



ISSN 2278 – 0211 (Online)

Psychology of Pathways

Brinda Varghese and Ar. Ganga Krishnan

Student, Department of Architecture, Bishop Jerome Institution, Kerala, India

Abstract:

A PATH is a channel along which observer customarily, occasionally or potentially moves as described by Kevin Lynch in 'the image of city' (Lynch). Architectural constructions are always revealed by circulation which leads us to, through, over, under, or around them, on foot, plane, train, automobile, or any other means of locomotion or conveyance. And as we move images blend into visual realization. But, we not only perceive this as visual unfolding but by other sensory organs like taste, smell, touch, sound etc.

Research intended to study how people perceive and react when moving through a path. As design of 'water temple' by architect Tadao Ando has proved that a skilled planner, by path manipulation, can play upon human emotions, and responses. Study on those factors (physical and psychological) can help architects to manipulate spaces according to the desired emotions.

Keywords: Path, psychology, emotional factors, physical factors

1. Introduction

An object is perceived through a flow of impressions. When in motion one sees a series of images blending into an expanding visual realisation of an object, space, or scene. Perception is not a matter of site alone. All the other senses may be involved- sight, taste, smell, touch and hearing. (This becomes the physical factor in the study). Thus, rate, order, type and degree of perception can be altered by design control and can be affected by planned pattern of circulation.

2. Purpose of Study

To understand the importance of physical factors in path, generating psychological impacts

3. Objective

- To study relation between path and surrounding
- To understand how people moving in a path respond to different surrounding situation
- To study different factors linked with a path triggering emotions in user

4. Limitation

The project is based on urban context. The vastness creates limitations to look into only eight physical factors and nine psychological factors. I limit my case studies to three different context in public realm.

5. Methodology

- Three different settings were selected to showcase the stark contrast in emotions, different settings have on human psychology. These case studies are on sites which attract first time visitors. First time visits create strong emotions in mind than the one who is familiar to the place, which is said aptly in the phrase "familiarity breeds contempt". Case studies have been selected with a varying hierarchy of path with different physical factors or natural setting which helps to study how emotions vary in different settings.



Figure 1: Padbhanabhaswamy Temple view (source: self)



Figure 2: Varkala cliff view (source: self)



Figure 3: Pedestrian path, Thillery view (source: self)

a) Stretch including Padmanabhaswamy temple, Mahatma Gandhi Park and Challai bazaar, which lie in the heart of the Trivandrum city, capital of Kerala. It is a bustling city street

b) Varkala cliff which is one of the major tourist destination spots in Trivandrum, where cliffs are found adjacent to Arabian Sea. It is a perfect idyllic picturesque location.

c) A shortcut connecting residential areas and main road in Thillery, Kollam is a silent path with two wheelers and pedestrian moving. It is a deserted isolated street in the city resembling a back alle

- Each case study has been documented in terms of 8 physical factors evolved from the literature studies. These are:
 - i. Width of path
 - ii. Enclosure provided
 - iii. Light and shadow
 - iv. Landscape
 - v. Material and texture
 - vi. Angles, curves, turns length of path
 - vii. Auditory experience
 - viii. Olfaction
- The behavioural patterns of people in these areas were carefully observed.
- People passing through this path were surveyed for the psychological impacts created by the physical surrounding. The task provided data results, which was the 'rating data'. Subjects provided assessment on 8 emotional variables. The emotional variables are:
 - i. Pleased
 - ii. Relaxed
 - iii. Curiosity
 - iv. Humbleness
 - v. Mysterious
 - vi. Surprise
 - vii. Adventurous
 - viii. Anxiety

Data form

EMOTIONS	VARYING DEGREE			
	100%	75%	50%	20%
Pleased				
Relaxed				
Curiosity				
Humbleness				
Mysterious				
Surprise				
Adventurous				
Strange and scary				
Anxiety				

Table 1: Data form

- SEX
- AGE

Subjects were asked to mark their emotions in the data form depending on the varying degree they experienced when passing through those respective paths.

Age and sex of the subjects were also recorded

- The obtained data is analysed graphically on the basis of number of people and degrees of emotions, which leads to inference on how physical factors contribute for psychological feelings in human

6. Case study 1

Sree padbhanabhaswamy temple to challai bazaar stretch, east fort, trivandrum city

6.1. Context

Three major activities:

- Temple related activities
- Recreation and parking
- Shopping and hawkers

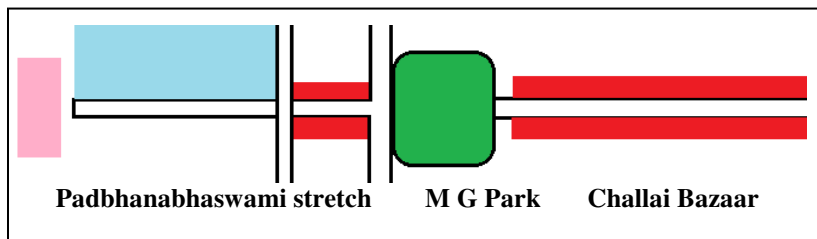


Figure 4: Case study stretch (source: self)

6.1.1. Challai Bazaar

This is a linear strip of the busy shopping streets. One could find the synthesizing elements of traditional architecture with a contemporary sensibility; the history hidden Challai bazaar is an old market street dating back to old 30's. The streets are packed with hawkers and street vendors on both sides. The path begins with the basic linear shape, which was then fragmented into smaller volumes mutually on sides, each fragments is carefully framing the views towards the gopuram of the temple. Austere volumes of bricks wrapped in colours and colonnades that simultaneously veil and add depth of complexity to the facades and the lightness and fragility of the street structures counterpoints the mass and solitude of the brick.

6.1.2. MG Park

Entering the MG Park, one could find the Arcadian quality helps in transforming atmosphere into a ring of public and private gathering spaces. The architecture is serene, sober and elemental, with an emphasis on natural material, sensitive handling of light and the expression of connection with nature.

6.1.3. Padbhanabhaswami Temple

The dimension and configuration of the paths are not prospective which in result can adapt to a range of uses. Spaces are singly loaded like a spinal connection of corridor running through the strip. The strip widens through the transition zone by passing through each sections. As a microcosmic embodiment of structural and architectural ingenuity, the bell tower is a perennial staple of the street highlighting the need of shade from the sun. And the forward path directs to a high-rise of steps with temple on its height.



Figure 5: Case study Plan (source: self)

6.2. Section 1
Padbhanabhaswami Temple

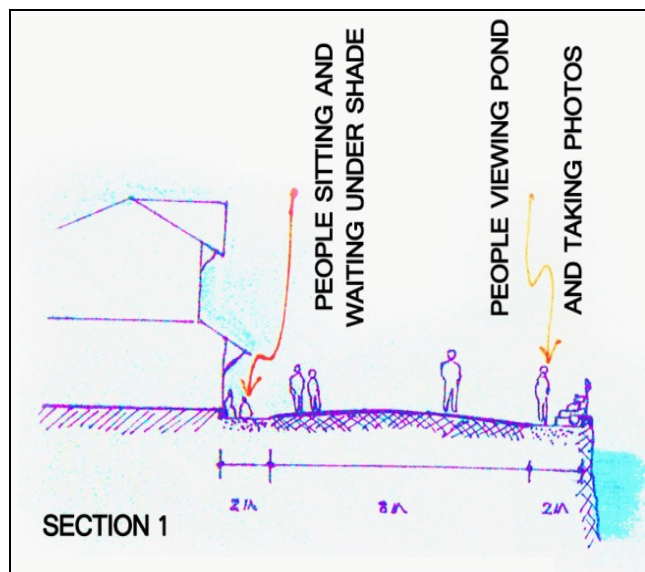


Figure 6: Section 1

6.2.1. Space Perception

Section 1 consists of a pond on one side, Bell tower on the other and a straight walk to the temple at a raise. Breezes from the pond try to cool up the place. But the absence of any shade makes the pathway very sultry and hot especially during noon. This causes great discomfort to the pedestrians. They therefore try to occupy the shady areas of the Bell tower, even though stones at the edge of pond act as perfect seating it is left unused

6.2.2. Physical Factors

- 8m Wide path with 2 m offset from the edges.
- 1.5 m railing on one side and two floor building on other.
- Edged with stone and pond on one side and Methamani tower on other side
- Harsh light most of time
- Tared path solely for pedestrian
- Long path with temple at raised position
- Calm and quite area
- No difference in gradient until one reaches the step to temple

6.2.3. Relationship between People and Emotion

According to the study 100% of subjects were curious to be in the place as they were moving to one of the richest temples in the world also owing to the recent discovery of a great treasure there. And the elevation of the temple from the path made 80% of people to feel humbled. 90% subjects were relaxed and 80% of them were pleased.

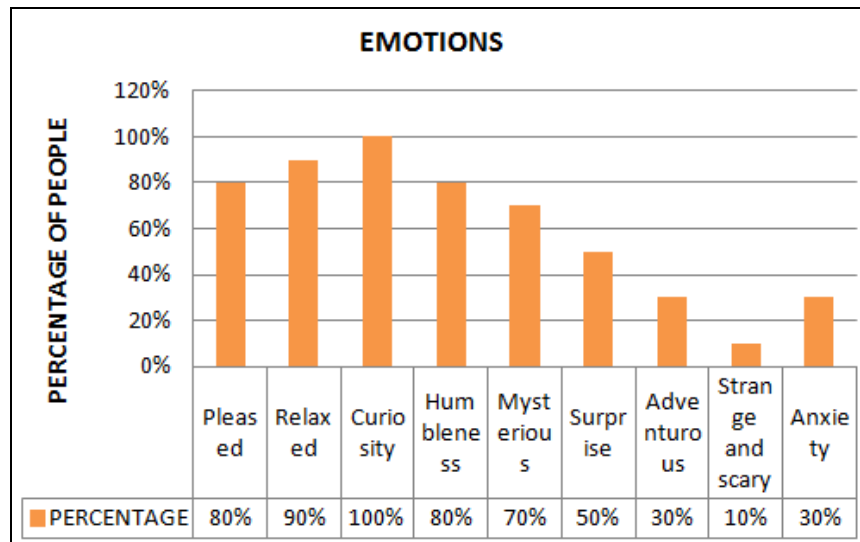


Figure 7: Emotions vs People

6.2.4. Relationship between People and Varying Degrees of Emotion

The study results show that 50% subjects were totally pleased and relaxed at the section under consideration. The factors which supported this emotion was the serenity of place created by the silence, breeze from pond, relaxing view to pond and the feeling of presence of almighty. 40% subjects reported they were 75% curious to move forward to the temple.

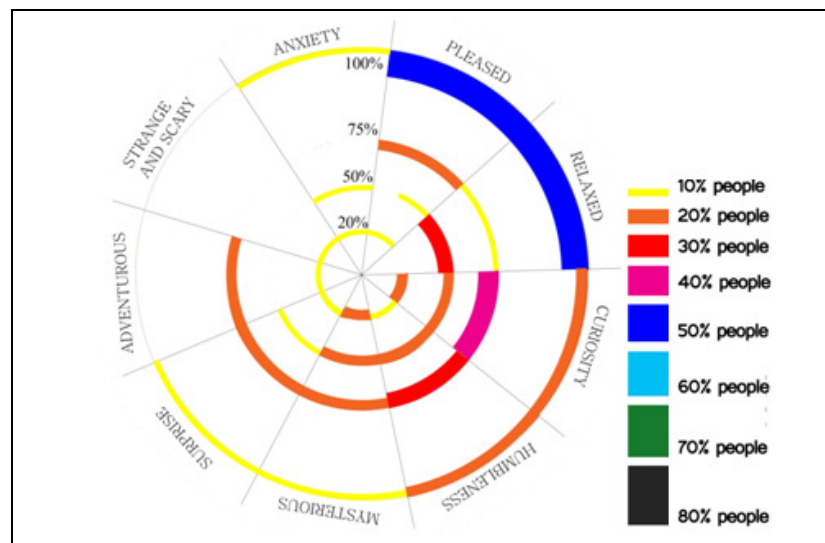


Figure 8: Degree of emotion vs People

6.2.5. Dominant Emotion

Pie Figure below shows that pleased and relaxed are the dominant emotion in the section considered felt by most of the subjects.

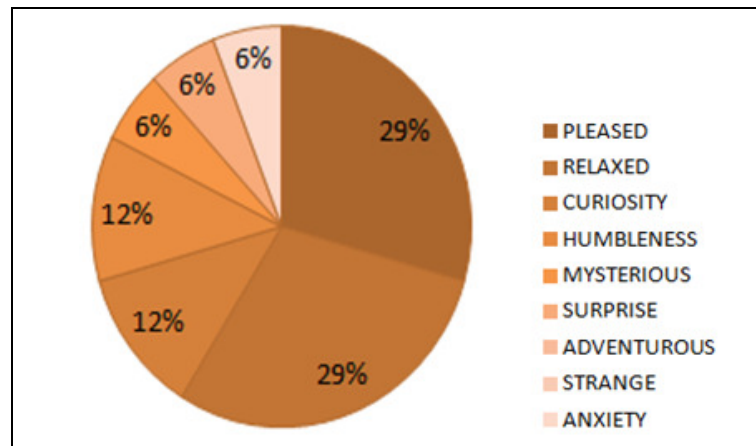


Figure 9: Prominent emotion

6.3. Section 4 MG Park

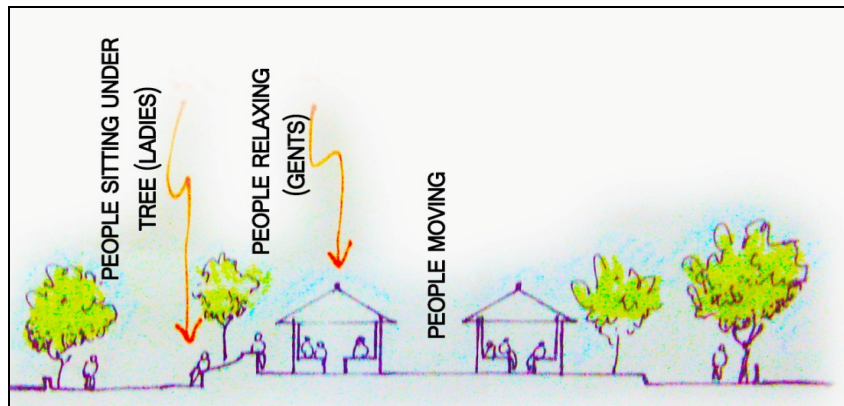


Figure 10: Section 4

6.3.1 Space Perception

Section 4 is a path through the MG Park with greenery and shady trees. Different groups of people such as couple, families, gents and ladies, cluster up at different spots with shade where they are comfortable. Ladies move away from gents and occupy areas with shade and from where they can be seen from street assuring security for them. Families move away from rest and formulate their own circle.

6.3.2. Physical Factors

- Wide enough for public movement, 2m
- No vertical enclosure
- Edged with grass and trees
- Filtered light through trees
- Paved path
- Short path stepping up and down at different spots
- Silent area
- Stepping up and down

6.3.3. Relationship between People and Emotion

Subjects were identified to feel 100% pleased and relaxed under the section considered. Mostly due to the soothing given by green colour and shade in the region. 70% subjects were curious and surprised to be in a totally diff atmosphere from where they came from

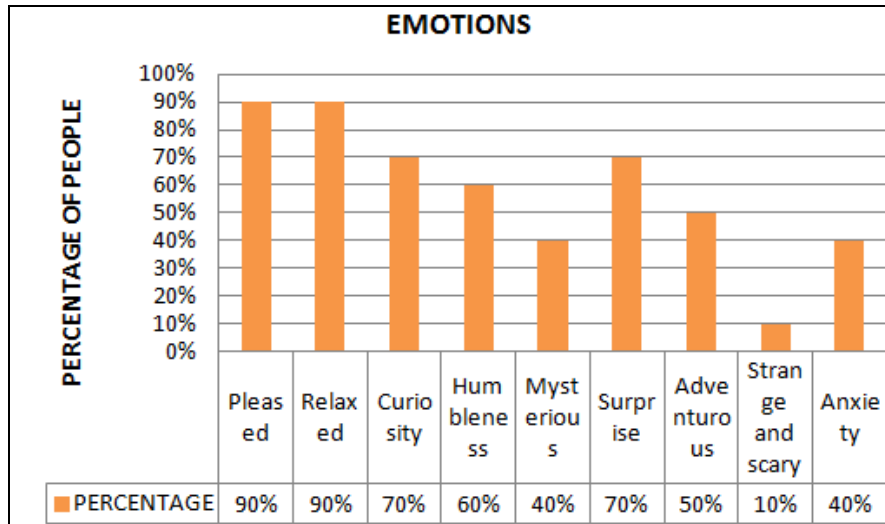


Figure 11: Emotions vs People

6.3.4. Relationship between People and Varying Degrees of Emotion

The study results show that 50% subjects were totally pleased and relaxed at the section under consideration. This was basically because of the green and silent environment provided by the landscape.

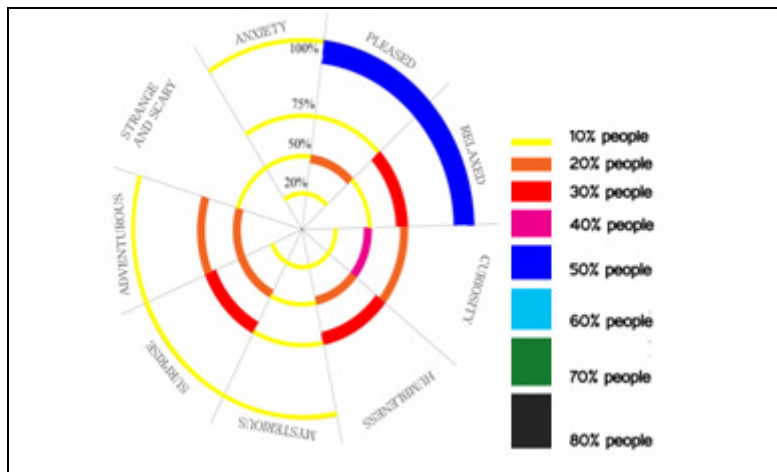


Figure 12: Degree of emotion vs People

6.3.5. Prominent Emotion

Pie Figure below reports that pleased and relaxed are the dominant emotion in the section considered, felt by most of the subjects.

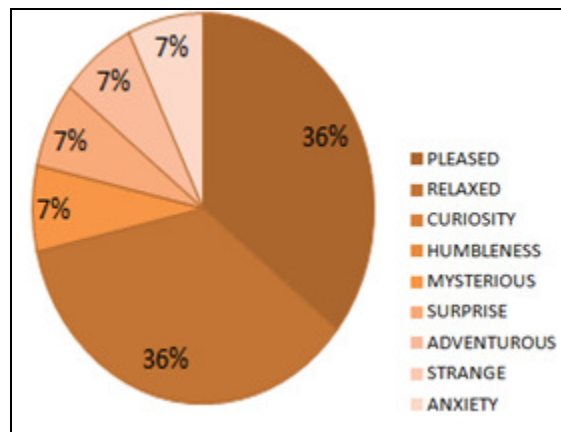


Figure 13: Prominent emotion

6.4. Section 5
Challai Bazaar

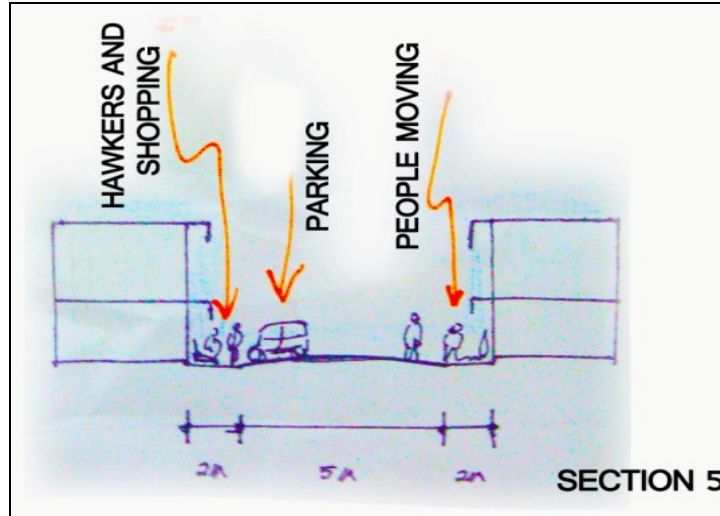


Figure 14: Section 5

6.4.1. Space Perception

Section 5 comprises of vendors on one side of street and small refreshment shops on other. People move hapazardously along the street. Few are attracted towards vendors, few to shops selling refreshments and temple offerings and the rest just moving to their destination. People moving through the busy street to their destination with few attracted towards shopping and vendors.

6.4.2. Physical Factors

- i. Wide enough for public movement, 2m
- ii. Enclosed with buildings on both sides of street
- iii. Edged with two storey shopping facilities
- iv. Bright light most of time
- v. Untreated path
- vi. Long path with undulation
- vii. Sound of traffic, people in moving in busy, shop keepers and hawkers
- viii. No grade in path

6.4.3. Relationship between People and Emotion

Subjects recorded 70% curious and mysterious under the section considered, as there is lots of chaos in the path.60% subjects reported the walk to be adventurous

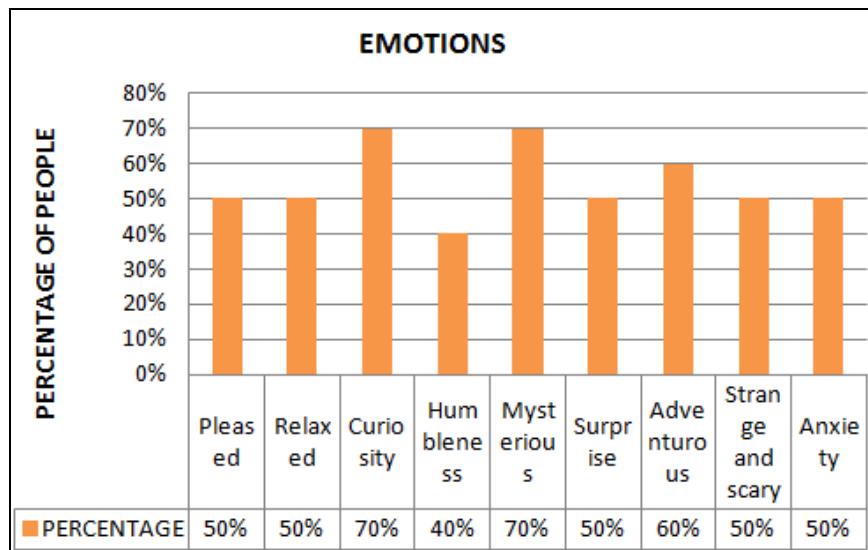


Figure 15: Emotion vs people

6.4.4. Relationship between People and Varying Degrees of Emotion

The study results show that 30% subjects were totally pleased at the section under consideration. And 20% subjects reported the walk to be 75% relaxing and adventurous .

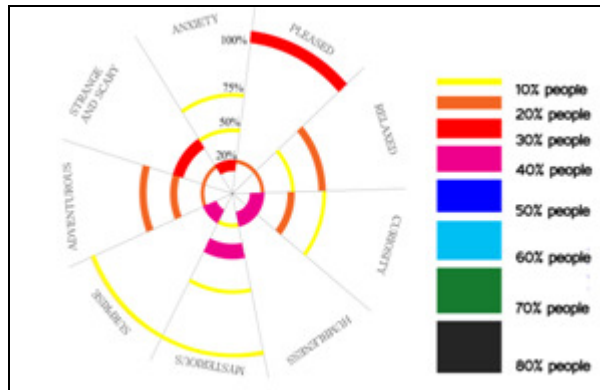


Figure 16: Degree of emotion vs people

6.4.5. Prominent Emotion

Pie Figure below reports that pleased is the dominant emotion in the section considered felt by most of the subjects.

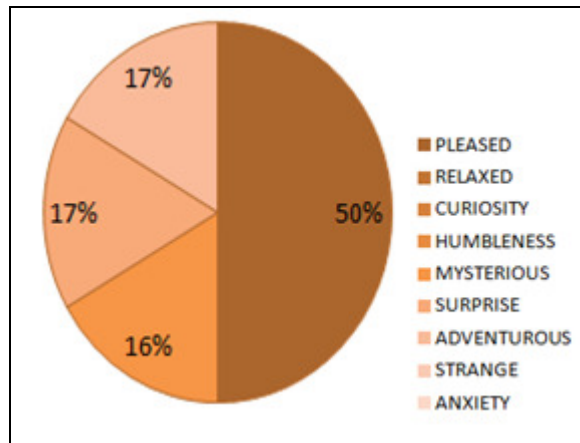


Figure 17: Prominent emotion

7. Case Study II

Varkala Cliff, Trivandrum

7.1. Context

Varkala, a calm and quite hamlet, lies in the out skirts of Thiruvananthapuram district. The setting of the beach is striking enough to take the breath away, with along winding stretch of cliff and views that extend over the Arabian sea. Enters into a large ground with parking facilities and seating. Spots have been recognised by visitors for good photography.

Perched almost perilously along the edge of dazzling cliffs, a paved footpath, boarded by coconut palms, quaint shops, beach shacks, hotels and guest houses. Cold breeze, sound of waves and splashing water gives a totally relaxed and refreshing experience. Visitors halt at restaurants to enjoy the stunning picturesque Varkala.

Nestled at the bottom of the cliff is along stretch of sparkling beach, reached by steps leading down from the cliff top.



Figure 18: Varkala plan



Figure 19: Varkala view(source: self)

7.2. Section 1 Varkala Cliff

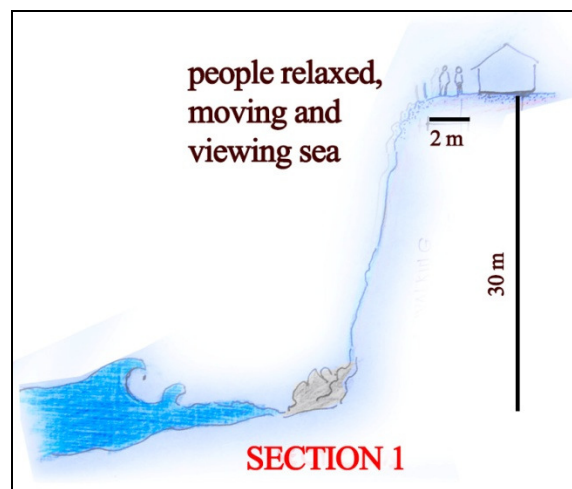


Figure 20: Section 1

7.2.1. Space Perception

People leisure walking, through the narrow path which allows only two people to cross each other. People move to the edge to get good views and photos. They also take up restaurants to enjoy the atmosphere with sea view dining. Top floor of the double storey restaurants are more preferred.

7.2.2. Physical Factors

- Narrow width varying from 1.5 to 2 m
- 1.2m high boundary on one side and 3m high building on other
- Edged with shops on one side and sea on other side Bright direct lighting falling on path
- Paved path
- Long path with no much definite curves but few angling at some points
- Raised path from the sea level
- Sound of sea waves profound

7.2.3. Relationship between People and Emotion

According to the study 100% of subjects felt pleased, curious adventurous and anxious to walk through the path. 90% of them felt relaxed, surprised and humbled when using the path. 80% of subjects reported mysterious when they walk through the path.

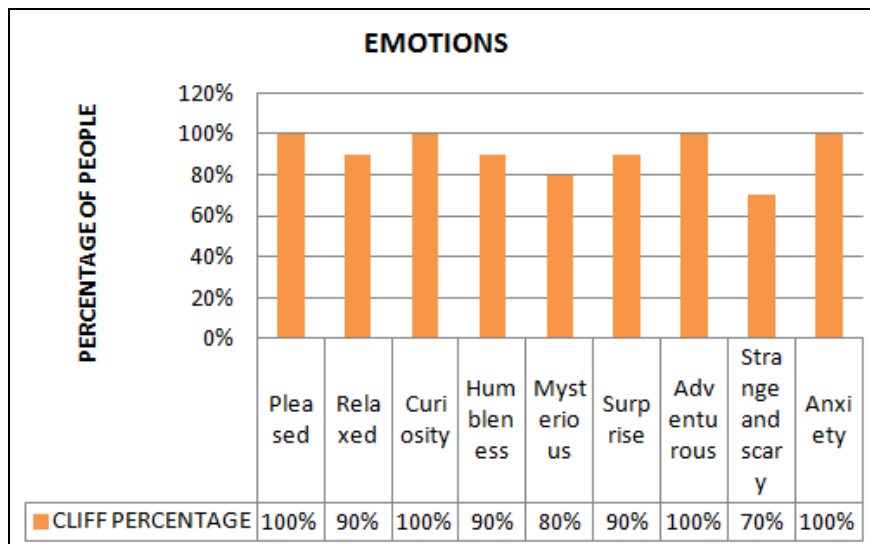


Figure 21: Emotions v s People

7.2.4. Relationship between People and Varying Degrees of Emotion

The study results show that 70% of subjects were totally relaxed at the section under consideration. And 70% subjects recorded 75% pleased and 50% recorded 75% curious to walk through the cliff

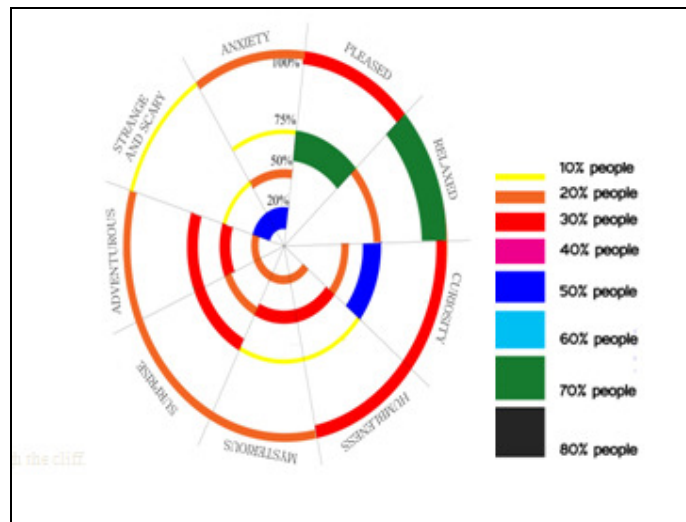


Figure 22: Degree of emotion vs People

7.2.5. Prominent Emotion

Pie Figure below, reports that relaxed is the dominant emotion in the section considered, felt by most of the subjects.

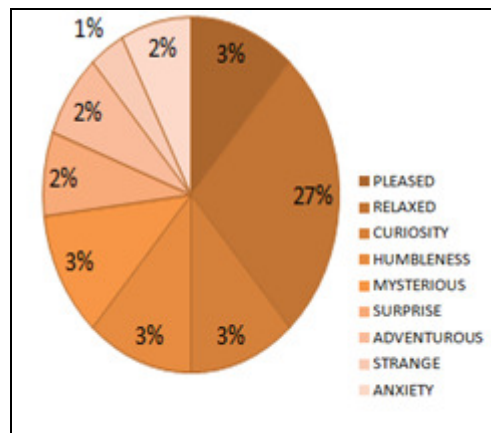


Figure 23: Prominent emotion

7.3. Section
Decend to Beach

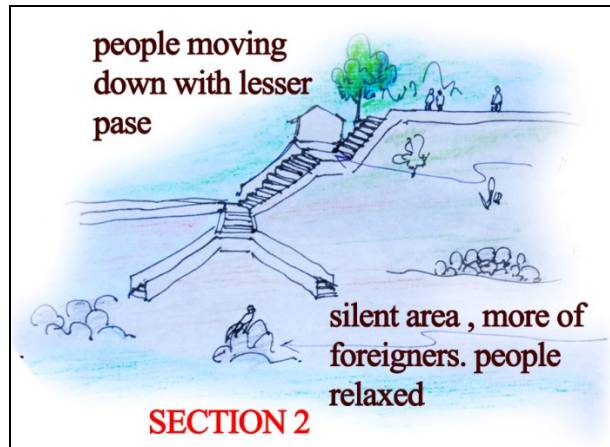


Figure 24: Section 2

7.3.1. Space Perception

People moving down the cliff to beach. They take rest in the walk down in the platforms provided at regular intervals. They try to explore the area when they get to each platform.

7.3.2. Physical Factors

- a. Wide enough for public movement, 2m
- b. 80cm boundary wall with laterite
- c. Edged with sedimentary rocks and sea on one side and landscape on other
- d. Bright direct light most of time
- e. Laterite pavement
- f. Sound of sea waves, water splashing, people howling and playing
- g. Stepping down

7.3.3. Relationship between People and Emotion

According to the study 70% of subjects felt pleased and relaxed when moving down the path from high contour near to water. 60% of them felt curious and humbled when using the path.

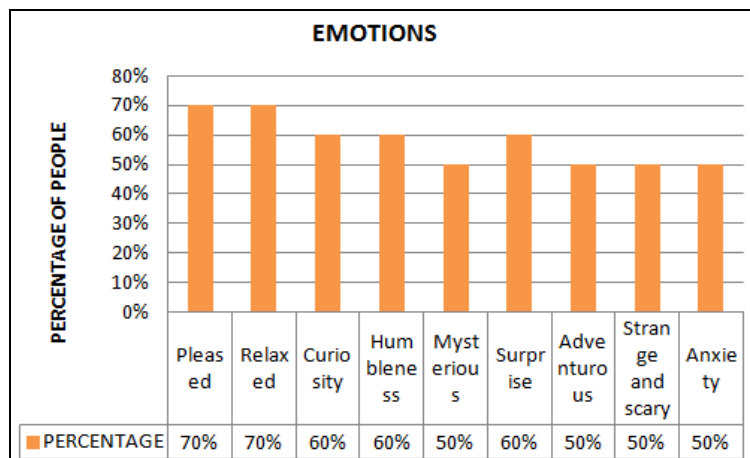


Figure 25: Emotion vs people

7.3.4. Relationship between People and Varying Degrees of Emotion

The study results show that 40% of subjects were totally relaxed and pleased at the section under consideration.

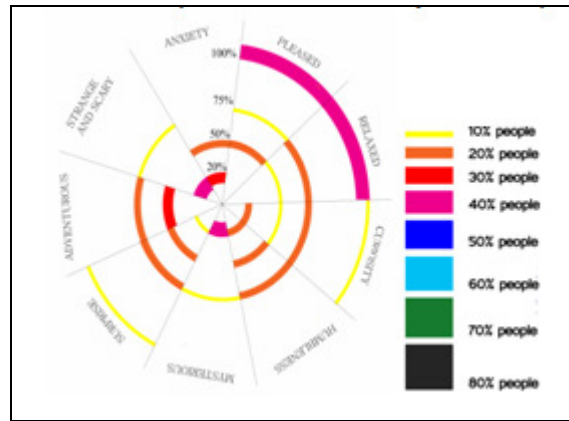


Figure 26: Degree of emotion vs people

7.3.5. Prominent Emotion

Figure below, reports that relaxed and pleased is the dominant emotion in the section considered, felt by most of the subjects.

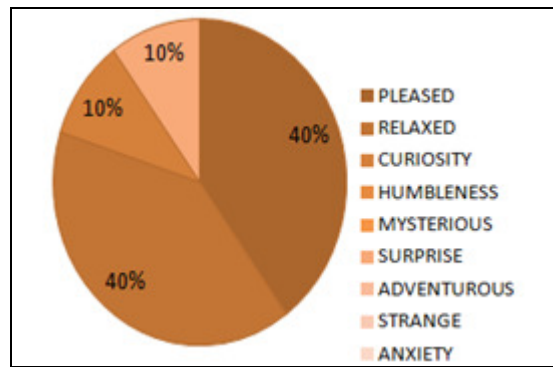


Figure 27: Prominent emotion

7.4. Section 3
Varkala Beach



Figure 28: Section 3

7.4.1. Space Perception

People are more energetic and vibrant. They move forward to the water to experience the waves and to play in it and also for swims. Few occupies the place to view the people and sea. Some engage in games such as volley ball and Frisbees.

7.4.2. Physical Factors

- Wide path
- No vertical enclosure
- Edged with sea on one side and retaining wall on other
- Direct light most of time
- Texture difference of sand and water
- Long length of path
- Sound of sea waves, people howling and playing

7.4.3. Relationship between People and Emotion

According to the study 100% of subjects felt relaxed and 90% subjects felt pleased and adventurous when moving through beach.80% of them felt anxious, mysterious and humbled when they were in the beach.

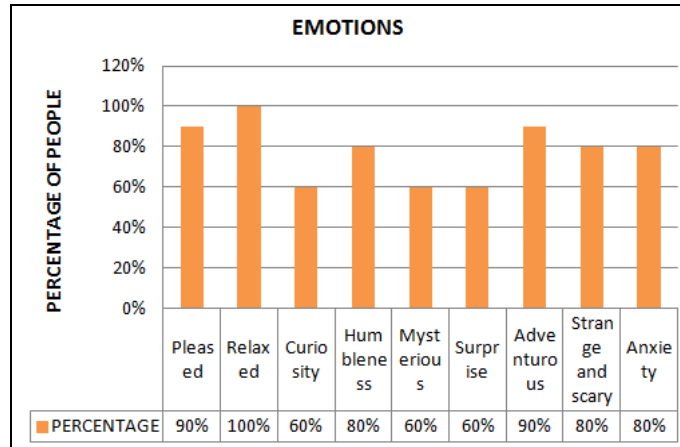


Figure 29: Emotions vs people

7.4.4. Relationship between People and Varying Degrees of Emotion

The study results show that 60% of subjects were totally relaxed and 40% subjects recorded a feel of strange and scary and 30% felt totally pleased when they walked near to the high current waves.

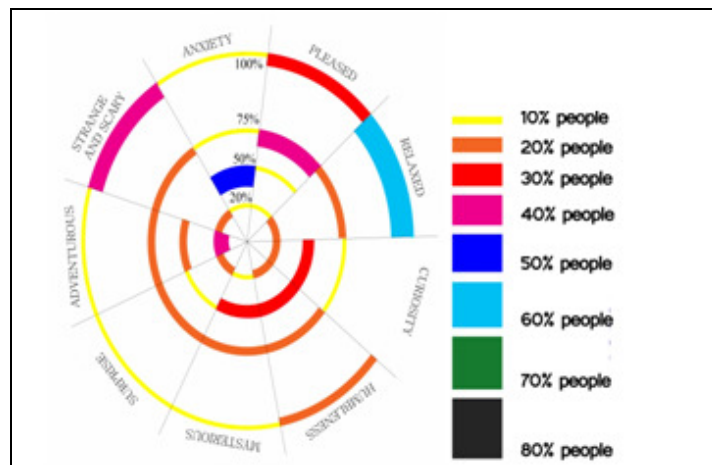


Figure 30: Degree of emotion vs people

7.4.5. Prominent Emotion

Pie Figure below reports that 32% relaxed feel persist in the area and 21% scared feel.

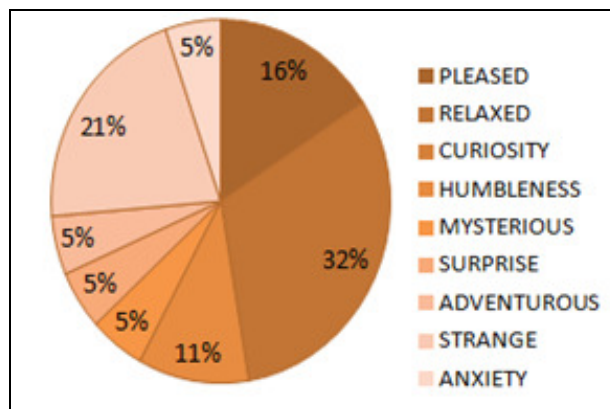
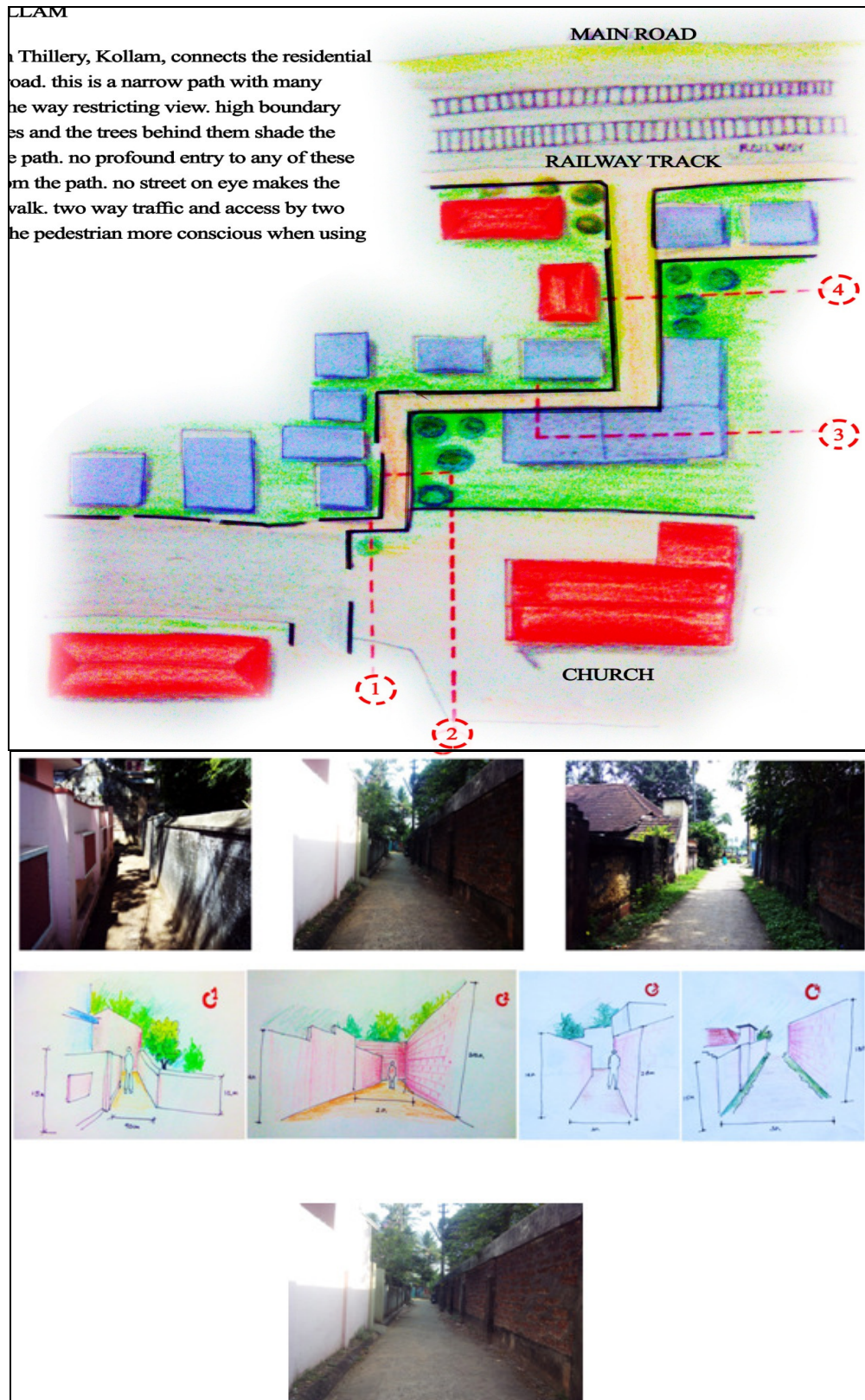


Figure 31: Prominent emotion

8. Case Study III
Thillery, Kollam



8.1. Context

A shortcut path in Thillery, Kollam, connects the residential areas to the main road. This is a narrow path with many turns coming in the way restricting view. High boundary walls on both sides and the trees behind them shade the area or dim up the path. No profound entry to any of these houses is seen from the path.

No eye on street makes the path insecure to walk. Two way traffic and access by two wheelers makes the pedestrians more conscious when using the path.

8.2. Physical Factors

- a. Narrow path 90 cm to 3m wide
- b. 1.8m to 2.8m high enclosure
- c. Edged with boundary walls, trees and buildings
- d. Dim light
- e. Mud road
- f. short path with 3 turns
- g. silent area
- h. No gradient difference

8.3. Relationship between People and Emotion

According to the study 100% of subjects felt strange, scary and anxious when using the path? And 90% subjects felt it to be adventurous.

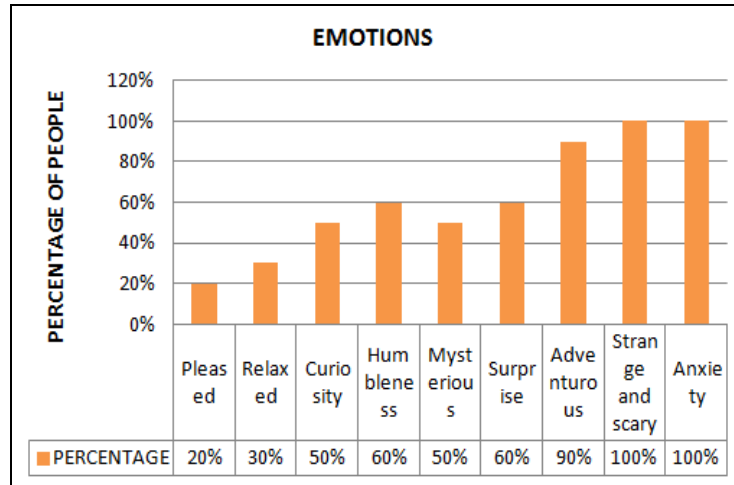


Figure 33: Emotion vs people

8.4. Relationship between People and Varying Degrees of Emotion

The study results show that 80% of subjects felt 100% scared and anxious when using the path. 50% subjects felt it to be adventurous and surprising. 30% subjects reported that they felt pleased, curious and mysterious when moving through the path.

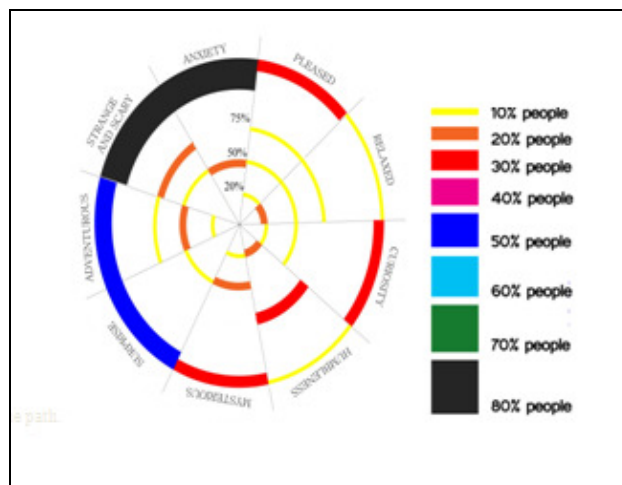


Figure 34: Degree of emotion vs people

8.5. Prominent Emotion

Pie Figure below reports that strange, scary and anxiety are the persistent emotions in the path.

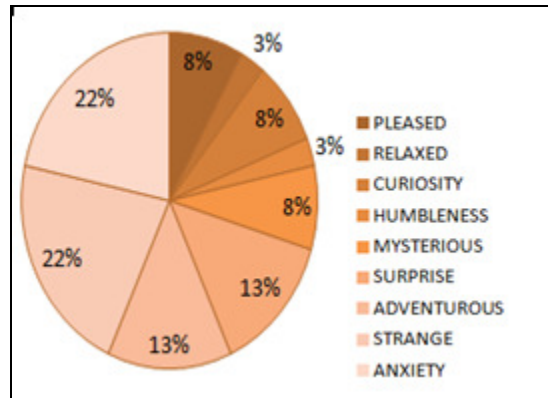
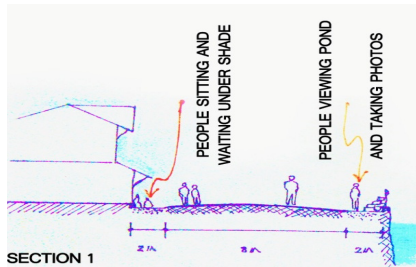
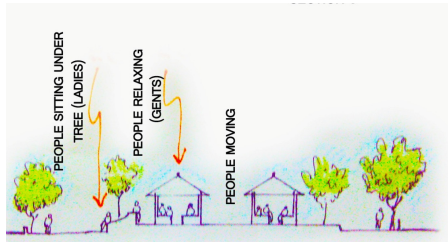
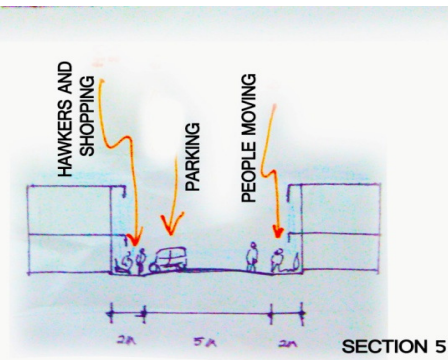
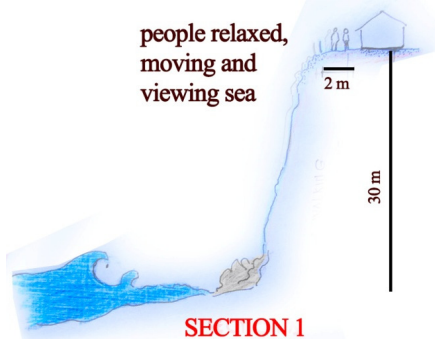




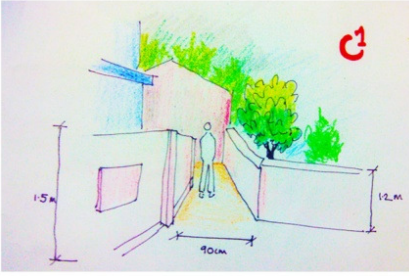
Figure 35: Prominent emotion

9. Inference and Conclusions

SECTION	PHYSICAL FACTOR	PSYCHOLOGY OF PATH	SUMMARY	INFERENCE
PADBHANABHASWAMY TEMPLE	<ul style="list-style-type: none"> 8m Wide path Enclosed with bell tower on one side Edged with bell tower on one side and pond on other side Harsh light most of time Tarred path solely for pedestrian Long path with temple at raised position Calm and quite area Horizontal path 	29% Relaxed Pleased	<ul style="list-style-type: none"> Evident structural stability of temple and bell tower Calm colour of pond Desire of visitor to be in temple Harmonious relation of bell tower, temple, and pond Low noise level in the area 	<ul style="list-style-type: none"> Structural stability and harmonious relationship between built and unbuilt Cool colours and low noise level brings in peaceful environment
		12% Curiosity Humbleness 6% Mysterious Surprise Anxiety	<ul style="list-style-type: none"> Overwhelming scale of temple and bell tower Soaring form of temple Temple contrived as to hold visitor on a broad base plane and lift ones mind and eye high along the vertical Quite lofty passage to temple Hiddenness of gods deity Unfamiliarity with the temple 	<ul style="list-style-type: none"> Overwhelming scale of nature and soaring forms of built environment where eyes get lifted up makes people humble Unfamiliarity of space can bring in anxiety



MG PARK		<ul style="list-style-type: none"> • 2m Wide path • No vertical enclosure • Edged with grass and trees • Filtered light through trees • Paved path • Short path stepping up and down at different spots • Silent area • Stepping up and down 	36% Relaxed Pleased	<ul style="list-style-type: none"> • Greenery of trees • Filtered light through foliage of trees • Harmonious relationship of built and unbuilt • Curvilinear forms and spaces • Low and Comfortable seating spaces 	<ul style="list-style-type: none"> • Cool colours and soft light brings in peaceful environment • Horizontality, curvilinear forms and low seating gives relaxing environment
			7% Mysterious Surprise Anxiety Adventurous	<ul style="list-style-type: none"> • Location of park in the city centre • Change in grade of land • Natural form 	<ul style="list-style-type: none"> • Contrasting location brings in surprise and anxiety
CHALLAI BAZAR		<ul style="list-style-type: none"> • 2m Wide pedestrian path flanking vehicular road • Enclosed with commercial buildings on both sides of street • Edged with two storey shopping facilities • Bright light most of time • Untreated path • Long rough path • Sound of traffic, people moving in hurries, shop keepers and hawkers • No grade on path 	50% Pleased	<ul style="list-style-type: none"> • Various involvement along the edge of path interest the visitors, pleasing them 	<ul style="list-style-type: none"> • Various involvement along the edge of path interest the passer by.
			17% Surprise Adventurous		
			16% Mysterious		
VARKALA CLIFF		<ul style="list-style-type: none"> • 1.5 to 2 m wide path • 1.2m high boundary on one side and 3m high building on other • Edged with shops on one side and sea on other side • Bright direct lighting falling on path • Paved path • Long path with no much definite curves but few angling at some points • Raised path from the sea level • Sound of sea waves profound 	27% Relaxed	<ul style="list-style-type: none"> • Horizontality • Agreeable texture • Volumes of shops varying in size from intimate to infinite • Curvilinear and Flowing lines of path • Soothing sound of waves • Quite colours of sea 	<ul style="list-style-type: none"> • Being in a intimate space with a view to infinity brings in relaxation along with a secure feel • Cool colours and low noise level brings in peaceful environment
			3% Mysterious Pleased Curiosity Humbleness 2% Surprise Adventurous Anxiety 1% Strange	<ul style="list-style-type: none"> • Interplay between line of site and line of passage in the path creates mystery • Modulation of view creates curiosity • Infinite scale of sea • Rough natural texture creates adventurous feel 	<ul style="list-style-type: none"> • Visual incontinuity brings in curiosity and anxiety • Rough natural texture creates adventure
VARKALA CLIFF TO BEACH		<ul style="list-style-type: none"> • 2m Wide pedestrian path • 80cm boundary wall with laterite • Edged with sedimentary rocks and sea on one 	40% Relaxed Pleased	<ul style="list-style-type: none"> • Increased interest of water • Relatively effortless movement to downwards • Cool breeze 	<ul style="list-style-type: none"> • Water is an interesting feature which relaxes people

		<ul style="list-style-type: none"> side and landscape on other Bright direct light most of time Laterite pavement Sound of sea waves, water splashing, people howling and playing Stepping down 	10% Surprise Curious	<ul style="list-style-type: none"> Increased interest of water New dimension to motion with change in grade of path brings curiosity 	<ul style="list-style-type: none"> Any change in grade or angle gives new dimensions to motion generating curiosity
VARKALA BEACH		<ul style="list-style-type: none"> Wide path No vertical enclosure Edged with sea on one side and retaining wall on other Direct light most of time Texture difference of sand and water Long length of path Sound of sea waves, people howling and playing 	32% Relaxed	<ul style="list-style-type: none"> Increased interest of water Cool colours and cool breezes Expanding views to nature Sound of waves which dominates over all other sound 	<ul style="list-style-type: none"> Expanding views to nature generates relaxed feeling Sound of waves
			21% Strange	<ul style="list-style-type: none"> The strong wave currents Large scale of sea 	<ul style="list-style-type: none"> Dynamic action and forms generates Strange and insecure feel
			16% Pleased 11% Humbled 5% Anxiety	<ul style="list-style-type: none"> Desire of visitor to be in beach Large scale of sea when compared to anthropometry The breeze from the sea 	<ul style="list-style-type: none"> Large scale when compared to anthropometry humbles down people
SHORT CUT IN THILLERY		<ul style="list-style-type: none"> Narrow path 90 cm to 3m wide 1.8m to 2.8m high enclosure Edged with boundary walls, trees and buildings Dim light Mud road short path with 3 turns silent area No gradient difference 	22% Strange Anxiety 13% Surprise Adventurous 8% Mysterious Humbleness Curiosity 3% Relaxed Pleased	<ul style="list-style-type: none"> Sensed confinement due to lesser width and high enclosure A quality of compression and bearing. The dim and dark quality of space Interplay between line of site and line of passage in the path creates mystery 	<ul style="list-style-type: none"> Blocking visual continuity brings in curiosity and anxiety Confining space with rough texture, worm and dark colours, high enclosure and lesser width of path with dim lights brings in insecure feel leading to mystery, anxiety, strangeness

10. References

- i. ALEXANDER, C. (1977). A PATTERN LANGUAGE.
- ii. Ching, D. K. (n.d.). form space and order.
- iii. Ching, f. D. (n.d.). architecture form, space and order. van nostrand reinhold.
- iv. en.wikiarquitectura.com. (n.d.). Retrieved from http://en.wikiarquitectura.com/index.php/Main_Page
- v. holl, s. (n.d.). the eyes of skin (part 1 ed.).
- vi. lynch, k. (n.d.).
- vii. simonds, j. o. (n.d.). a manual of environmental planning and design (forth ed.). McGraw.Hill.
- viii. time saver standards for landscape architecture. (n.d.).
- ix. unwin, s. (1997). analysing architecture. routeledge.