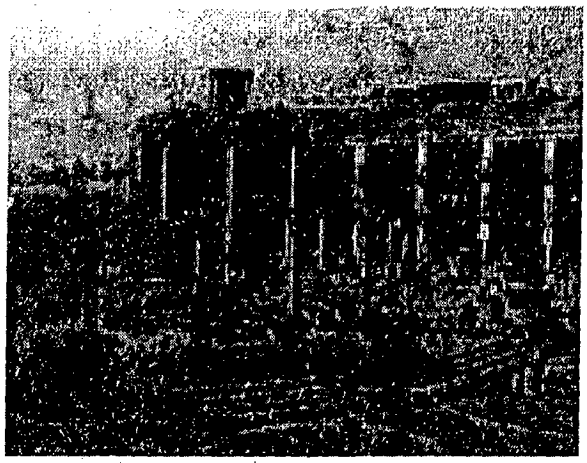


Fig. 4.21 View of Ansal plaza from amphitheatre, New Delhi
Source: Internet

4.4.4 VIEWING ENVIRONMENT

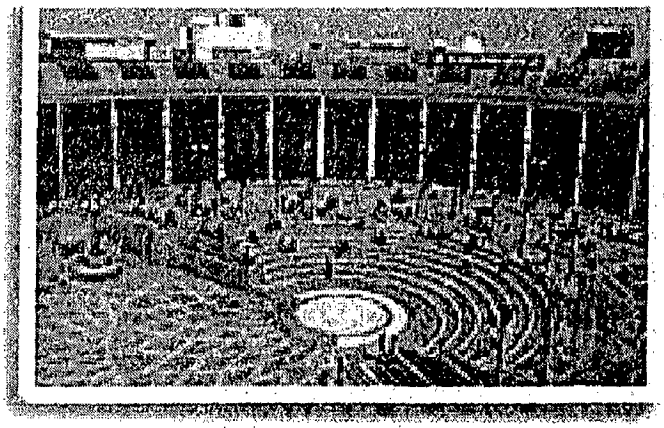


Fig. 4.22 View of Ansal plaza from amphitheatre, New Delhi
Source: Internet

Ansal plaza is surrounded by landscaped lawn and fountain at the rear and HUDCO housing in the right. It is best viewed from the amphitheatre imparting the total sense of enclosure. Foreground is created by hard paving in amphitheatre and no sign of soft landscape in the plaza.

The ratio of the height of the shopping and viewing distance is less than "1: 1.75" which gives the sense of enclosure. Skyline is not dominating due to the AC plant is provided on the roof.

4.4.5 VIEWING CONDITION

Ansal plaza mostly visited in the evening and every weekend. Building is having glare, because of the material used. Night view is not so much memorable but the transparency of interior can be easily seen from outside.

4.5 INFERENCES FROM THE CASE STUDY

Through analysis, several indicators have been framed which can affect the perception of the observer, or can create the great mental image in the mind of observer. Those indicators are as follows_

- *Entrance to the plaza.*
- *Dominating /focal point.*
- *Many/different façade can be unified in such a way that it looks one composition.*
- *Whole composition – unity & order in massing.*
- *Focal point – should have maximum.*
- *Supportive elements*
- *Height of building*
- *Treatment of floor-unified element in façade on different floors.*
- *Detailing – size of details.*

  Height at which details are putted.
- *Distance between two facades*

  Max distance for focal.

CHAPTER- 5

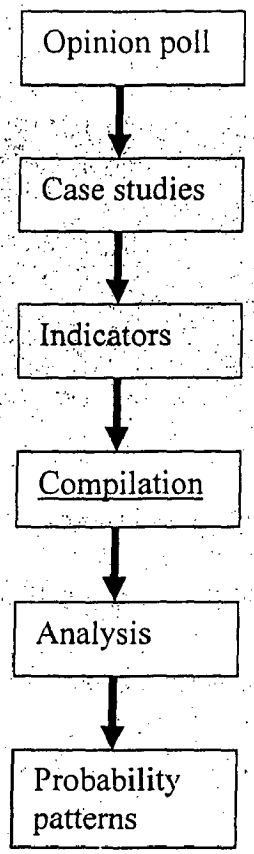
ANALYSIS AND CONCLUSIONS

In this chapter, analysis of the opinion poll to frame out the various indicators has been done in the form of histograms based on responses from the public on various case studies, which has been selected on the basis of first survey to find out the places that are most frequented visited and popular. After the framing of indicators, consistency of those indicators has been checked on the various case studies. Another opinion poll was conducted for the perception of forms and façade of that space, follows the same analysis as for the perception of urban spaces.

5.1 METHODOLOGY

First an opinion poll was conducted to choose the case studies, their varying nature helping to objectify the resultant data. These case studies were then analysed in the term of the factors that affect the perception of that place like visual characteristics, visual conditions and visual environments. From there a common set of the indicators were deduced. Armed with an elaborate list of indicators, we asked a number of viewers of different background to react to these case studies.

From the knowledge in the field of perception and behavioral mapping, responses were analyzed and suitable grading systems were applied to these responses. From the vast amount of data that resulted, patterns of probability emerged. These patterns are essentially objective in nature, since a probability is an acceptable mathematical representation of an event.



There was no as such the formula to know the reactions of various viewers of different background and architects also. To know their reaction, Opinion poll was conducted in two format i.e, open ended interview and questionnaire. Open ended interview comes with a astonishing results as how the viewer without having the knowledge of architecture, had react the place like a professional. It was found that there was not much difference in responses of architects and the common man.

Opinion poll could have to a larger group of people and chosen Commercial places from various parts of the world, but this was not possible due to time and economic constraints. Moreover, to deduce the indicators or visual factors, opinion poll was conducted for the buildings and space that they had seen and experienced.

Whole analysis was done in two stages. From the first opinion poll, four case studies were chosen and then analysed in term of visual characteristics, viewing condition and viewing environment. Then again, opinion poll was conducted to know the reaction of viewer. First viewers were chosen from the same place and residents of Delhi to know the mental maps that they have in their mind about that places. These two stages of analysis helped us to arrive at the Indicators of these case studies. These Indicators are attributes that come together to form the – entire space as well as building experience.

It was chosen to limit the sampling to only intellectuals i.e., professional, architects, students and visitors for the simple reason to know the difference between the perception of different background and architects. Architects (professionally qualified and students) were from Delhi and Roorkee. The results were quite astonishing as there were very less difference in their perception of the same place.

5.2 FRAMING OF INDICATORS

Based on the inferences and analysis done of the selected case studies and the opinion poll was conducted, the following indicators were deduced –

For the perception of urban commercial space

1. **Context** – Environment
2. **Surroundings**- nearby areas, land uses
3. **Location** – where it is been located with respect to other amenities
4. **Function**- certain facilities

5. **Purpose** – with which purpose viewer visit that place i.e., viewer doesn't come there for the visual appeal, its just his need.
6. **Proportion** – length and height ratio
7. **Scale** - sense of enclosure
8. **Colour** – Colour of composition
9. **Shape** – physical shape of the space
10. **Time** – time of viewing (morning, afternoon, evening)
11. **Form** – three dimensional form of the space
12. **Façade** of the building(s)
13. **Lighting** – Night light
14. **Traffic** – movement of vehicles
15. **View station** – from where space was seen or perceived
16. **Access** – way to entrance
17. **Entrance** – to the space
18. **Foreground** – what is their in foreground of the composition
19. **Background** – what is their in background of the composition
20. **Open space**- extent of open space (how much its open with respect to built environment)
21. **Landscaping** – vegetation, greenery
22. **Circulation** – ease of movement
23. **Crowd** – gentry gather at that place
24. **Element of surprise** -
25. **Details**
26. **Unity**

Like wise for perception of form and facades, the indicators were deduced like –

1. **Colour**
2. **Roofscape**
3. **Dominating element (contrast element)**
4. **Material**
5. **Texture**
6. **Shape of openings**
7. **Details**
8. **Entrance**
9. **Access**
10. **Vertical elements**
11. **Horizontal elements**
12. **Form (Regular or irregular form)**
13. **Corner**

The importance of each indicator obviously cannot be equal to all the others. The relative Weightage of each indicator will be a function of the social, cultural, ethnic economic and political background of the sampling group. This implies that each sampling group will have its own set of indicators weights and similar values fo indicators from different sampling groups do not necessarily imply simila experiences. That is why, it was left for the last, that it should come automatically which indicators is common in all places.

5.3 ANALYSIS FOR PERCEPTION OF URBAN SPACE BASED ON OPINION POLL

Based on their reactions, first graph were plotted between indicators and viewer percentage for that particular place. On the horizontal axis, indicators were denoted and on the vertical axis the no of viewers were denoted. The numbers denote that these many people have reacted for this indicator. The number denotes the number of responses in support of those indicators or they have noticed those indicators or found disturbing or pleasing. The aim was that whether they noticed these indicators or have the mental image of that place in terms of these indicators, it does not matter that whether they like it or not.

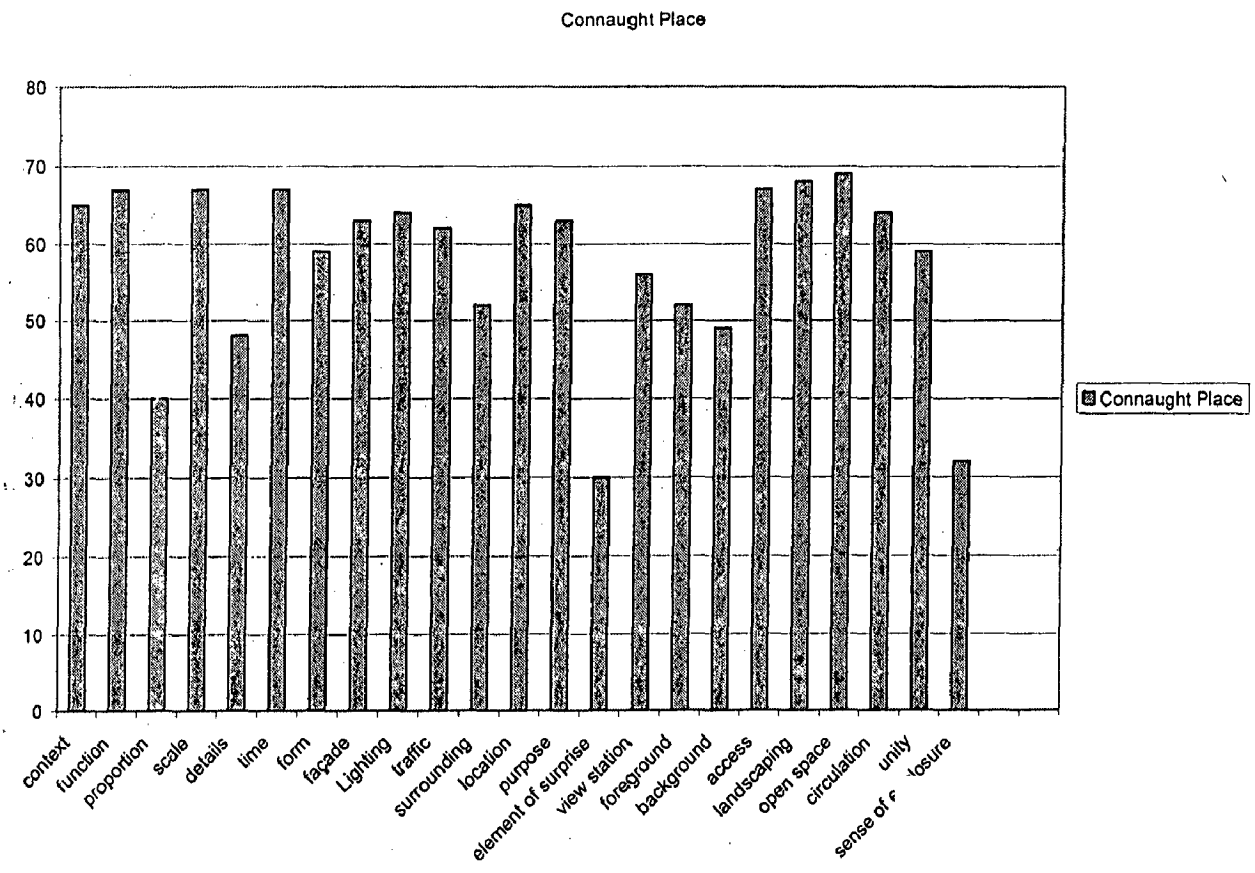


Fig 5.1 perceivers Vs indicators histogram for Connaught Place, New Delhi

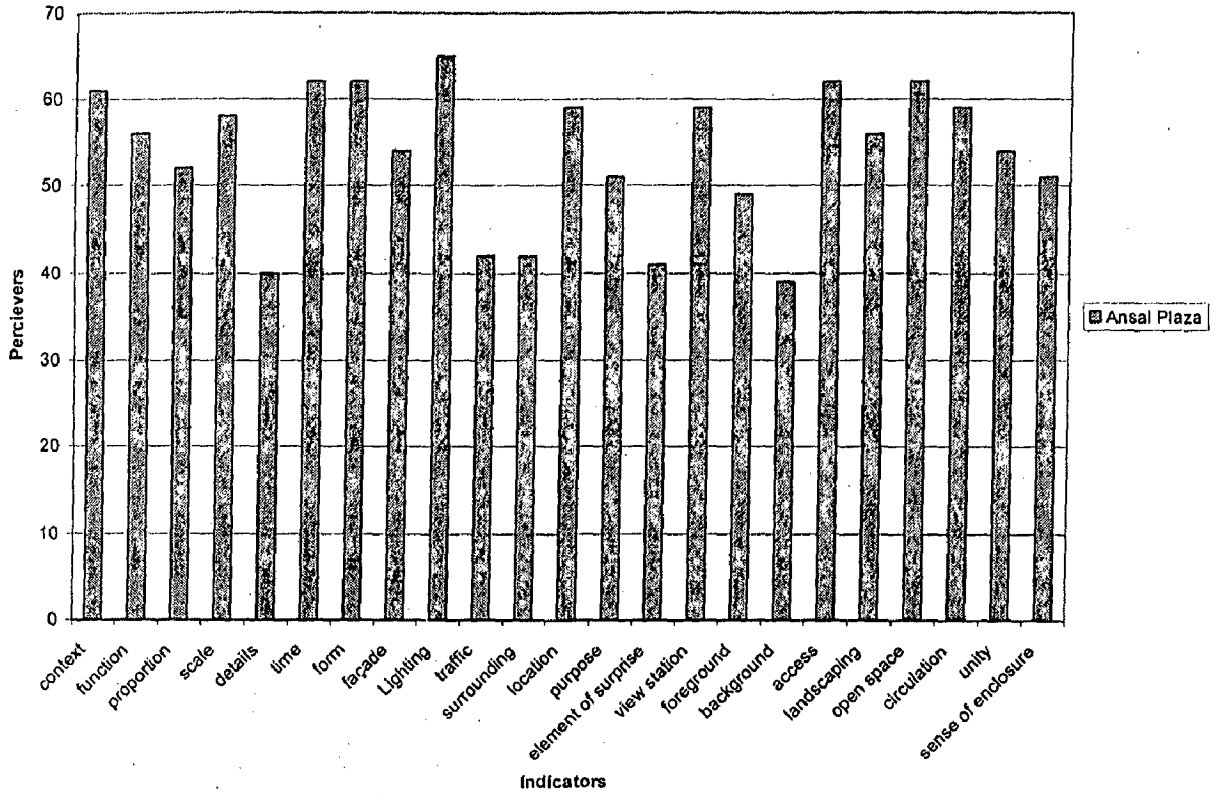


Fig 5.2 perceivers Vs indicators histogram for Ansal Plaza, New Delhi

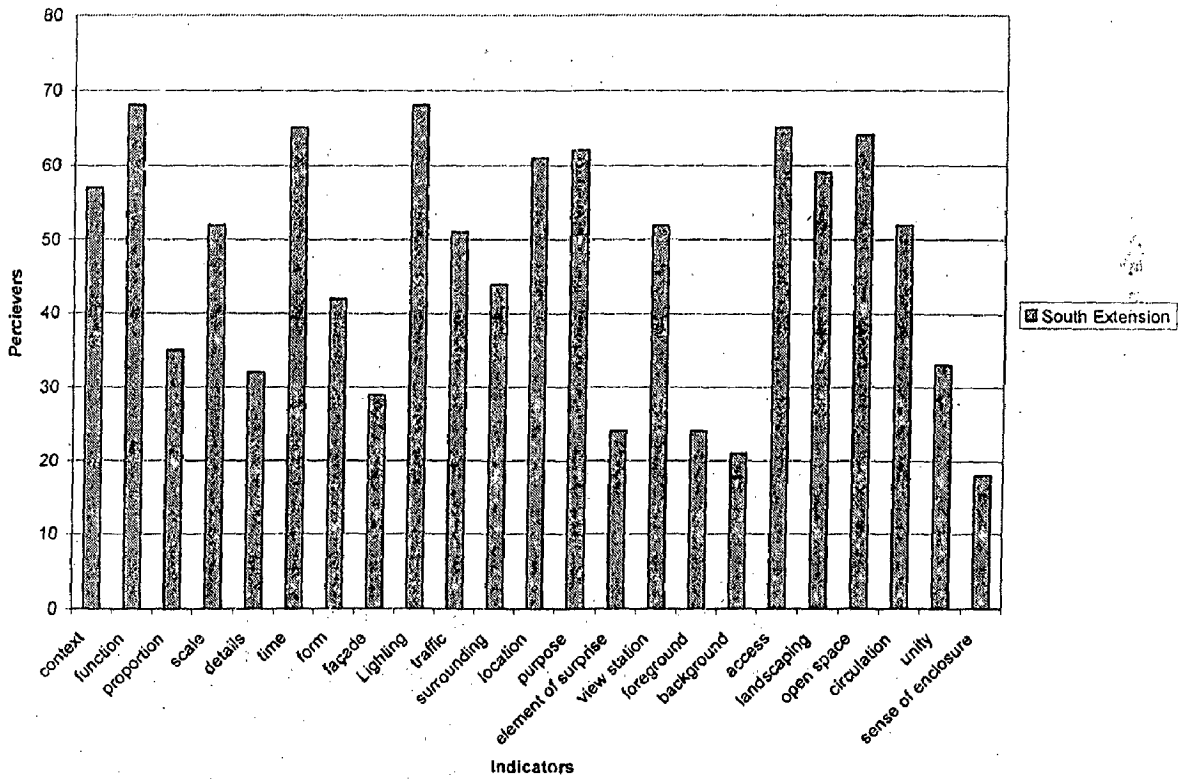


Fig 5.3 Perceivers Vs Indicators histogram for South Extension, New Delhi

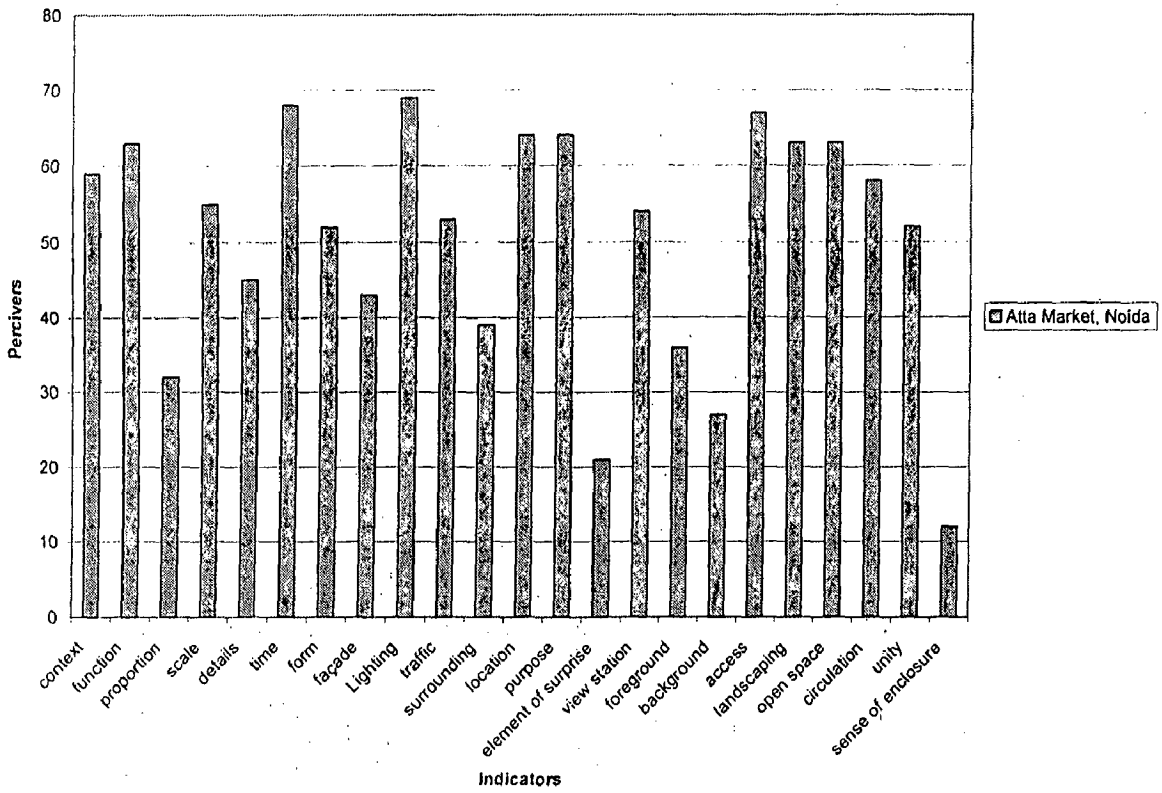


Fig 5.4 Perceivers Vs Indicators histogram for Atta Market, Noida

5.4 ANALYSIS FOR PERCEPTION OF FORM AND FACADE BASED ON OPINION POLL

Separate opinion was taken at the same time for the perception of form and façade of the identified commercial places, to check that how many elements from the form and façade of urban space are being perceived ar create a mental image in mind of the perceivers. Firstly analysis was done on individual case study and then checking of consistency of the elements in different case studies.

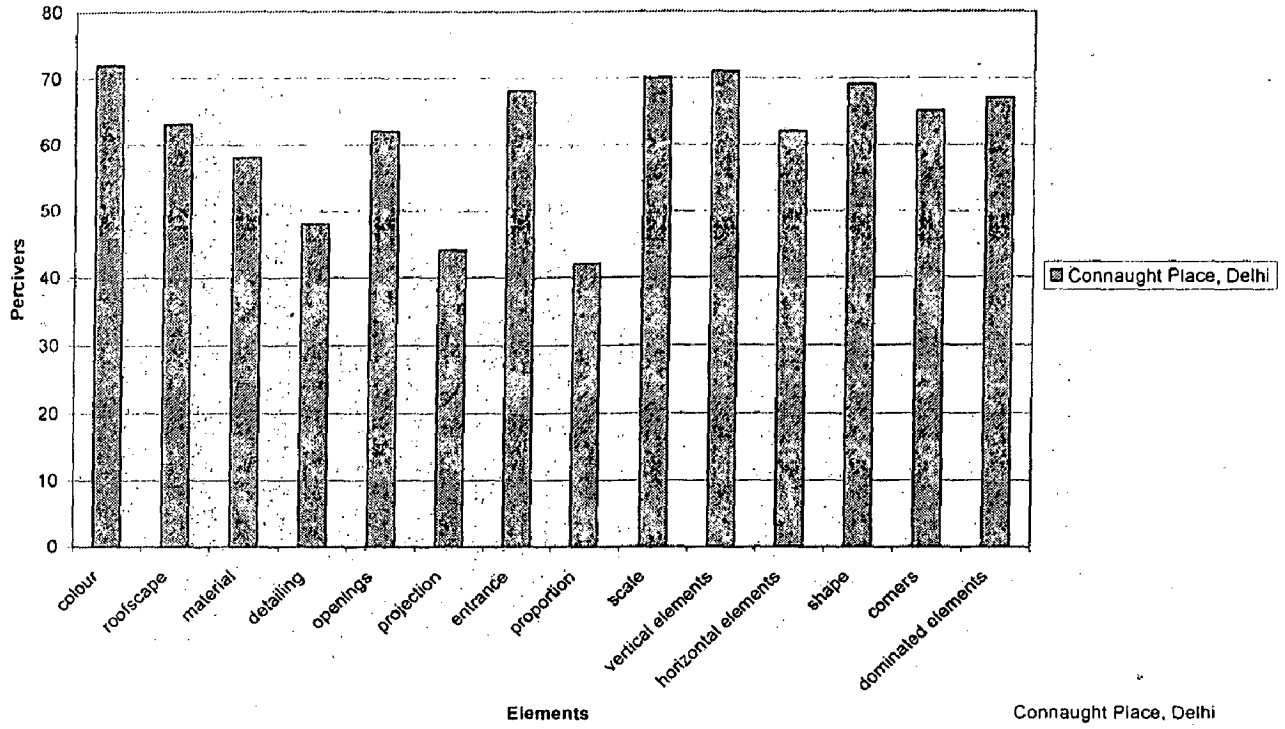


Fig 5.5 Perceivers Vs Elements histogram for Connaught Place, New Delhi

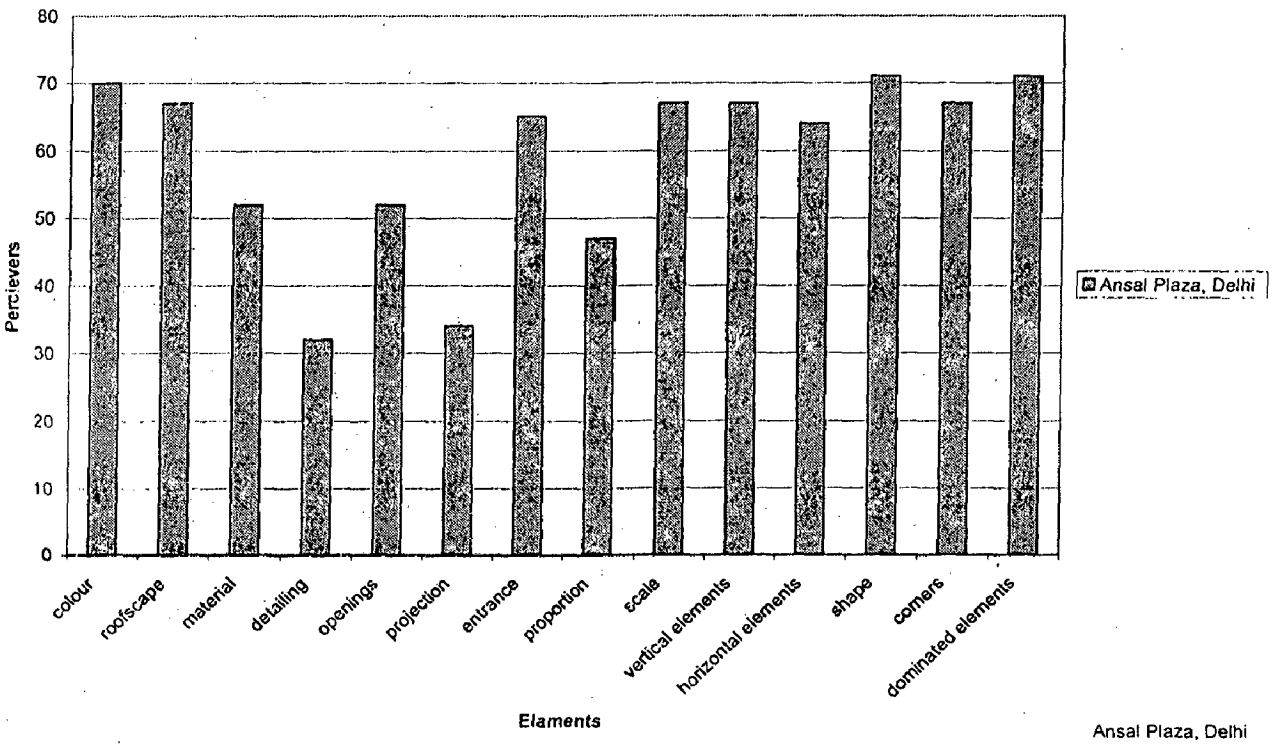


Fig 5.6 Perceivers Vs Elements histogram for Ansal Plaza, New Delhi

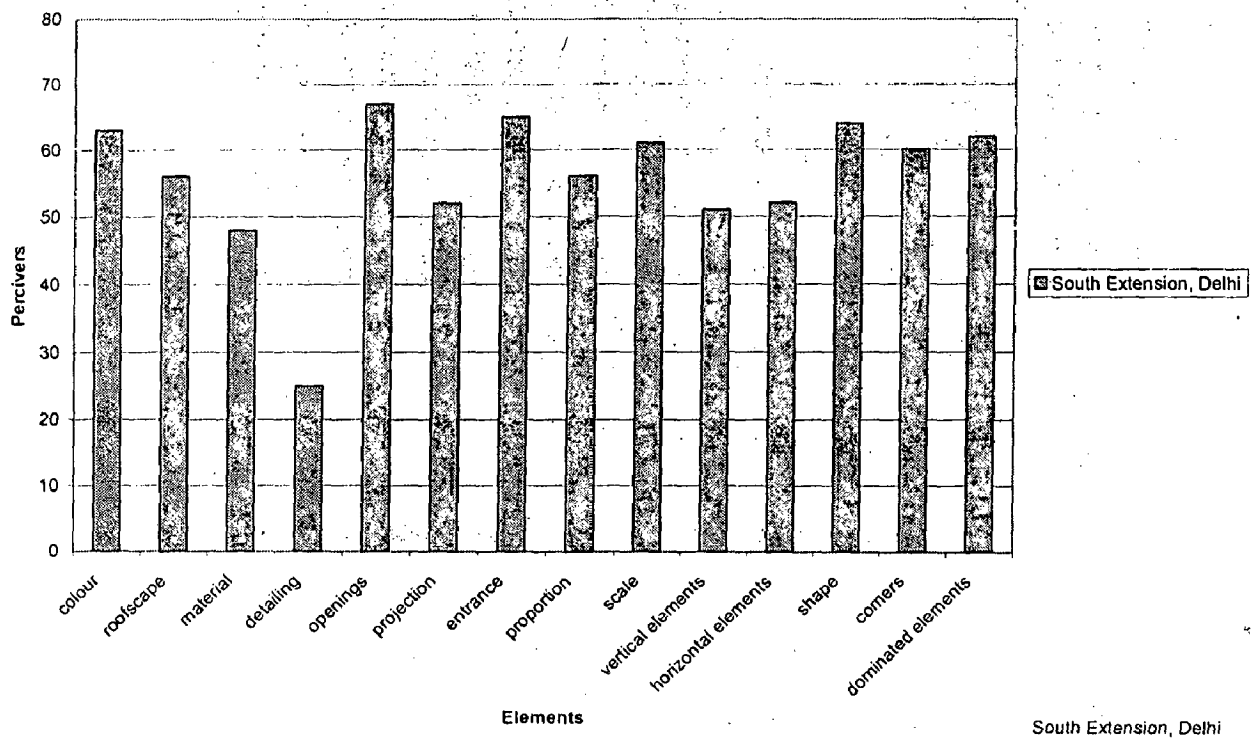


Fig 5.7 Perceivers Vs Elements histogram for South Extension, New Delhi

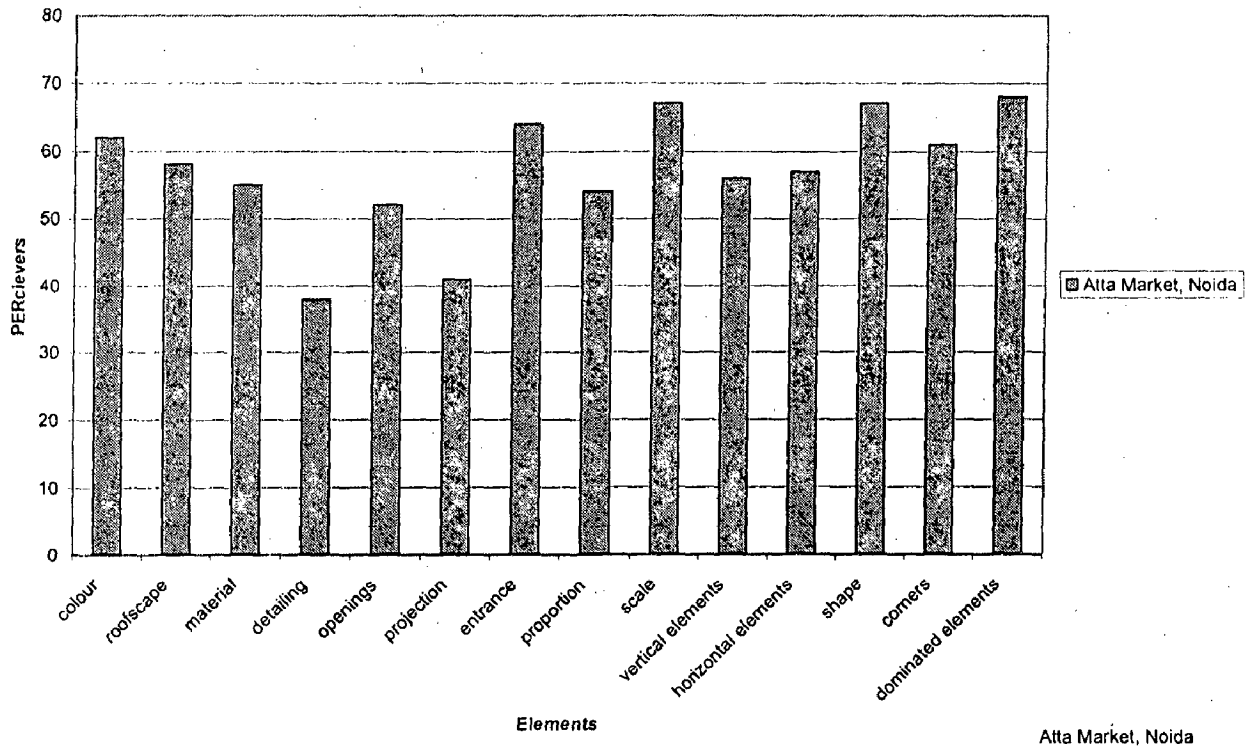


Fig 5.8 Perceivers Vs Elements histogram for Atta Market, Noida

5.5 ANALYSIS OF THE OPINION POLL

It has been seen that importance of each indicator obviously cannot be equal to all the other. The relative weightage of each indicator will be a function of the social, cultural, ethnic, economic and political background of the sampling group. From the all histograms showing the perception of viewers for each case study, it is seen that some of the indicators are commonly prioritized. To check the consistency of indicators, one line graph was prepared showing the consistency of indicators through all the case studies which is perceived by the viewer. From it, it is clear that there are some indicators which are consistent through all case studies. Like **location** of the commercial place play a vital role in the perception of that space i.e., its distance from all other amenities like from residential, or other land uses. Then **time of visiting or viewing**, is also the important visual factors which affect the perception of the commercial space, as most of the people visit the commercial place in the night then the form and facades of the buildings are on the less priority and lighting come in to play. It will be wrong to say that forms and façades of buildings in any commercial place are not important as they are used or viewed in evening or in artificial light. But it is at less priority in the mind of preceptors as they perceive many other things like crowd, other facilities provided, lighting and large showrooms having heavy glazing creating transparency. The total mental image of any commercial place is mainly of evening and that's having a less priorities to forms and facades.

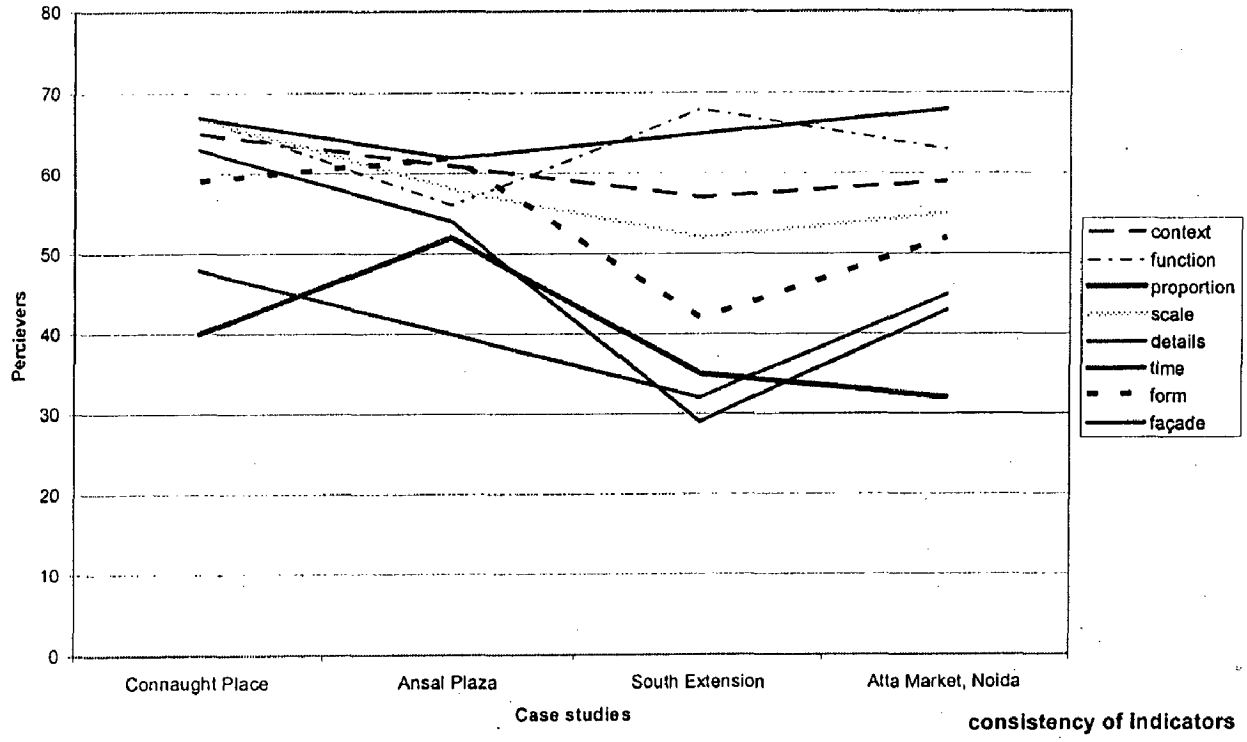


Fig 5.9(a) Line graph showing consistency of indicators vis – a – vis Perceivers and Indicators

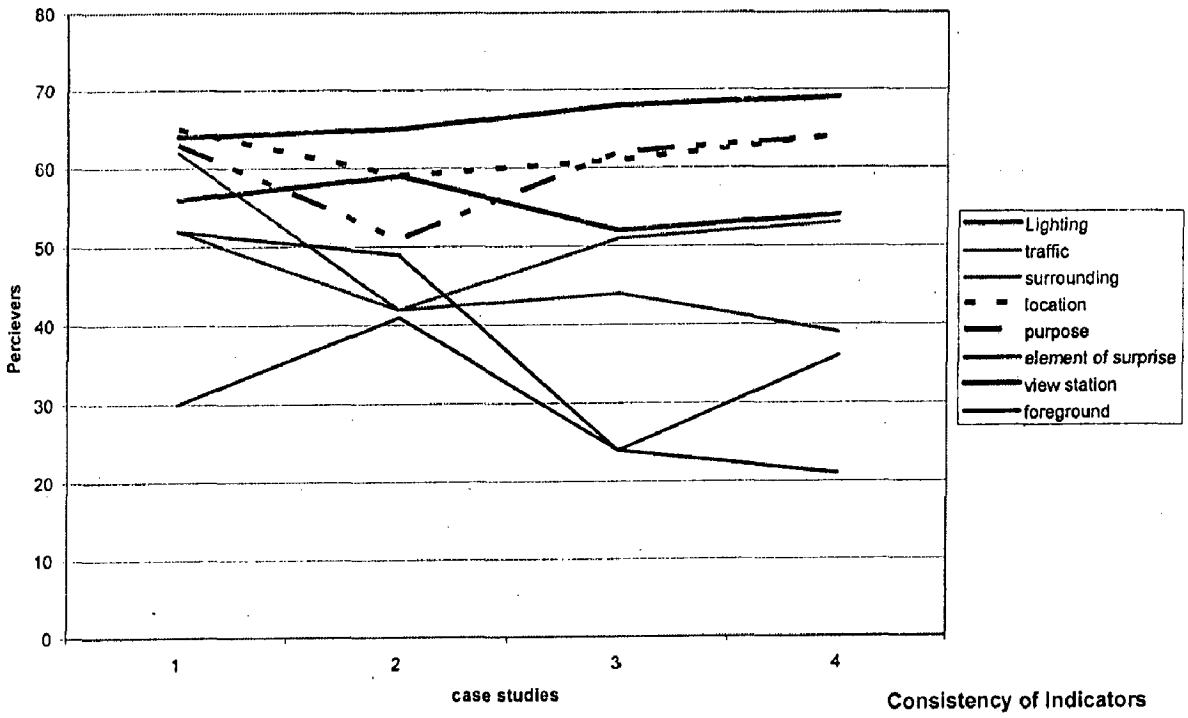


Fig 5.9(b) Line graph showing consistency of indicators vis – a – vis Perceivers and Indicators

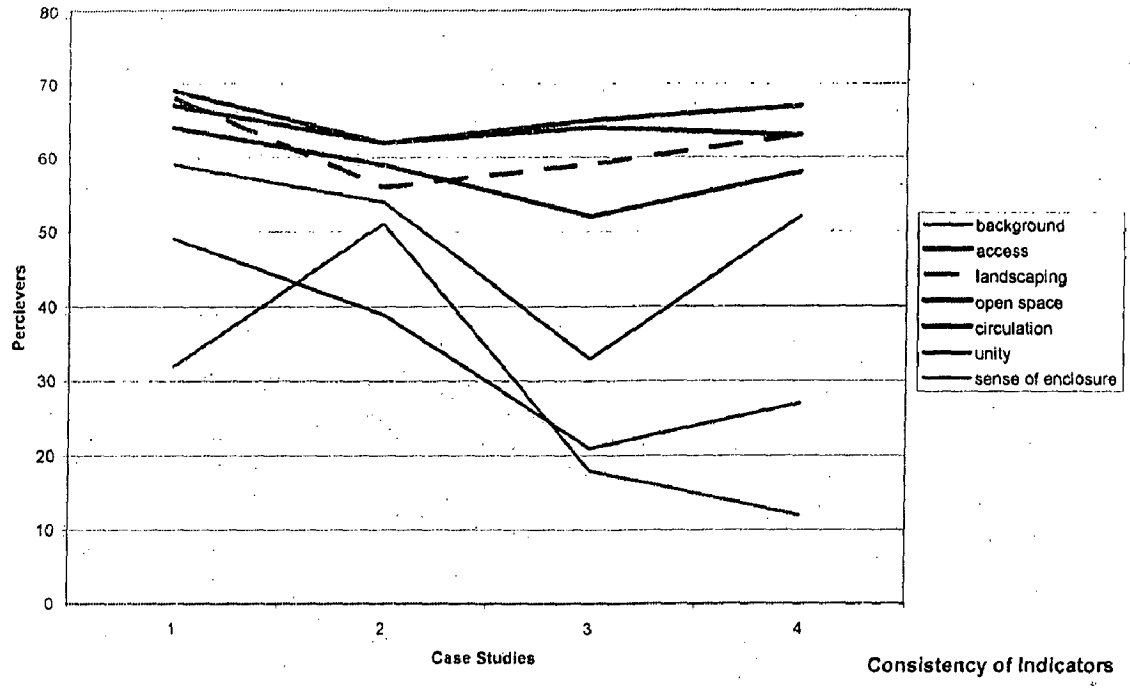


Fig 5.9(c) Line graph showing consistency of indicators vis – a – vis Perceivers and Indicators

Likewise, for the perception of form and façade of the selected buildings, several indicators were drawn out from the case studies analysis as well as the opinion poll and then their consistency were analyzed in the form of line graph as shown below.

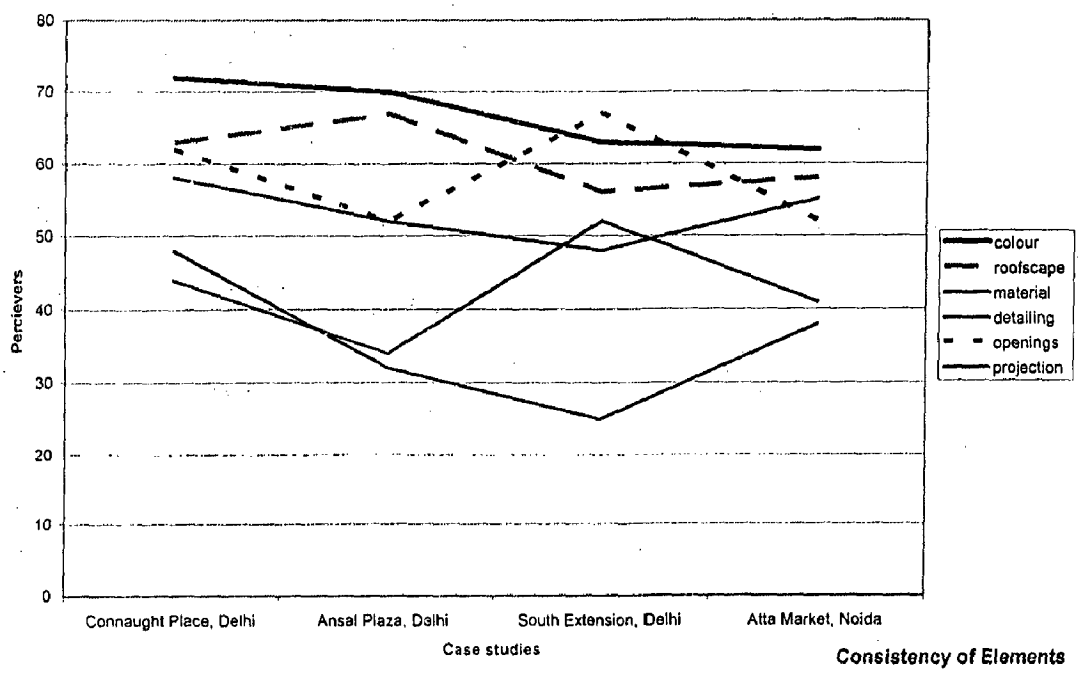


Fig 5.10(a) Line graph showing consistency of elements vis – a – vis Perceivers and Elements

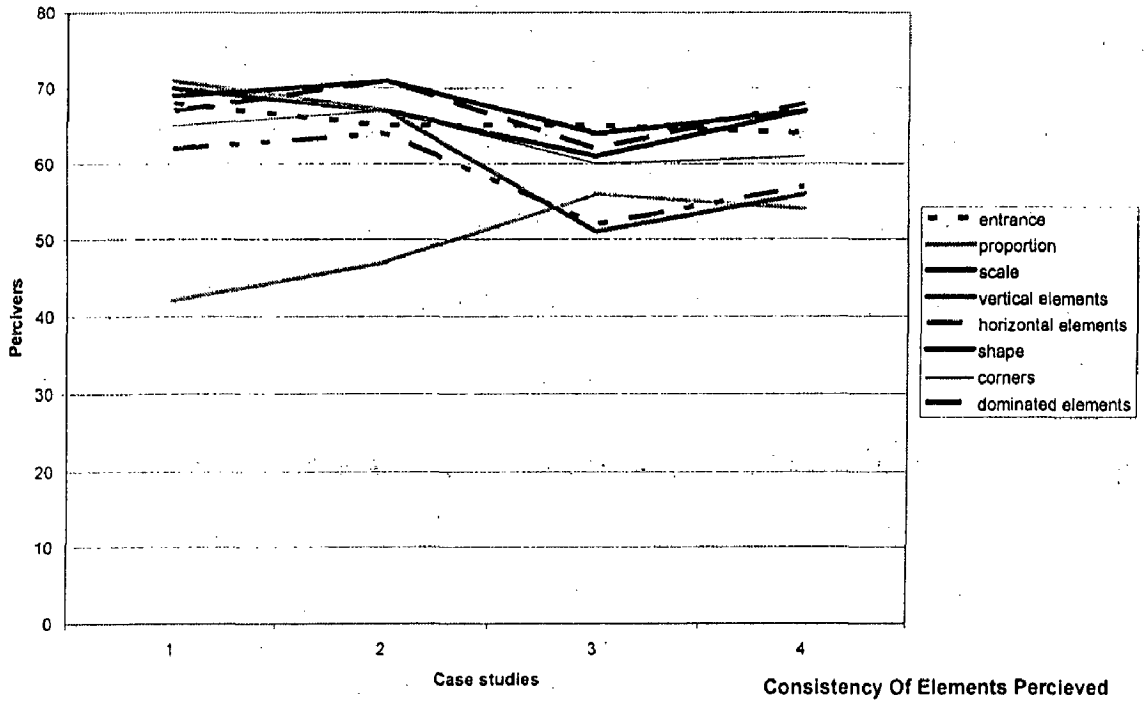


Fig 5.10(b) Line graph showing consistency of elements vis – a – vis Perceivers and Elements

5.6 CONCLUSIONS AND RESULTS

After analyzing the line graph for consistency of indicators it has been found that the following indicators have more importance or have more preference in the perception of any commercial space by the viewer. The visual elements/ factors which affect the perception as well as imageability of that space –

1. **Location**
2. **Function**
3. **Purpose**
4. **Extent of Open space**
5. **Circulation**
6. **Lighting**
7. **Time of visiting**

8. **Context**
9. **Access**
10. **Entrance**
11. **Scale**
12. **View Station**

It does not mean that rests of the indicators are not important, they are also important but having the less preference while perception of the commercial spaces.

Like wise in the perception of Form and Facades of Urban Commercial spaces, elements which are generally perceived by the viewer are –

1. **Roofscape**
2. **Any dominated element (Contrast elements) like Tower in ansal plaza, end blocks at Connaught place**
3. **Openings (mainly its shape)**
4. **Regular forms**
5. **Entrance to the buildings**
6. **Materials**
7. **Colour**
8. **Corners**
9. **Vertical elements**

The thesis is not to illustrate the indicators here to arrive at universal indicators for aesthetic judgment. But it is able to derive a particular 'pattern' amongst viewer in cities. That is , we can say for sure what a particular group of people with a similar educational background has to say about these five buildings.

It can be argue that the shape of the curves in the previous figure would change completely if the position of the case studies were changed. It will be clarified that this graph demonstrates the relative consistency of an indicator across a variety of case studies and the shape of the curve was not an important aspect. The indicators will be same for any square or commercial space no matter which space is studied.

CHAPTER- 6

RECOMMENDATIONS

6.1 RECOMMENDATIONS

This study can be used as a tool to combine the aspirations of the client and the skills of the architect to create architecture that is a joy to both. Such experiments can be conducted for a larger group of people and with various socio- cultural backgrounds to discover their respective patterns of indicators. As an example, suppose there is project to build a new public building for the city of New Delhi. A study of the indicators of the projected users will reveal their preferences. It can be asked from them to react to buildings that are of a similar nature, but might have been executed in a very diverse manner. Their reactions can be compiled and a graph made for the indicators that are most common to all the perceivers. The graph will illustrate the relative importance of indicators in a buildings typology. How this graph is to be manifested in a physical manner depends on the skills of the architect to correctly interpret the preferential indicators of the target users. He must satisfy all the indicators in any manner he chooses.

It can also be seen that applying too many elements to any form and facades also does not make any sense, as a certain number of elements and details is perceived by viewer, that too depend on their shape and size. How much the complex shape it is, difficult to perceive it.

It is designer's failure that his building is not even perceived by the people and people come to that place just because the other factors like lighting, shopping because of good quality material. Designers should keep in mind all these visual

factors/ Indicators while designing the urban commercial space that not only provide the environment which will meet the aspirations of the people but also give a direction for the designers to work on the people requirements.

As earlier also, it was said that aesthetic quality of any space is not just because of the built environment of that space but it is the sum total of all the other factors and all sensory experiences that one place can impart to the perceiver.

6.2 EPILOGUE

Architecture is man's greatest artifact. It has been produced with love and labour of countless passionate people over ages. It cries out to be understood. It should be.

A building is not a beautiful shell, and neither is it a functional shed. A building is the coherent solution of a problem in living. In that profound sense, a building is an invention, and all architecture is an invention.

Hopefully, this research would have produced more questions than it has been able to answer. It was just an attempt to encourage constructive criticism of architecture. From this research, we also came to know that perception is largely regarded as an instinctive ability, but we have seen it is not. It is a skill, and must be learnt, like all others.

This study has been a substantial departure from conventional architectural criticism and employs analytic tools that are equally new to it.

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APPENDIX

Appendix I

DEPARTMENT OF ARCHITECTURE AND PLANNING
INDIAN INSTITUTE OF TECHNOLOGY, ROORKEE- 247667

TITLE: PERCEPTION OF FORM AND FAÇADE OF URBAN COMMERCIAL SPACES

(Information collected will be confidential & entirely used for the academic purpose)

Surveyor: Ashok Mishra
Student of M.Arch, IIT Roorkee

Questionnaire of survey for the most visited place because of it visual quality

Type of survey – Oral and Questionnaire Survey
City - New Delhi (North & South)

A. Viewer Background

i. local resident (employee/ student/ businessman/ other)
ii. regular visitor (employee/ student/ businessman/ other)
iii. tourist (first time/ second time/ more than two times)

B. Commercial urban spaces which are most popular in the city

1. Connaught Place
2. South Extension
3. Bhikaji Gama place
4. Nehru Place
5. Ansal Plaza
6. Delhi Hatt
7. Lajpat Nagar market
8. Vasantkunj market
9. Greater Kailash- I

C. Purpose of visit that place

i. Work place is located
ii. For meeting
iii. For shopping
iv. For enjoying the place, recreational , visual quality of place

D. Places, out of the above visited because of their visual appearance of the built environment

1. Connaught Place
2. Ansal Plaza
3. Bhikaji Gama place
4. Delhi Hatt

Appendix II

DEPARTMENT OF ARCHITECTURE AND PLANNING
INDIAN INSTITUTE OF TECHNOLOGY, ROORKEE- 247667

TITLE: PERCEPTION OF FORM AND FAÇADE OF URBAN COMMERCIAL SPACES

(Information collected will be confidential & entirely used for the academic purpose)

Surveyor: Ashok Mishra
Student of M.Arch, IIT Roorkee

Preceptor's Background:

Name: .....
Education: .....
Age: .....
Occupation: .....
Native: .....

PERCEPTION OF URBAN SPACE

1. Which major cities in India have you visited so far?
   i. .....
   ii. .....
   iii. .....
   iv. .....
   v. .....
2. Which cities did you find most attractive in term of its physical appearance?
   i. .....
   ii. .....
   iii. .....
3. Which are the most popular and famous and mostly frequented commercial places in these city?
   i. .....
   ii. .....
   iii. .....
   iv. .....
   v. .....
4. Which commercial place did you find most attractive?
   i. .....
   ii. .....
   iii. .....

5. What was the purpose of your visit?
    i. Meeting, gathering
    ii. Shopping
    iii. Recreational, Enjoyment
    iv. Just to visit
    v. Any other purpose
    vi. No purpose
6. What was the most striking feature / attraction of the place?

    .....

7. What are other features there which you found attractive and which you could not forget till now.

    .....

    .....

    .....

    .....

PERCEPTION OF FORM

8. Do you remember any buildings which you found dominated in that place? If yes, then what was the form of the building?
    i. Regular form (like cuboids, cubes, sphere, pyramid, cylinder)
    ii. Irregular form
9. Which form do you think was the dominating, or that first struck to your mind and which you have not forgotten it till now?

    .....

    .....

    .....

    .....

    .....

PERCEPTION OF THE FAÇADE OF COMMERCIAL SPACE

1. What elements do you remember that have been used in the façades of those buildings?
    i. Colour
    ii. Roofscape.
    iii. Material
    iv. Details
    v. Shape of openings
    vi. Projections (shape and size)
    vii. Entrance
    viii. Railings

ix. Vertical elements
x. Horizontal elements
xi. Landscaping around the building.
xii. Way to entrance
xiii. Any other elements

2. Does building(s) has/ have any dominating elements? If yes, where it was located in whole composition.
   i. .....
   ii. .....
3. Was there any repetition of any form or line or any element?
   i. .....
   ii. .....
   iii. .....
   iv. .....
   v. .....

4. From where did you see the building at very first instance? What did you see at that moment?
   .....
   .....
5. Does it look good in that setting or context?
   .....
6. What does it have in it foregrounded, background?
   .....
   .....
7. Did building(s) look too tall or too short?
   .....
8. What were the landscaping feature did you find most attractive in relation to the building?
   .....
   .....

FOR VIEWING CONDITION

1. From where all did you see that composition?
   .....
   .....
2. From Where did you find it most attractive?
   .....
   .....

3. If you are asked to take any stranger or your friend to that place, then from which way would you like to take him that place and Why?

.....

.....

4. At what time did you see that space?

.....

.....

5. What time did you find that space most attractive?

.....

.....

A. Was there anything that you find disturbing there in overall composition? If yes, then what is it?

.....

.....

B. Draw a sketch of the building that you could never forget till now?