# ANALYSIS OF
# BEHAVIORAL RESPONSES
# TO THE
# PERCEPTION OF SPACES
# IN
# RESIDENTIAL BUILDINGS

MASTER OF ARCHITECTURE DISSERTATION

Submitted by :
**ABHIJIT SHIRODKAR**

Guided by :
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DEPARTMENT OF ARCHITECTURE AND PLANNING
UNIVERSITY OF ROORKEE
ROORKEE-247 667 (INDIA)

April, 1986

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# certificate

CERTIFIED THAT THE DISSERTATION ENTITLED
'ANALYSIS OF BEHAVIORAL RESPONSES TO THE PERCEPTION
OF SPACES IN RESIDENTIAL BUILDINGS',
WHICH IS BEING SUBMITTED BY SHRI. ABHIJIT D. SHIRODKAR
IN PARTIAL FULFILMENT FOR THE AWARD OF THE DEGREE OF
MASTER OF ARCHITECTURE, IN THE DEPARTMENT OF
ARCHITECTURE AND PLANNING, UNIVERSITY OF ROORKEE, ROORKEE,
IS A RECORD OF THE STUDENT'S OWN WORK CARRIED OUT
BY HIM UNDER MY SUPERVISION AND GUIDANCE.
THE MATTER EMBODIED IN THIS DISSERTATION HAS NOT BEEN
SUBMITTED FOR THE AWARD OF ANY OTHER DEGREE OR DIPLOMA.

THIS IS TO FURTHER CERTIFY THAT HE HAS WORKED FOR A
PERIOD OF EIGHT MONTHS FROM AUGUST 1985 TO MARCH 1986
FOR THE PREPARATION OF THIS DISSERTATION AT THIS
UNIVERSITY.

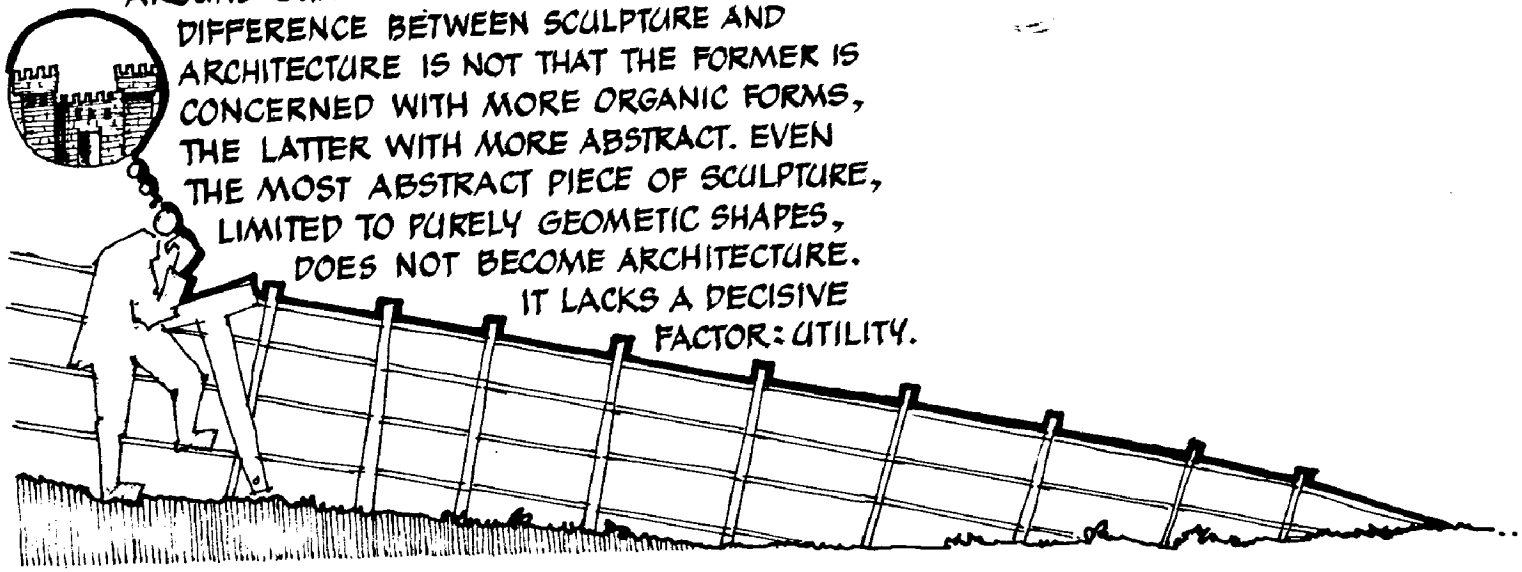
(VISHWAMITTER)
PROFESSOR,
DEPARTMENT OF ARCHITECTURE AND PLANNING,
UNIVERSITY OF ROORKEE, ROORKEE.

ROORKEE,
APRIL 1986.

# curtain raiser

THERE WAS A FENCE WITH SPACES YOU
COULD LOOK THRO' IF YOU WANTED TO.
AN ARCHITECT WHO SAW THIS THING
STOOD THERE ONE SUMMER EVENING,
TOOK OUT THE SPACES WITH GREAT CARE
AND BUILT A CASTLE IN THE AIR.
• CHRISTIAN MORGENSTERN

ARCHITECTURE IS A VERY FUNCTIONAL ART; IT CONFINES SPACE SO WE CAN DWELL IN IT, CREATES THE FRAMEWORK AROUND OUR LIVES. IN OTHER WORDS, THE DIFFERENCE BETWEEN SCULPTURE AND ARCHITECTURE IS NOT THAT THE FORMER IS CONCERNED WITH MORE ORGANIC FORMS, THE LATTER WITH MORE ABSTRACT. EVEN THE MOST ABSTRACT PIECE OF SCULPTURE, LIMITED TO PURELY GEOMETIC SHAPES, DOES NOT BECOME ARCHITECTURE. IT LACKS A DECISIVE FACTOR: UTILITY.



OBVIOUSLY THEN, ARCHITECTURE IS BUILT FOR PEOPLE. IT IS THE ENCLOSURE IN WHICH PEOPLE LIVE THEIR LIVES. WHY THEN TALK OF BEHAVIORAL ARCHITECTURE; WHY NOT ARCHITECTURE FOR PEOPLE, OR HUMAN ARCHITECTURE, OR JUST ARCHITECTURE?

THE WORD 'BEHAVIOUR' SUGGESTS PEOPLE IN ACTION, WITH THINGS TO DO, WITH OTHER PEOPLE TO TALK TO AND INTERACT WITH. BEHAVIOUR SUGGESTS AN AWARENESS OF THE SOCIAL FABRIC OF PEOPLE, A MOVING TOGETHER DYNAMICALLY IN TIME.

BUILDINGS ARE STATIC. THE TRAGEDY OF ARCHITECTURE IS SEEING PEOPLE AS STATIC, TOO. IF A PHYSICAL SPACE WILL DIMENSIONALLY ACCOMODATE A PERSON, WE FEEL THAT, SOMEHOW, THAT PERSON HAS BEEN ADEQUATELY PROVIDED FOR. YET, ONLY BY CONSIDERING AN INDIVIDUAL'S BEHAVIOUR IN SPACE CAN WE VALIDATE THE DESIGN. THIS IS, PRECISELY, WHAT THE ENDEAVOUR OF THIS DISSERTATION IS GOING TO BE....

....AND THE CREDITS FOR THIS HUMBLE ESSAY SHOULD RIGHTFULLY GO TO....

1. PROF. VISHWAMITTER
   FOR THE 'MOULDING, REMOULDING, RE-REMOULDING, RE-RE-RE....'

2. PROF. PHUTANE (RTD. PRINCIPAL, R.A.PODAR COLLEGE OF COMMERCE AND ECONOMICS, BOMBAY) AND
3. SHRI. RAJINDER LAL (SCIENTIST, CENTRAL BUILDING RESEARCH INSTITUTE, ROORKEE)
   FOR THE 'LIVELY FIGURING'.

4. OFFICIALS AND STAFF OF THE RESERVE BANK OF INDIA, BOMBAY
   FOR THE 'TRESPASSING RIGHTS'.

5. ARCHITECT JAYEN MISTRY, BOMBAY
   FOR 'CALLING THE SHOTS'.

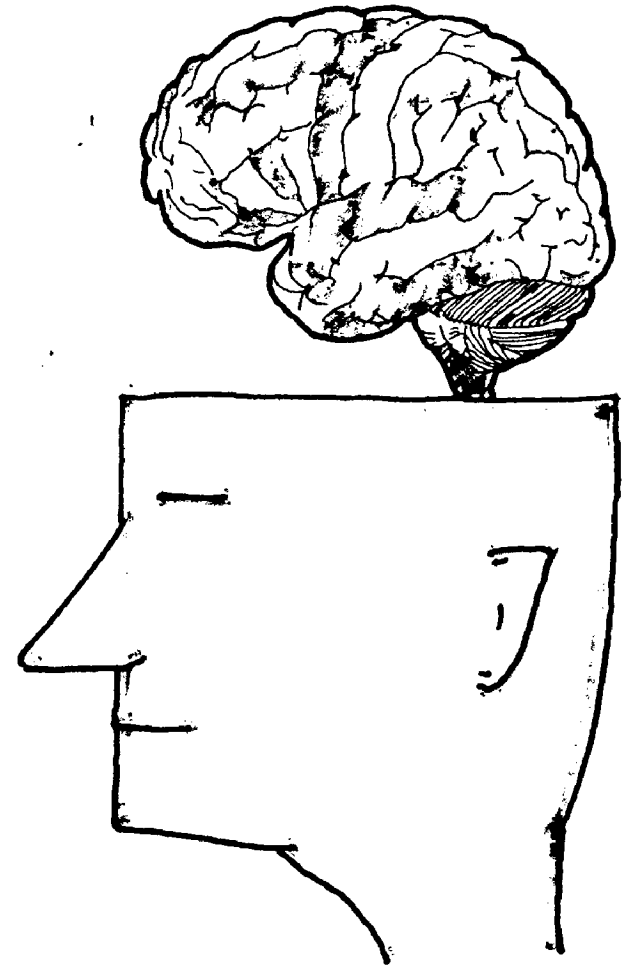
6. SHRI. SATISH MANDALIA, ROORKEE
   FOR THE 'PATIENT COPYING'.

7. ALL THOSE
   WHO KEPT ON THROWING BRICKS, BATS AND BRICK-BATS....

ABHIJIT SHIRODKAR
ROORKEE,
APRIL 1986.

# insides out





- CHAPTER I
  FOR A START....

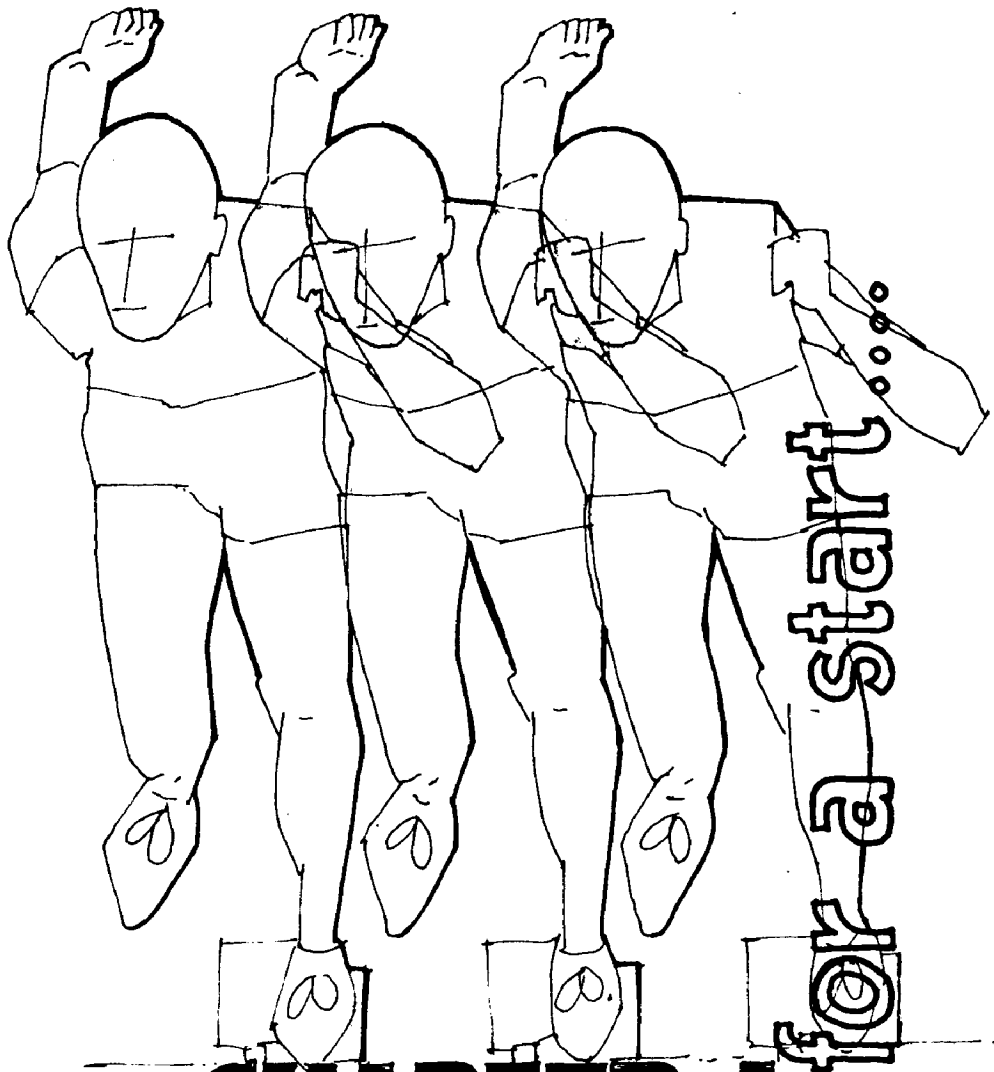
- CHAPTER II
  WHAT'S THE PROBLEM?
  - PROBLEM : IDENTIFICATION
  - PROBLEM: SCOPE
  - OBJECTIVES
  - METHODOLOGY

# part one

part one

ARCHITECTURE IS INDIVISIBLE. ONE CANNOT SPLIT IT INTO A NUMBER OF ELEMENTS. ARCHITECTURE IS NOT PRODUCED SIMPLY BY ADDING PLANS AND SECTIONS TO ELEVATIONS (THOUGH ALL THREE MUST HARMONIZE TO PRODUCE A GOOD BUILDING). IT IS SOMETHING ELSE. SOMETHING MORE. IT IS IMPOSSIBLE TO PIN-POINT THIS 'SOMETHING', FOR ITS LIMITS ARE, IN NO WAY, WELL-DEFINED. IT CANNOT BE EXPLAINED; IT MUST BE EXPERIENCED.

A REMARKABLE FEATURE ABOUT CERTAIN HISTORICAL BUILDINGS, APART FROM THEIR SURVIVAL, IS NOT THEIR ANTIQUITY, BUT IRONICALLY, THEIR MODERNITY. IT IS TRUE THAT WE TEND TO ADMIRE SUCH BUILDINGS DUE TO PARTICULAR HISTORICAL ASSOCIATIONS OR FOR THE RICH AURA WHICH CENTURIES (OF WEATHERING) HAVE GIVEN ITS SURFACES, BUT THE ARCHITECTURAL BEAUTY OF THEIR FORMS LIES IN THE FACT THAT THEY REPRESENT CONTEMPORARY ARCHITECTURAL PROBLEMS SOLVED BY THE MOST MODERN CONSTRUCTIONAL METHODS OF THOSE TIMES (ALL DONE WITH A SENSITIVE MANIPULATION OF AVAILABLE MATERIAL). THE BEAUTY OF SUCH STRUCTURES IS A CONSCIOUS (AT TIMES UNCONSCIOUS) BY-PRODUCT WHICH AROSE FROM AN ECONOMICAL AND INTELLIGENT SOLUTION TO PURELY PRACTICAL PROBLEMS; BUT, BEARING IN MIND, AT THE SAME TIME, THE EFFECT THAT IT WOULD HAVE ON THE MASSES.



# CHAPTER I for a start...

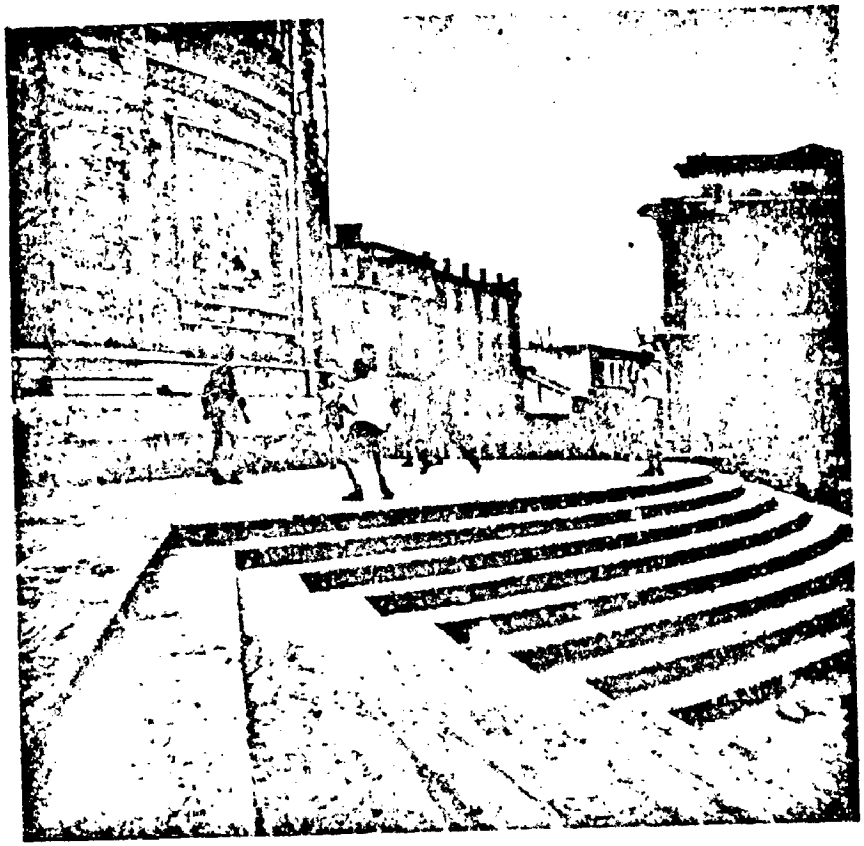
IDEAS OF WHAT IS OR WHAT IS NOT BEAUTIFUL (AND COMFORTABLE OR FUNCTIONAL) VARY NOT ONLY FROM TIME TO TIME BUT ALSO FROM CULTURE TO CULTURE. THUS WE FIND THAT, THE RIGHT APPROACH TO ARCHITECTURE OF THE GREEKS WAS DISCARDED AS INCORRECT BY THE RENNAISANCE BUILDERS. SIMILARLY THE CONCEPT ADOPTED BY THE WEST, IN THE LATTER HALF OF THE 19TH CENTURY, OF HAVING SEPARATE ROOMS FOR DIFFERENT ACTIVITIES, FOUND THE GENERAL WESTERN USER QUITE SATISFIED. ON THE OTHER HAND, A CONTEMPORARY JAPANESE FOUND HIMSELF DISORIENTED IN SUCH A HOUSE. HE WAS USED TO REMAINING STATIC WHILE THE ACTIVITIES AROUND HIM CHANGED WITH THE USE OF PAPER SCREENS.

THUS ARCHITECTURE IS NOT MERELY THAT WHICH IS SEEN BUT ALSO THAT WHICH IS EXPERIENCED. GOING A STEP FURTHER, TO EXPERIENCE ARCHITECTURE ONE MUST 'PERCEIVE' IT. ONE MUST OBSERVE HOW IT WAS DESIGNED FOR A SPECIAL PURPOSE AND HOW IT WAS ATTUNED TO THE ENTIRE CONCEPT AND RHYTHM OF A SPECIFIC ERA. ONE MUST DWELL IN THE ROOMS, FEEL HOW THEY CLOSE ABOUT ONESELF, OBSERVE HOW ONE IS NATURALLY LED FROM ONE TO ANOTHER. ONE MUST BE AWARE OF THE TEXTURAL EFFECTS, DISCOVER WHY JUST THOSE COLOURS WERE USED. TWO APARTMENTS, ONE ABOVE THE OTHER, WITH ROOMS OF EXACTLY THE SAME DIMENSIONS AND WITH THE SAME OPENINGS, CAN BE ENTIRELY DIFFERENT SIMPLY BECAUSE OF THE CURTAINS, WALLPAPER AND FURNITURE. ONE MUST ALSO EXPERIENCE THE GREAT DIFFERENCE ACCOUSTICS MAKE IN ONE'S CONCEPTION OF SPACE.

IT IS THIS FACTOR OF PERCEPTION, ON PART OF THE USER, WHICH CAN BE TAKEN AS A SCALE BETWEEN ARCHITECTURE AND NON-ARCHITECTURE.

AT THIS POINT IT WOULD BE INTERESTING TO NOTE AN INCIDENT WHICH APPEARS IN THE BOOK 'EXPERIENCING ARCHITECTURE':

> THE ENORMOUS CHURCH OF S. MARIA MAGGIORE STANDS ON ONE OF ROME'S SEVEN FAMOUS HILLS. ORIGINALLY THE SITE WAS VERY UNKEMPT, AS CAN BE SEEN IN AN OLD FRESCO PAINTING IN THE VATICAN. LATER, THE SLOPES WERE SMOOTHED AND ARTICULATED WITH A FLIGHT OF STEPS UP TO THE APSE OF THE BASILICA. THE MANY TOURISTS WHO ARE BROUGHT TO THE CHURCH ON SIGHT-SEEING TOURS HARDLY NOTICE THE UNIQUE CHARACTER OF THE SURROUNDINGS.... BUT THEY DO NOT EXPERIENCE THE PLACE IN THE WAY SOME BOYS I SAW THERE A FEW YEARS AGO DID. I IMAGING THEY WERE PUPILS FROM A NEARBY MONASTERY SCHOOL. THEY HAD A RECESS AT ELEVEN O'CLOCK AND EMPLOYED THE TIME PLAYING A VERY SPECIAL KIND OF BALL GAME ON THE BROAD TERRACE AT THE TOP OF THE STAIRS. IT WAS APPARENTLY A KIND OF FOOTBALL BUT THEY ALSO UTILIZED THE WALL IN THE GAME, AS IN SQUASH—



BOYS PLAYING A BALL GAME ON THE TOP STEP OF THE STAIRWAY BEHIND THE CHURCH OF S.MARIA MAGGIORE IN ROME.

A CURVED WALL, WHICH THEY PLAYED AGAINST WITH GREAT VIRTUOSITY. WHEN THE BALL WAS *OUT*, IT WAS MOST DECIDEDLY OUT, BOUNCING DOWN ALL THE STEPS AND ROLLING SEVERAL HUNDRED FEET FURTHER ON WITH AN EAGER BOY RUSHING AFTER IT, IN AND OUT AMONG MOTOR CARS AND VESPAS DOWN NEAR THE GREAT OBELISK.

I DO NOT CLAIM THAT THESE ITALIAN YOUNGSTERS LEARNED MORE ABOUT ARCHITECTURE THAN THE TOURISTS DID. BUT QUITE UNCONSCIOUSLY THEY EXPERIENCED CERTAIN BASIC ELEMENTS OF ARCHITECTURE : THE HORIZONTAL PLANES AND THE VERTICAL WALLS ABOVE THE SLOPES. AND THEY LEARNED TO PLAY ON THESE ELEMENTS. AS I SAT IN THE SHADE WATCHING THEM, I SENSED THE WHOLE THREE-DIMENSIONAL COMPOSITION AS NEVER BEFORE. (RASMUSSEN, 1968, PP. 16-17)

PEOPLE IN GENERAL, BY A VARIETY OF EXPERIENCES, QUITE INSTINCTIVELY LEARN TO JUDGE THINGS ACCORDING TO WEIGHT, SOLIDITY, TEXTURE, COLOUR, VOLUME, ETC. IT IS ALSO FOUND THAT THEY TEND TO JUDGE ARCHITECTURE TOO AS HARD, SOFT, LIGHT, HEAVY, BRIGHT, DULL, AIRY, CRAMPED, ETC. DEPENDING ON THE MATERIALS, TEXTURES AND COLOURS USED IN THE STRUCTURE.

THIS PSYCHOLOGICAL ANGLE IS AN INTEGRAL PART OF ARCHITECTURE; AND THE DESIGNER WOULD HAVE FAILED IN HIS VISION, HOWEVER NOBLE AND LOFTY IT MIGHT BE, IF THE FINAL USER OF HIS STRUCTURE IS DISSATISFIED WITH IT.

# CHAPTER II

## what's the problem?

## PROBLEM: IDENTIFICATION

AMONGST THE MANY REVOLUTIONS THAT HAVE TAKEN PLACE IN THE HISTORY OF MAN, TWO STAND OUT AS HAVING HAD A DEEPER EFFECT ON HIS LIFE THAN ANY OTHERS. THE FIRST BEGAN WHEN MAN, THE HUNTER, BECAME MAN, THE FARMER. AS A RESULT, THE HUMAN POPULATION OF AN AREA COULD INCREASE AS MUCH AS TEN TIMES. THE SECOND IS, THE CHANGE FROM FARMING AS A HANDICRAFT TO INDUSTRIAL FARMING. THIS WILL, IT IS HOPED, SUPPORT A FURTHER TEN-FOLD GROWTH IN THE POPULATION. URBANISATION HAS ALREADY STARTED ON A WORLD-WIDE SCALE, AND DEMOGRAPHERS ESTIMATE THAT IN A SHORT TIME 80 PER CENT OF THE WORLD'S POPULATION WILL LIVE IN TOWNS.

IT IS AT THIS POINT THAT THE TASK OF AN ARCHITECT IS OF SIGNIFICANCE. THE NEW HOUSES BEING CONSTRUCTED MUST NOT ONLY PROVIDE SHELTER, THEY MUST 'SPEAK' TO THEIR INHABITANTS. BUT (BARRING A FEW), MODERN BUILDINGS TEND TO BE DUMB. IT IS EASY TO SEE WHY WE FAIL SO OFTEN. FOR ONE THING WE DO NOT DRAW SPACE, BUT RATHER PLANS AND SECTIONS IN WHICH SPACE LURKS. SECONDLY, DESIGN EDUCATION PHILOSOPHIES' CONCEPT OF SPACE AND FORM ARE USUALLY SEPARATED AND REGARDED RESPECTIVELY AS THE NEGATIVE AND POSITIVE OF THE PHYSICAL WORLD.

HOWEVER, SINCE THE BEGINNING OF THE CENTURY, THERE HAS BEEN AN ALTERNATIVE CONCEPT OF SPACE AS CONTINUUM. ARCHITECTURE, THEREFORE, CAN BE CONSIDERED AS A CREATIVE CO-EXISTENCE OF SPACE AND FORM ON A HUMAN SCALE, BUT ITS UNDERSTANDING, TOGETHER WITH ALL OTHER CONCEPTS, IS ROOTED IN THE PSYCHOLOGICAL SPACE OF OUR THOUGHTS.

MEANWHILE, TO MAKE SPACE MORE DYNAMIC AND TANGIBLE, EXPERIMENTAL PSYCHOLOGY STUDIES HAVE TO BE UNDERTAKEN. ATTEMPTS HAVE TO BE MADE TO UNDERSTAND THE MECHANICS OF PERCEPTION AND INFORM THE DESIGNER AS TO THE NATURE OF ITS MANY FORMS. AN AWARENESS NEEDS TO BE CREATED AMONGST ARCHITECTS, TO THE USERS' RESPONSES TO SPACES OR IN OTHER WORDS, HOW USERS USE SPACES. THIS IS ALL THE MORE RELEVANT, SINCE WE ARCHITECTS ARE SELDOM THE FINAL USERS OF THE SPACES WE CREATE; IF WE WERE, THEN WE WOULD FIND THAT WE HAVE CREATED MORE COMPLICATIONS THAN THOSE WHICH WE SET TO UNTANGLE.

# PROBLEM: SCOPE

THE SCOPE OF THE PROBLEM WILL....

- INCLUDE A THEORETICAL STUDY OF PERCEPTION AND SPACES.
- BE RESTRICTED TO UNDERSTANDING THE OCCUPANTS' PATTERNS OF SPACE USE, AND TO EVALUATING THE WAY PEOPLE PERCEIVE LIVING SPACES AND THEIR RESPONSES TO THESE SPACES (IN TERMS OF USE-BEHAVIOUR).
- ENCOMPASS SEEKING, BY MEANS OF A METHODOLOGY, AN OVERALL IDEA OF SATISFACTION AND DISSATISFACTION OF SPACES IN TERMS OF QUALITATIVE AND QUANTITATIVE ASPECTS.
- COMPRISE, HIGHLIGHTING SALIENT RECOMMENDATIONS AS GUIDELINES FOR DESIGNERS OF RESIDENTIAL SPACES AND ENVIRONMENTS.

THE AREA OF STUDY, WITHIN THE PURVIEW OF THIS DISSERTATION, WILL BE THE A AND B CATEGORY OFFICERS' QUARTERS OF THE RESERVE BANK OF INDIA AT SANTACRUZ, BOMBAY.

NOTE: RESPONSES WILL BE STUDIED IN THE CONTEXT OF THE VARIOUS COMPONENTS OF THE HOUSE AS THEY EFFECT THE BEHAVIORAL PATTERNS OF OCCUPANTS AND NOT IN TERMS OF MOULDING THE GIVEN ENVIRONMENT ACCORDING TO THE BEHAVIORAL ASPECTS.

# OBJECTIVES

THE MAJOR GOAL OF THE DISSERTATION IS....

- TO DETERMINE THE LEVEL OF USER-SATISFACTION IN THE SELECTED RESIDENTIAL ENVIRONMENT, VIZ. THE RESERVE BANK OF INDIA OFFICERS' QUARTERS, SANTACRUZ (BOMBAY).

THE OBJECTIVES ARE ....

- TO STUDY THE WAYS IN WHICH THE USERS REACT TO SPACES – THROUGH OCCUPANCY PATTERNS.
- TO MAKE A PERCEPTUAL ANALYSIS OF RESIDENTIAL SPACES.
- TO EVALUATE AND QUANTIFY THE EXTENT OF USER-SATISFACTION.

USER-SATISFACTION WILL BE TACKLED ON TWO FRONTS:
1. REACTIONS OF THE OCCUPANTS, WHICH WILL BE THE FUNCTIONAL ASPECTS PRIMARILY DEALING WITH SPACE USAGE; AND
2. PERCEPTIONS OF THE OCCUPANTS (BEHAVIORAL AND AESTHETIC RESPONSES) INCORPORATING ONLY THOSE ANGLES COVERED BY THE THEORETICAL STUDY MENTIONED UNDER SCOPE.

# METHODOLOGY

THE GOAL AND THE OBJECTIVES WILL BE ACHIEVED BY....

- PREPARATION OF A QUESTIONNAIRE AND GETTING THE SAME FILLED BY THE OCCUPANTS IN THE COURSE OF THE SURVEY.
- PERSONALLY SPEAKING TO/INTERVIEWING THE OCCUPANTS.
- DOCUMENTATION IN THE FORM OF DRAWINGS AND PHOTOGRAPHIC EVIDENCE.
- GRAPHICAL REPRESENTATION AND PRESENTATION OF THE RESULTS.

- CHAPTER III
  THE 'SENSUALITIES
  - THE MEANING OF PERCEPTION
  - VISUAL PERCEPTION
    - PERCEPTION OF SHAPE AND FORM
    - MONOCULAR CUES
    - BINOCULAR CUES
    - VISUAL COLOUR PERCEPTION
    - VISUAL TEXTURE PERCEPTION
    - PERSPECTIVES OF POSITION
    - PERSPECTIVES OF PARALLAX
    - PERSPECTIVES INDEPENDENT OF THE POSITION OR MOTION OF THE OBSERVER
  - AUDITORY PERCEPTION
  - OLFACTORY PERCEPTION
  - TACTILE PERCEPTION
  - THERMAL PERCEPTION

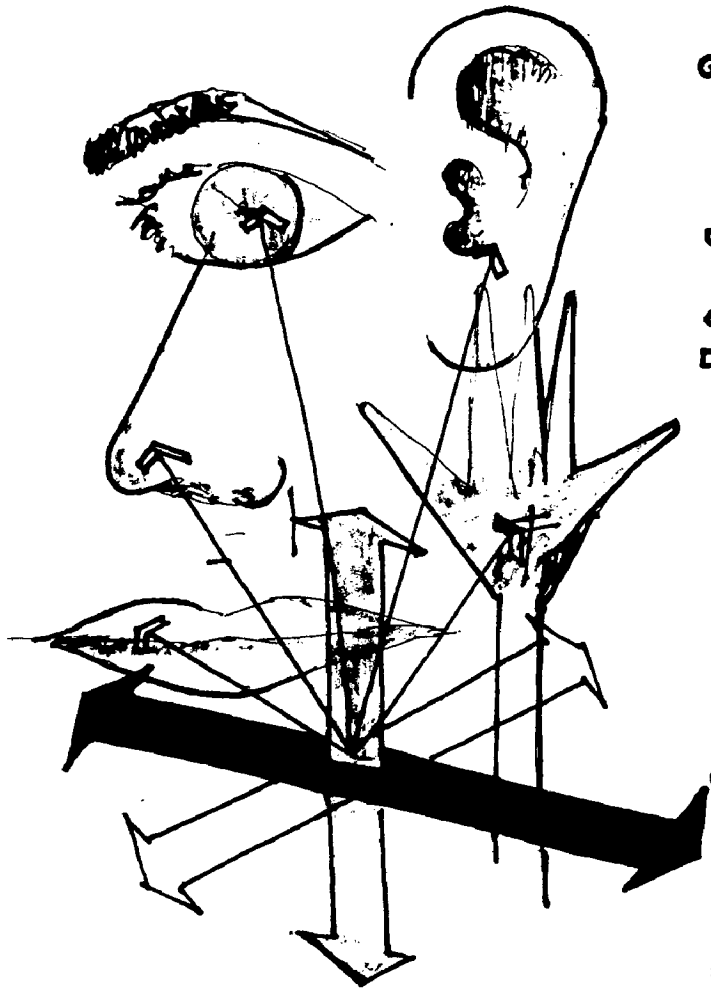
- CHAPTER IV
  THE 'SPATIAL-ITIES'
  - ANTHROPOLOGY OF SPACE
    - FIXED-FEATURE SPACE
    - SEMIFIXED FEATURE SPACE
    - INFORMAL SPACE
  - DISTANCES IN SPACE
    - INTIMATE DISTANCE
    - PERSONAL DISTANCE
    - SOCIAL DISTANCE
    - PUBLIC DISTANCE
  - PSYCHO-PHYSICAL ASPECTS OF SPACE
    - SPATIAL IMPACT
    - SPATIAL QUALITIES
    - SPATIAL SIZE
    - SPATIAL FORM
    - SPATIAL COLOUR
    - THE VERTICALS IN SPACE
  - A HISTORICAL REVIEW OF SPATIAL PERCEPTION
    - THE WEST
    - THE EAST

# part two

part two

# CHAPTER III

# the sensualities



## THE MEANING OF PERCEPTION

PERCEPTION IS A CREATIVE PROCESS : IT IS THE TRANSFORMATION OF EVIDENCE OF OUR SENSES INTO MENTAL REPRESENTATIONS. FACTS, OR DATA, ARE FED INTO COMPUTERS, BUT THEY MEAN NOTHING UNTIL THE MACHINE HAS PROCESSED THE CODED INFORMATION AND ARRANGED IT IN A MEANINGFUL WAY. IN A SIMILAR WAY OUR SENSES FEED INFORMATION TO OUR BRAINS. IT IS ONLY AFTER THE BRAIN HAS PROCESSED THE STIMULI FROM THE SENSES THAT WE PERCEIVE.

FOR AN ARCHITECT TO BE ABLE TO PLAN A BUILDING WHICH IS COMFORTABLE FOR ITS OCCUPANTS, HE MUST HAVE AN UNDERSTANDING OF THE SENSUAL ASPECTS WHICH HELP THE OCCUPANTS PERCEIVE THAT SPACE IN A MANNER THAT IS CONDUCIVE TO THEIR ACTIVITY. GOING BY MERE ANTHROPOMETRICS IS NOT ENOUGH BECAUSE THE SENSES ARE AN EXTENSION OF MAN'S BODY AND HENCE WHAT MAY BE CORRECT ANTHROPOMETRICALLY MAY CREATE AN UNCOMFORTABLE AND UNCONDUCIVE ENVIRONMENT FOR THE USER.

AN EXAMPLE OF THE SUCCESSFUL USE OF PERCEPTION IS DEMONSTRATED BY F.L.WRIGHT IN THE OLD IMPERIAL HOTEL, TOKYO. THE OBSERVER IS PROVIDED WITH A CONSTANT

VISUAL, KINESTHETIC AND TACTILE REMINDER THAT HE IS IN A DIFFERENT WORLD. THE CHANGING LEVELS, THE CIRCULAR, WALLED-IN, INTIMATE STAIRS TO THE UPPER FLOORS, AND THE SMALL SCALE ARE ALL NEW EXPERIENCES. THE LONG HALLS ARE BROUGHT TO SCALE BY KEEPING THE WALLS WITHIN REACH. THE ROUGHEST OF BRICKS ARE SEPARATED BY SMOOTH GILDED MORTAR SET IN FROM THE SURFACE A FULL HALF-INCH. WALKING DOWN THESE HALLS THE GUEST IS ALMOST COMPELLED TO RUN HIS FINGERS ALONG THE GROOVES. THUS WRIGHT ENHANCES THE EXPERIENCE OF SPACE BY PERSONALLY INVOLVING PEOPLE WITH THE BUILDING.

PERCEPTION OF SPACE CAN BE BROADLY CATEGORISED INTO TWO CLASSES VIZ. PERCEPTION BY DISTANCE RECEPTORS, WHICH INCLUDES VISUAL, AUDITORY AND OLFACTORY PERCEPTION; AND PERCEPTION BY IMMEDIATE RECEPTORS, WHICH INCLUDES TACTILE AND THERMAL PERCEPTION.

## VISUAL PERCEPTION

LIGHT IS THE EXTERNAL STIMULUS FOR VISION. WE CAN SEE DIRECTLY ANY OBJECT THAT EMITS LIGHT AND OTHER OBJECTS DUE TO THE LIGHT THEY REFLECT. BUT VISUAL PERCEPTIO AS SUCH, IS SO NATURAL, SO MUCH A PART OF OUR EVERYDAY LIFE THAT IT IS DIFFICULT TO THINK ABOUT IT ANALYTICALLY. IT SEEMS EVIDENT TO US THAT THINGS LOOK AS THEY DO BECAUSE THEY ARE THERE. YET VISION REQUIRES AN ENORMOUS AMOUNT OF ACTIVE REGISTRATION, ANALYSIS, SORTING, FILTERING AND COMPARING BY OUR PERCEPTUAL MECHANISMS – FIRST AT THE EYE ITSELF BUT CHIEFLY AT THE CENTRES WITHIN THE BRAIN. VISION IS THE MOST USED MEANS OF PERCEPTION AND THE LARGEST AMOUNT OF INFORMATION IS GATHERED THROUGH IT. (THIS IS ON ACCOUNT OF THE DISTANCE IT CAN COVER, WE CAN SEE FURTHER THAN WE CAN EITHER HEAR OR FEEL) SECONDLY, VISUAL PERCEPTION TENDS TO BE SHARPER THAN THE OTHER PERCEPTIONS. THIRDLY, SINCE PERCEPTION IS BASED ON PAST EXPERIENCES, TWO PERSONS VIEWING AN OBJECT FROM THE SAME POINT AND UNDER SIMILAR CONDITIONS WOULD PERCEIVE IT DIFFERENTLY..

VISUAL PERCEPTION HAS THREE CHARACTERISTICS:

1) PERCEPTUAL ADAPTATION –
THE ABILITY TO COMPENSATE FOR AN ARTIFICIALLY DISPLACED VISUAL FIELD IS CALLED VISUAL ADAPTATION. IT IS A FORM OF LEARNING OR RELEARNING.

2) VISUAL CAPTURE –
THE TENDENCY OF VISION TO DOMINATE THE OTHER SENSES IS CALLED VISUAL CAPTURE.

3) PERCEPTUAL CONSTANCY –
ANOTHER HIGHLY IMPORTANT CHARACTERISTIC OF VISUAL PERCEPTION IS THE STABILITY OR PERCEPTUAL CONSTANCY OF: A-SIZE, B-SHAPE, C-BRIGHTNESS, AND D-COLOUR, OF OBJECTS IN OUR VISUAL FIELDS. WE RECOGNISE THE SAME OBJECTS AT A VARIETY OF ANGLES, AT VARIOUS DISTANCES AND EVEN UNDER VARIOUS KINDS OF LIGHTS.

A. SIZE CONSTANCY: LOOK AT SOMEONE STANDING NEARBY AND THEN COMPARE THAT WITH THE PERCEPTION OF SOMEONE STANDING ACROSS THE STREET. THEY LOOK ABOUT THE SAME SIZE EVEN THOUGH THE ACTUAL SIZE OF THE RESPECTIVE IMAGES ON THE RETINA MAY DIFFER CONSIDERABLY. PERCEIVED SIZE DOES NOT REGULARLY FOLLOW RETINAL SIZE.

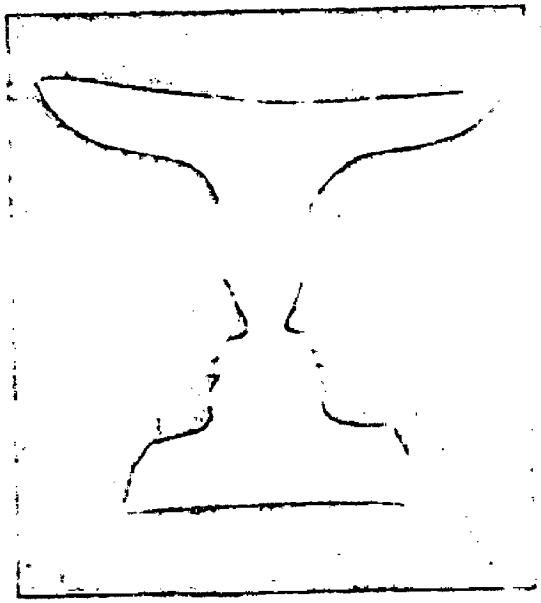
B. SHAPE CONSTANCY: A DOOR OR A WINDOW CASTS A RECTANGULAR IMAGE ONLY WHEN VIEWED FROM A CERTAIN POINT; HOWEVER BOTH APPEAR RECTANGULAR FROM WHATEVER POINT THEY ARE VIEWED. THUS OBJECTS MAINTAIN THEIR APPARENT CONSTANCY OF SHAPE DESPITE DIFFERENCES IN THE POINT FROM WHICH THEY ARE VIEWED.

C. BRIGHTNESS CONSTANCY: A LUMP OF COAL, IN SUNLIGHT, REFLECTS A LARGER AMOUNT OF LIGHT THAN WHITE PAPER IN A DIMLY LIT ROOM. YET THE COAL STILL LOOKS BLACK IN THE SUNLIGHT AND THE PAPER WHITE IN THE DIMLY LIT ROOM. THIS TENDENCY OF OUR PERCEPTION OF AN OBJECT'S BRIGHTNESS TO REMAIN STABLE OVER A WIDE RANGE OF ILLUMINATION IS CALLED BRIGHTNESS CONSTANCY.

D. COLOUR CONSTANCY: COLOURS OF AN OBJECT ARE PERCEIVED AS CONSTANT ONLY IF THE OBJECT'S SURROUNDINGS ARE SEEN. THE COLOUR OF A LEMON VIEWED THROUGH A TUBE, SO THAT ONLY THE LEMON IS VISIBLE, MAY OR MAY NOT BE PERCEIVED AS YELLOW, DEPENDING ON THE WAVELENGTH OF LIGHT RAYS STRIKING IT. HOWEVER, IF THE LEMON IS SEEN ON A TABLE OR IN A BOWL OF OTHER FRUIT, THEN A YELLOW LEMON WILL BE SEEN BECAUSE THERE ARE BACKGROUND CLUES AS COLOUR REFERENTS. COLOUR CONSTANCY IS ANALOGOUS WITH BRIGHTNESS CONSTANCY IN THAT THE LIGHT FALLING ON AN OBJECT AND ITS SURROUNDINGS DETERMINE THE HUE WE PERCEIVE.

## PERCEPTION OF SHAPE AND FORM

A DANISH PSYCHOLOGIST BY THE NAME OF EDGAR RUBIN, IN 1915 PRESENTED EVIDENCE THAT PARTS OF ANY DIFFERENTIATED VISUAL FIELD WILL STAND OUT FROM THE OTHER PARTS. THAT PART APPEARING AS A DISTINCT, DELINEATED SHAPE IS THE FIGURE; THE REMAINDER IS THE GROUND. SHAPE AND FORM TEND TO STAND OUT AGAINST A BACKGROUND. THIS IS CALLED THE FIGURE-GROUND RELATIONSHIP. (E.G. DOORWAY AND CANOPY AGAINST THE FACADE OF THE BUILDING).



RUBIN'S CLASSICAL DEMONSTRATION OF FIGURE AND BACKGROUND.

FIRST A WHITE VASE IS SEEN AGAINST A DARK BACKGROUND. BUT SUDDENLY THE EXPERIENCE CHANGES AND TWO DARK FACES ARE PERCEIVED, LOOKING AT EACH OTHER. THEY ARE PERCEIVED AS FIGURES AGAINST A WHITE BACKGROUND.

IN OTHER WORDS, A VISUAL FORM IS (ALMOST) ALWAYS PERCEIVED AS A FIGURE AGAINST A BACKGROUND.

ONE OF THE MOST PROSAIC YET PROFOUND STATEMENTS ABOUT VISUAL PERCEPTION IS THAT WE LIVE IN A THREE-DIMENSIONAL WORLD. ALTHOUGH THE RETINA IS ESSENTIALLY A TWO-DIMENSIONAL SURFACE, WE PERCEIVE DEPTH AND DISTANCE. WHAT ARE THE VISUAL CUES THAT ENABLE DEPTH PERCEPTION? SOME OF THESE CUES REQUIRE THE USE OF ONLY ONE EYE AND ARE THUS MONOCULAR. OTHER CUES ARE BINOCULAR, REQUIRING THE USE OF BOTH EYES.

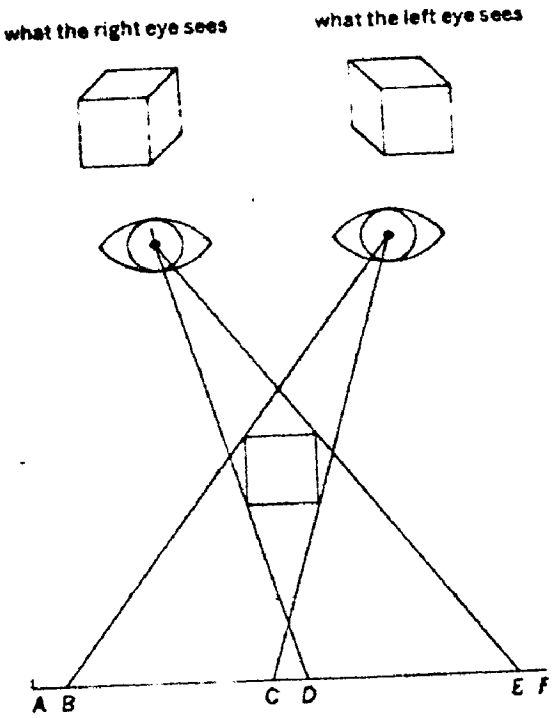
## MONOCULAR CUES

THEY ARE: 1. PERSPECTIVE – LINEAR AND AERIAL,
2. OVERLAP OR INTERPOLATION,
3. RELATIVE SIZE,
4. TEXTURE, AND
5. MOTION PARALLAX.
(THESE ARE SUBSEQUENTLY EXPLAINED IN THE SUMMARY OF JAMES GIBSON'S THIRTEEN VARIETIES OF PERSPECTIVES.)

## BINOCULAR CUES

1. CONVERGENCE:
THE FUNCTION OF CONVERGENCE IS TO REGULATE THE PATTERN OF STIMULATION ON EACH EYE SO AS TO AVOID DOUBLE IMAGES, WHICH ARISE BECAUSE THE TWO EYES VIEW THE WORLD FROM DIFFERENT POSITIONS ON THE HEAD.

2. STEREOSCOPIC VISION:
SINCE OUR EYES ARE ABOUT 6.3 CMS. APART, EACH ONE HAS A SLIGHTLY DIFFERENT POINT OF VIEW AND THUS RECORDS AN IMAGE THAT IS SLIGHTLY DIFFERENT FROM THAT OF THE OTHER EYE. THIS SLIGHT DISPARITY RESULTS IN THE PERCEPTION OF DEPTH.




LEONARDO DA VINCI WAS THE FIRST PERSON TO DIAGRAM BINOCULAR VISION AND THUS TO SHOW, HOW THE EFFECT OF THE THIRD DIMENSION IS GIVEN.

THE TWO EYES ARE FOCUSED ON THE OBJECT. BOTH (LEFT AND RIGHT) EYES CAN SEE EVERYTHING FROM A TO F EXCEPT WHAT IS BLOCKED BY THE OBJECT. YET THE LEFT EYE CAN SEE WHAT THE RIGHT EYE CANNOT, I.E., D TO E. TOGETHER THE TWO EYES CAN SEE AROUND THE OBJECT, TAKING IN ALMOST THE WHOLE BACKGROUND FROM A TO F.

PURELY FOR ARCHITECTURAL PURPOSES, VISUAL PERCEPTION CAN BE CLASSIFIED ALONG THE FOLLOWING LINES, EACH HAVING AN IMPACT OF ITS OWN.

## VISUAL COLOUR PERCEPTION

THE USE OF COLOUR (PERCEPTION) IN ARCHITECTURE IS MANIFOLD. COLOUR CAN 'CREATE' ENVIRONMENTS. THIS CAN BE, SIMPLY, DEMONSTRATED BY THE FACT THAT DIFFERENT ROOMS OF THE SAME DIMENSIONS PAINTED WITH DIFFERENT COLOURS 'SEEM' TO HAVE DIFFERENT DIMENSIONS. COLOUR PERCEPTION HAS ANOTHER ASPECT IN ITS CONNECTION WITH THERMAL PERCEPTION, WHICH IS WHY ONE HEARS THE TERMS WARM COLOURS, NEUTRAL COLOURS OR COLD COLOURS. THIS IS DUE TO THE FACT THAT ROOMS PAINTED IN SHADES OF RED 'FEEL' WARM WHILE THE SAME ROOMS WHEN PAINTED GREEN OR BLUE MIGHT 'FEEL' COLD. (INCIDENTALLY THE WORD FEEL REFERS TO PERCEPTION).

COLOURS ALSO HELP PERCEPTION IN THE SENSE OF DIFFERENCES IN PLANES. IF DIFFERENT COLOURS ARE USED ON THE SAME PLANE THEN THE PLANE WOULD SEEM TO BE MADE UP OF PROJECTING AND RECESSED SURFACES. TAKE THE EXAMPLE OF A RED FIGURE ON A BLACK WALL, THE FIGURE SEEMS TO PROJECT OUT DESPITE BEING IN THE SAME PLANE. ON THE OTHER HAND, A BLACK FIGURE OR A RED WALL WOULD SEEM TO RECEDE INTO THE SURFACE. COLOUR ALSO TENDS TO MAKE A BUILDING SEEM HEAVIER OR LIGHTER THAN THE BUILDING ACTUALLY IS. A BUILDING PAINTED IN DARK HUES WOULD APPEAR TO BE HEAVIER AND ROOTED TO THE EARTH, WHEREAS LIGHTER SHADES WOULD GIVE A FLOATING APPEARANCE TO THE SAME BUILDING.

## VISUAL TEXTURE PERCEPTION

THIS IS ANOTHER IMPORTANT FRONTIER OF PERCEPTION. TAKE FOR EXAMPLE A 9" RUBBLE WALL AND AN 18" BRICK WALL. CONTRARY TO THE FACT OF THEIR ACTUAL WEIGHTS THE LATTER SEEMS MUCH LIGHTER THAN THE FORMER. TEXTURE ALSO HELPS PERCEPTION IN TERM OF HARDNESS OR SOFTNESS. IT ALSO AFFECTS THE APPARENT DISTANCE. A WALL WITH HORIZONTAL GROOVES WOULD APPEAR TO BE LONGER THAN AN EQUALLY LONG WALL WITH VERTICAL GROOVES (THE LATTER WOULD SEEM TALLER).

THE DISCUSSION ON VISUAL PERCEPTION CAN BE APTLY AND JUSTLY ROUNDED OFF WITH A SUMMARY OF JAMES GIBSON'S THIRTEEN VARIETIES OF PERSPECTIVE.

ACCORDING TO GIBSON THERE IS NO SUCH THING AS PERCEPTION OF SPACE WITHOUT A 'CONTINUOUS' BACKGROUND SURFACE. HE ALSO OBSERVES THAT PERCEPTION DEPENDS UPON MEMORY OR PAST STIMULATION, I.E. IT HAS A 'PAST' THAT LAYS THE FOUNDATION FOR THE PERCEPTIONS OF HERE AND NOW. HE IDENTIFIES THIRTEEN VARIETIES OF PERSPECTIVE "SENSORY SHIFTS." THEY CONSTITUTE THE BASIC STRUCTURAL CATEGORIES OF EXPERIENCE INTO WHICH THE MORE

SPECIFIC VARIETIES OF VISION FIT. IN OTHER WORDS, A SCENE CONTAINS 'INFORMATION' THAT IS BUILT UP OUT OF A NUMBER OF DIFFERENT ELEMENTS. GIBSON HAS, IN FACT, ANALYZED AND DESCRIBED THE SYSTEM AND THE COMPONENT "STIMULUS VARIABLES" WHICH COMBINE TO PROVIDE THE INFORMATION MAN NEED TO MOVE ABOUT EFFECTIVELY AND TO DO ALL THAT MOVEMENT IMPLIES.

GIBSON'S SENSORY SHIFT AND VARIETIES OF PERSPECTIVE FALL INTO FOUR CLASSES: PERSPECTIVE OF POSITION; PERSPECTIVE OF PARALLAX; DEPTH AT A CONTOUR, AND PERSPECTIVE INDEPENDENT OF POSITION OR MOTION.

## PERSPECTIVES OF POSITION

1. TEXTURE PERSPECTIVE:
THIS IS THE GRADUAL INCREASE IN THE TEXTURE OF A SURFACE AS IT RECEDES IN THE DISTANCE.

2. SIZE PERSPECTIVE:
AS THE OBJECTS GET FARTHER AWAY THEY DECREASE IN SIZE.

3. LINEAR PERSPECTIVE:
PARALLEL LINES CONVERGE AT A SINGLE VANISHING POINT AT THE HORIZON.

## PERSPECTIVES OF PARALLAX

4. BINOCULAR PERSPECTIVE:
THIS IS SENSED BECAUSE, OWING TO THE SEPARATION OF THE EYES, EACH PROJECTS A DIFFERENT IMAGE. CLOSING AND OPENING ONE EYE AND THEN THE OTHER MAKES THE DIFFERENCES IN IMAGES APPARENT.

5. MOTION PERSPECTIVE:
AS ONE MOVES FORWARD IN SPACE, THE CLOSER ONE APPROACHES A STATIONARY OBJECT, THE FASTER IT APPEARS TO MOVE. LIKEWISE OBJECTS MOVING AT UNIFORM SPEEDS APPEAR TO BE MOVING MORE SLOWLY AS DISTANCE INCREASES.

## PERSPECTIVES INDEPENDENT OF THE POSITION OR MOTION OF THE OBSERVER

6. AERIAL PERSPECTIVE:
IT IS DERIVED FROM THE INCREASED HAZINESS AND 'CHANGES IN COLOUR' DUE TO THE INTERVENING ATMOSPHERE. IT GIVES THE IMPRESSION THAT EVERYTHING IS MILES CLOSER THAN IT REALLY IS.

7. THE PERSPECTIVE OF BLUR:
OBJECTS IN A VISUAL PLANE OTHER THAN THE ONE ON WHICH THE EYES ARE FOCUSED WILL BE SEEN LESS DISTINCTLY.

8. RELATIVE UPWARD LOCATION IN THE VISUAL FIELD:
IN THE CONTEXT OF EVERYDAY EXPERIENCE, ONE LOOKS

'DOWN' AT OBJECTS THAT ARE CLOSE AND 'UP' TO OBJECTS THAT ARE FAR AWAY. THIS IS BECAUSE, THE SURFACE OF THE GLOBE CLIMBS, AS IT WERE, FROM ONE'S FEET TO EYE LEVEL.

9. SHIFT OF TEXTURE OR LINEAR SPACING:
A VALLEY SEEN OVER THE EDGE OF A CLIFF IS PERCEIVED AS MORE DISTANT BECAUSE OF THE BREAK OR RAPID INCREASE IN TEXTURE DENSITY.

10. SHIFT IN THE AMOUNT OF DOUBLE IMAGERY:
IF ONE LOOKS AT A DISTANT POINT, EVERYTHING BETWEEN THE VIEWER AND THE POINT WILL BE SEEN AS DOUBLE. THE CLOSER TO THE VIEWER, THE GREATER THE DOUBLING; THE MORE DISTANT THE POINT, THE LESS DOUBLING.

11. SHIFT IN THE RATE OF MOTION:
ONE OF THE MOST DEPEDABLE AND CONSISTENT WAYS OF SENSING DEPTH IS THE DIFFERENTIAL MOVEMENT OF OBJECTS IN THE VISUAL FIELD. THOSE OBJECTS WHICH ARE CLOSE MOVE MUCH MORE THAN DISTANT OBJECTS.

12. COMPLETENESS OR CONTINUITY OF OUTLINE:
IF THE OUTLINE OF THE NEAREST OBJECT IS UNBROKEN AND THAT OF THE OBSCURE OBJECTS IS BROKEN IN THE PROCESS OF BEING ECLIPSED, THIS FACT WILL CAUSE ONE OBJECT TO APPEAR BEHIND THE OTHER.

13. TRANSITIONS BETWEEN LIGHT AND SHADE:
AN ABRUPT SHIFT IN BRIGHTNESS IS INTERPRETED AS AN EDGE. GRADUAL TRANSITIONS IN BRIGHTNESS ARE THE PRINCIPAL MEANS OF PERCEIVING MOULDING OR ROUNDNESS. (GIBSON, 1950)

# AUDITORY PERCEPTION

AFTER VISUAL PERCEPTION, AUDITORY PERCEPTION IS THE NEXT IMPORTANT FORM OF PERCEPTION AND LIKE THE FORMER, THE LATTER TOO EXTENDS BEYOND THE PARAMETERS OF THE BODY, THOUGH TO A MUCH LESSER EXTENT. (THE OFT USED TERM 'ACOUSTICS' IS ALSO A PART OF AUDITORY PERCEPTION).

A VERY PERTINENT QUESTION THAT MAY ARISE HERE IS, CAN ARCHITECTURE BE HEARD? AND HOW (SINCE IT CANNOT PRODUCE SOUND)? THE FACT OF THE MATTER IS, NEITHER DOES ARCHITECTURE EMIT LIGHT, YET WE SEE IT, IT IS HEARD IN EXACTLY THE SAME FASHION. WE GENERALLY TEND TO PERCEIVE ARCHITECTURE IN TERMS OF WHAT WE SEE AND FEEL AND NOT IN TERMS OF WHAT WE HEAR. THE ROLE THAT AUDITORY PERCEPTION PLAYS IN THE DAY-TO-DAY EXPERIENCING OF ARCHITECTURE (IN ADDITION TO AUDITORIUMS AND MOVIE HALLS) IS SELDOM RECOGNISED.

AUDITORY PERCEPTION ALSO HELPS US IN EVALUATING DISTANCES. FAINT SOUNDS SEEM FARTHER THAN LOUD SOUNDS.

A SIMILAR EXAMPLE CAN BE SEEN (OR SHOULD IT BE HEARD!) IN THE TONES USED WHILE SPEAKING TO SOMEONE CLOSE-BY AND VOLUMES (SHOUTS) USED OVER LARGE DISTANCES.

AN ECHO IS ANOTHER ASPECT OF AUDITORY PERCEPTION. WITH CLOSED EYES A MAN TENDS TO JUDGE SPACE ON THE BASIS OF REFLECTED SOUND, AND AN ECHO CONJURES UP THE IMAGE OF A LARGE VOLUME OF SPACE IN HIS MIND. A THIRD ASPECT WAS DEMONSTRATED BY J.W. BLACK, A PHONETICIAN. HIS STUDY SHOWED THAT PEOPLE READ MORE SLOWLY IN LARGER ROOMS WHERE THE REVERBERATION TIME IS SLOWER THAN THEY DO IN SMALLER ROOMS. (FROM HALL, 1969, P.44)

AN ECHO OR REVERBERATIONS, IN PLACE OF THE PERFECTLY AMPLIFIED SOUND WAVES, WOULD HAVE CREATED CHAOTIC CONDITIONS THEREBY DESTROYING THE ATMOSPHERE OF THE PERFORMANCE/DANCE HALLS IN THE INDIAN TEMPLES. SIMILARLY, NOISE WOULD DEFEAT THE VERY AIM OF A READING ROOM OR LIBRARY: THESE TWO EXAMPLES GO TO SHOW THAT AUDITORY PERCEPTION IS ALSO RESPONSIBLE FOR MAKING OR MARRING THE ENVIRONMENTS.

## OLFACTORY PERCEPTION

IT PLAYS A MINOR ROLE IN THE PROCESS OF PERCEPTION OF SPACE. THE PRESENT INCLINATION TOWARDS THE EXTENSIVE USE OF DEODORANTS (AND THE SUPPRESSION OF ODOUR) RESULTS IN OLFACTORY BLANDNESS AND SAMENESS. THIS BLANDNESS MAKES FOR UNDIFFERENTIATED SPACES AND DEPRIVES US OF RICHNESS AND VARIETY IN LIFE. IT ALSO OBSCURES MEMORIES, BECAUSE SMELL EVOKES MUCH DEEPER MEMORIES THAN EITHER VISION OR SOUND.

## TACTILE PERCEPTION

TOUCH AND VISUAL SPATIAL EXPERIENCES ARE SO INTERWOVEN THAT IT IS DIFFICULT TO SEPARATE THE TWO. TACTILE SPACE CAN BE SAID TO SEPARATE THE VIEWER FROM OBJECTS WHILE VISUAL SPACE SEPARATES OBJECTS FROM EACH OTHER.

TEXTURE IS APPRAISED AND APPRECIATED ALMOST ENTIRELY BY TOUCH, EVEN WHEN IT IS VISUALLY PRESENTED. WITH FEW EXCEPTIONS, IT IS THE MEMORY OF TACTILE EXPERIENCES THAT ENABLES US TO APPRECIATE TEXTURE. SO FAR, ONLY A FEW DESIGNERS HAVE PAID MUCH ATTENTION TO THE IMPORTANCE OF TEXTURE, AND ITS USE IN ARCHITECTURE IS

LARGELY HAPHAZARD AND INFORMAL. IN OTHER WORDS, TEXTURES ON AND IN BUILDINGS ARE SELDOM USED CONSCIOUSLY AND WITH PSYCHOLOGICAL OR SOCIAL AWARENESS.

## THERMAL PERCEPTION

SKIN IS THE MAIN ORGAN OF THERMAL PERCEPTION. ITS DEGREE OF SENSITIVITY, THERMALLY SPEAKING, IS LIMITED TO ONLY A FEW FEET, WHICH IS WHY THERMAL PERCEPTION HAS A VERY SMALL RANGE. (A PART OF THERMAL PERCEPTION IS ANALOGOUS WITH VISUAL PERCEPTION - BASED ON COLOUR AND HAS ALREADY BEEN EXPLAINED UNDER VISUAL COLOUR PERCEPTION).

ANOTHER PART OF THERMAL PERCEPTION IS ASSOCIATED WITH CLIMATE. THUS TO MAKE INTERNAL SPACES MORE COMFORTABLE, IT IS IMPERATIVE THAT THE ARCHITECT PLAN HIS BUILDINGS MORE JUDICIOUSLY WITH THE CORRECT MATERIALS AND PRECISELY WORKED OUT OPENINGS.

IN ARCHITECTURE, THERMAL PERCEPTION IS ALSO ASSOCIATED WITH CROWDING. AN ILL-DESIGNED ROOM, WITH SMALL DIMENSIONS, LEADS TO CROWDING AND A RESULTANT INCREASE IN TEMPERATURE, ALL CONTRIBUTING TO AN UNCOMFORTABLE ENVIRONMENT.

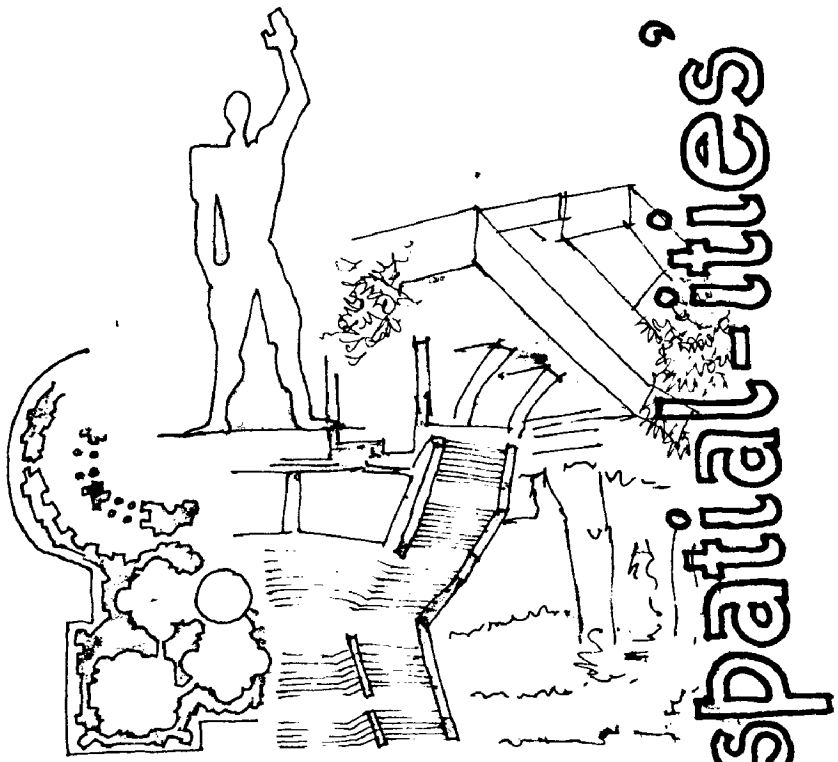
BESIDES TEMPERATURE PERCEPTION, THERMAL PERCEPTION ALSO PLAY ITS ROLE IN THE EXPERIENCING OF VARIOUS SPACES. FOR EXAMPLE, SMALL, NARROW, ILL-LIT SPACES TEND TO CLOSE-IN ON THE VIEWER THEREBY EXERTING A FEELING OF WARMTH. THERMALLY, A ROOM WITH A LOW CEILING WILL BE PERCEIVED DIFFERENTLY AS COMPARED TO A SIMILAR ROOM WITH A HIGHER CEILING.

ALL SAID AND DONE, ONLY A COLLECTIVE UTILISATION OF ALL THE SENSES CAN GIVE A CLEAR CONCEPTION OF ARCHITECTURAL SPACES. PUTTING IT IN THE WORDS OF BERNARD TSCHUMI:

> ARCHITECTURE IS THE ULTIMATE EROTIC ACT. CARRY IT TO EXCESS AND IT WILL REVEAL BOTH THE TRACES OF REASON AND THE SENSUAL EXPERIENCE OF SPACE. SIMULTANEOUSLY. (AS QUOTED IN PORTER, 1979, P.91)

# CHAPTER IV

## the 'spatial-ities'



AFTER DWELLING IN THE REALMS OF PSYCHOLOGY WE NOW DESCEND INTO MORE CONCRETE AREAS AND TAKE A LOOK AT ARCHITECTURAL SPACES AND THEIR PERCEPTION.

IN THE ABILITY TO 'GRASP' SPACE, LIES THE KEY TO UNDERSTANDING ARCHITECTURE AND UNTIL ONE LEARNS, NOT ONLY TO UNDERSTAND SPACE THEORETICALLY, BUT ALSO ITS APPLICATION TO PLANNING, THE REAL ENJOYMENT OF ARCHITECTURE WILL REMAIN ELUSIVE.

ONE FACTOR THAT HAS RADICALLY CHANGED OUR IDEAS ABOUT THE PERCEPTION OF SPACE, FROM THOSE OF OUR ANCESTORS, IS THE DISCOVERY OF THE FOURTH DIMENSION. TO PUT IT IN THE WORDS OF BRUNO ZEVI:

> THE PARIS PAINTER OF THE LATE 1900'S REASONED MORE OR LESS AS FOLLOWS: "I SEE AND REPRESENT AN OBJECT, FOR EXAMPLE A BOX OR A TABLE. I SEE IT FROM ONE POINT OF VIEW. BUT IF I HOLD THE BOX IN MY HANDS AND TURN IT, OR IF I WALK AROUND THE TABLE, MY POINT OF VIEW CHANGES, AND TO REPRESENT THE OBJECT FROM EACH NEW VIEW-POINT I MUST DRAW A NEW PERSPECTIVE OF IT. THE REALITY OF THE OBJECT, THEREFORE, IS NOT EXHAUSTED BY ITS REPRESENTATION IN THE THREE DIMENSIONS

OF ONE PERSPECTIVE. TO CAPTURE IT COMPLETELY, I MUST DRAW AN INFINITE NUMBER OF PERSPECTIVES FROM THE INFINITE POINTS OF VIEW POSSIBLE." THIS SUCCESSIVE DISPLACEMENT IN TIME OF THE ANGLE OF VISION ADDS A NEW DIMENSION TO THE THREE DIMENSIONS OF TRADITION. THUS TIME WAS BAPTIZED THE "FOURTH DIMENSION." (ZEVI, 1957, P. 26)

TIME.... THE FOURTH DIMENSION ?!

INORDER TO PERCEIVE OR TO 'FEEL' ANY SPACE, OR FOR THAT MATTER ANY BUILDING (EITHER INTERNALLY OR EXTERNALLY) ONE HAS TO 'MOVE' ABOUT/AROUND IT.

THIS 'MOVING ABOUT' OBVIOUSLY TAKES SOME TIME.

IN OTHER WORDS, TO EXPERIENCE THE SPLENDOUR OF THREE DIMENSIONS IN TOTALITY, THE FOURTH DIMENSION OF TIME IS ABSOLUTELY ESSENTIAL; WITHOUT TIME, THE WHOLE ESSENCE OF ARCHITECTURE IS LOST.

THE ABOVE PHOTOGRAPH (WHICH IN ACTUALITY IS A COMBINATION OF THREE SEQUENTIAL PHOTOGRAPHS) SHOWS TWO FACADES OF THE MAIN BUILDING OF THE UNIVERSITY OF ROORKEE.

IN FACT, IT IS THIS FOURTH DIMENSION THAT HAS ADDED TO OUR APPREHENSION OF ARCHITECTURE (RIGHT FROM THE CAVE TO THE MODERN DAY APARTMENT), BUT ALAS NOT TOTALLY. THERE STILL ARE VOIDS LEFT.

IN PAINTING, THE FOURTH DIMENSION IS A QUALITY INHERENT IN THE REPRESENTATION OF AN OBJECT, AN ELEMENT OF ITS REALITY WHICH A PAINTER MAY CHOOSE TO PROJECT ON A FLAT SURFACE WITHOUT REQUIRING PHYSICAL PARTICIPATION ON THE PART OF THE OBSERVER. THE SAME THING IS TRUE OF SCULPTURE: IN SCULPTURE THE 'MOVEMENT' OF A FORM, IS A QUALITY INHERENT IN THE STATUE WE ARE LOOKING AT, WHICH WE MUST RELIVE VISUALLY AND PSYCHOLOGICALLY.

BUT IN ARCHITECTURE WE ARE DEALING WITH A CONCRETE PHENOMENON WHICH IS ENTIRELY DIFFERENT: HERE, MAN 'MOVING ABOUT WITHIN THE BUILDING', STUDYING IT FROM SUCCESSIVE POINTS OF VIEWS, HIMSELF CREATES, SO TO SPEAK, THE FOURTH DIMENSION, GIVING THE SPACE AN INTEGRATED REALITY.

TO BE MORE PRECISE, THE FOURTH DIMENSION IS SUFFICIENT TO DEFINE THE ARCHITECTURAL VOLUME, THAT IS THE BOX FORMED BY THE WALLS WHICH ENCLOSE SPACE. BUT THE SPACE ITSELF – THE ESSENCE OF ARCHITECTURE – TRANSCENDS THE LIMITS OF THE FOUR DIMENSIONS.

AFTER HAVING MADE IT OBVIOUS (THE INCOMPREHENSIBLE COMPLICACY OF THE 'VOIDS') THE DISSERTATION CAN ONLY MAKE AN HUMBLE EFFORT TOWARDS UNDERSTANDING AND ANALYSING SPACES (AND THEIR PSYCHOLOGICAL ASPECTS).

## ANTHROPOLOGY OF SPACE

CULTURE GIVES STRUCTURE AND MEANING TO THE PHYSIOLOGICAL BASE, VIZ. THE SENSES, SHARED BY ALL HUMAN BEINGS. IT IS THIS PRECULTURAL SENSORY BASE TO WHICH THE ARCHITECT MUST INEVITABLY REFER IN COMPARING THE PROXEMIC PATTERN OF TWO CULTURES. (THE TERM PROXEMICS IS USED TO DEFINE THE INTERRELATED OBSERVATIONS AND THEORIES OF MAN'S USE OF SPACE). THERE ARE THREE PROXEMICS MANIFESTATIONS. ONE, THE INFRACULTURAL, IS BEHAVIORAL AND IS ROOTED IN MAN'S BIOLOGICAL PAST. THE SECOND, THE PRECULTURAL, IS PHYSIOLOGICAL AND VERY MUCH IN THE PRESENT. THE THIRD MICROCULTURAL LEVEL, IS THE ONE ON WHICH MOST PROXEMIC OBSERVATIONS ARE MADE. (HALL, 1969, P. 101)

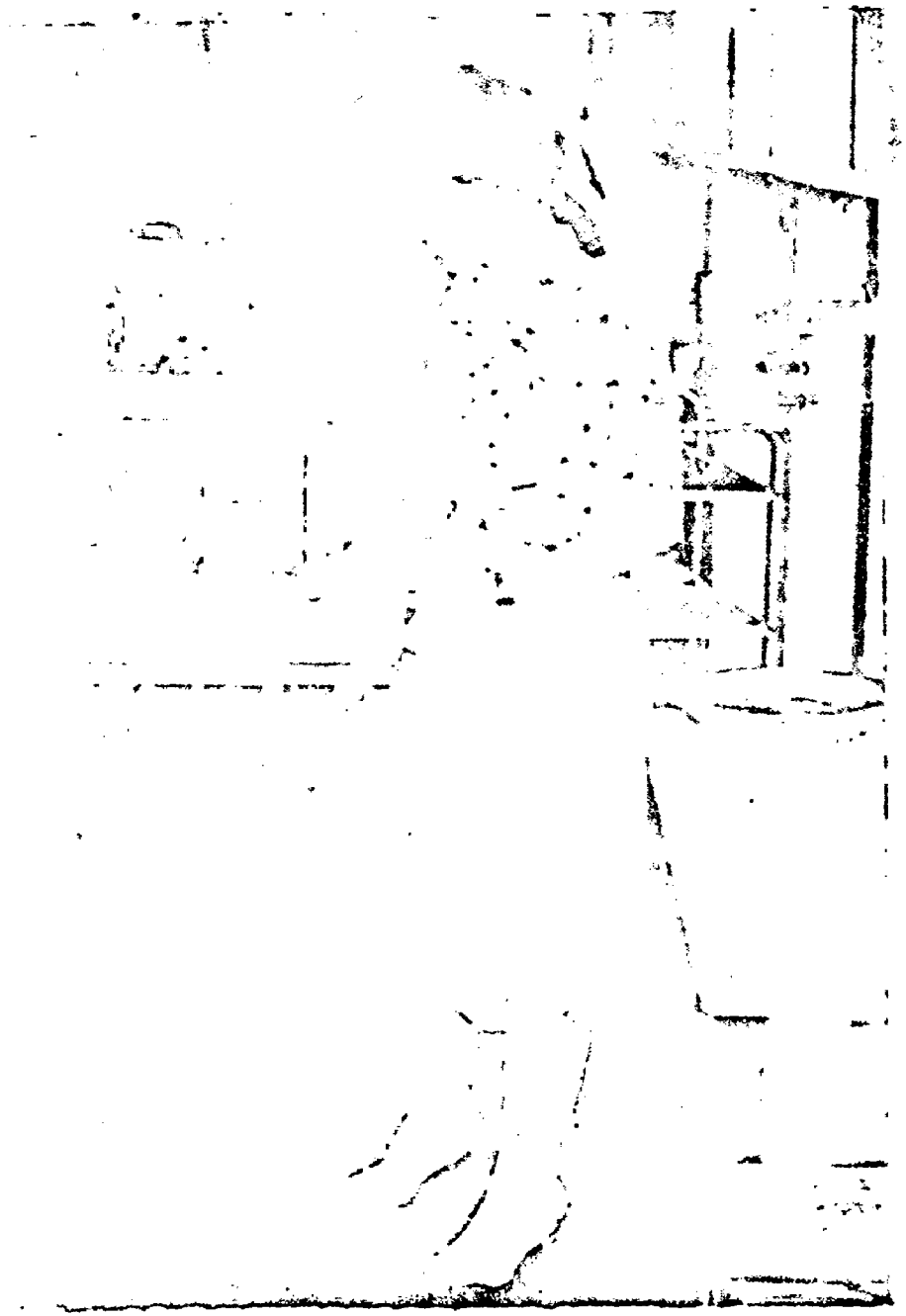
PROXEMICS AS A MANIFESTATION OF MICROCULTURE HAS THREE ASPECTS: FIXED-FEATURE, SEMIFIXED-FEATURE AND INFORMAL.

### FIXED-FEATURE SPACE

AS THE NAME SUGGESTS, FIXED-FEATURE SPACE IS A SPATIAL CLASSIFICATION ON THE BASIS OF USAGE. IT IS ONE OF THE BASIC WAYS OF ORGANIZING THE ACTIVITIES OF INDIVIDUALS AND GROUPS.

TODAY THE HOUSE IS ORGANIZED SPATIALLY. NOT ONLY ARE THERE SPECIAL ROOMS FOR SPECIAL FUNCTIONS — BUT FOR SANITATION AS WELL. IF, AS SOMETIMES HAPPENS, EITHER THE ARTIFACTS OR THE ACTIVITIES ASSOCIATED WITH ONE SPACE ARE TRANSFERED TO ANOTHER SPACE, THEN THIS FACT IS IMMEDIATELY APPARENT. PEOPLE WHO 'LIVE IN A MESS' OR A 'CONSTANT STATE OF CONFUSION' ARE THOSE WHO FAIL TO CLASSIFY ACTIVITIES AND ARTIFACTS ACCORDING TO A UNIFORM, CONSISTENT OR PREDICTABLE SPATIAL PLAN.

THE RELATIONSHIP OF FIXED-FEATURE SPACE TO PERSONALITY AS WELL AS TO CULTURE IS NOWHERE MORE APPARENT THAN IN THE KITCHEN. WHEN MICROPATTERNS INTERFERE AS THEY DO IN THE KITCHEN, IT IS MORE THAN JUST ANNOYING TO THE WOMEN. EDWARD HALL CITES THE EXAMPLE OF HIS WIFE, WHO HAS STRUGGLED FOR YEARS WITH KITCHENS OF ALL TYPES. SHE COMMENTS ON MALE DESIGN IN THE FOLLOWING WAY: "IF ANY OF THE MEN WHO DESIGNED THIS KITCHEN HAD EVER WORKED IN IT, THEY WOULDN'T HAVE DONE IT THIS WAY." THE LACK OF CONGRUENCE BETWEEN THE DESIGN ELEMENTS, FEMALE STATURE AND BODY BUILD, AND THE



A VIEW OF AN OVER-CROWDED, POORLY PLANNED KITCHEN ILLUSTRATING THE LACK OF CONGRUENCE BETWEEN DESIGN ELEMENTS AND ACTIVITIES.

ACTIVITIES TO BE PERFORMED, WHILE NOT OBVIOUS AT FIRST, IS OFTEN BEYOND BELIEF. (HALL, 1969, P. 105)

SOME ASPECTS OF FIXED-FEATURE SPACE ARE NOT VISIBLE UNTIL ONE OBSERVES HUMAN BEHAVIOUR. FOR EXAMPLE, ALTHOUGH THE SEPARATE DINING ROOM IS FAST VANISHING, THE LINE SEPARATING THE DINING AREA FROM THE REST OF THE LIVING ROOM (OR KITCHEN FOR THAT MATTER) IS QUITE REAL.

THE MOST IMPORTANT POINT ABOUT FIXED-FEATURE SPACE IS THAT, IT IS THE MOULD INTO WHICH A GREAT DEAL OF BEHAVIOUR IS CAST. IT WAS THIS FEATURE OF SPACE THAT THE LATE SIR WINSTON CHURCHILL REFERRED TO WHEN HE SAID: "WE SHAPE OUR BUILDINGS AND THEY SHAPE US."

## SEMIFIXED-FEATURE SPACE

FIXED-FEATURE SPACE IN ONE CULTURE MAY BE SEMIFIXED IN ANOTHER, AND VICE VERSA. IN JAPAN, FOR EXAMPLE, THE WALLS ARE MOVABLE, OPENING AND CLOSING AS THE DAY'S ACTIVITIES CHANGE. IN THE U.S. PEOPLE MOVE FROM ROOM TO ROOM OR FROM ONE PART OF THE ROOM TO ANOTHER FOR EACH DIFFERENT ACTIVITY. IN JAPAN IT IS QUITE COMMON FOR THE PERSON TO REMAIN IN ONE SPOT WHILE THE ACTIVITIES KEEP CHANGING.

MANY WOMEN KNOW IT IS HARD TO FIND THINGS IN SOMEONE ELSE'S KITCHEN. CONVERSELY IT CAN BE EXASPERATING TO HAVE KITCHENWARE PUT AWAY BY WELL-MEANING HELPERS WHO DON'T KNOW WHERE THINGS 'BELONG.' HOW AND WHERE BELONGINGS ARE ARRANGED AND STORED IS A FUNCTION OF MICROCULTURAL PATTERNS, REPRESENTATIVE NOT ONLY OF LARGE CULTURAL GROUPS BUT OF THE MINUTE VARIATIONS IN CULTURES THAT MAKE EACH INDIVIDUAL UNIQUE.

INFORMAL SPACE

IT IS THAT CATEGORY OF SPATIAL EXPERIENCE, WHICH IS PERHAPS MOST SIGNIFICANT FOR THE INDIVIDUAL BECAUSE IT INCLUDES THE DISTANCES MAINTAINED IN ENCOUNTERS WITH OTHERS. THESE DISTANCES ARE FOR THE MOST PART OUTSIDE AWARENESS. INDEED, AS THE SUBSEQUENT DISCUSSION ABOUT DISTANCES IN SPACES WILL SHOW, INFORMAL SPATIAL PATTERNS HAVE DISTINCT BOUNDS AND DEEP, EVEN IF UNVOICED, SIGNIFICANCE.

## DISTANCES IN SPACE

SOME THIRTY INCHES FROM MY NOSE
THE FRONTIER OF MY PERSON GOES,
AND ALL UNTILLED AIR BETWEEN
IS PRIVATE PAGUS OR DEMESNE.

STRANGER, UNLESS WITH BEDROOM EYES
I BECKON YOU TO FRATERNIZE,
BEWARE OF RUDELY CROSSING IT:
I HAVE NO GUN, BUT I CAN SPIT.

W.H. AUDEN
"PROLOGUE: THE BIRTH OF ARCHITECTURE."
(AS QUOTED IN HALL, 1969, P. 113)

UNTIL RECENTLY MAN'S SPACE REQUIREMENTS WERE THOUGHT OF IN TERMS OF THE ACTUAL AMOUNT OF AIR DISPLACED BY HIS BODY. THE FACT THAT MAN HAS, AS EXTENSIONS OF HIS PERSONALITY, SOME ZONES AROUND HIM, HAS GENERALLY BEEN OVERLOOKED.

THE ABILITY TO RECOGNIZE THE VARIOUS ZONES OF INVOLVEMENT AND THE ACTIVITIES, RELATIONSHIPS, AND EMOTIONS ASSOCIATED WITH EACH, HAS NOW BECOME EXTREMELY IMPORTANT. IF ONE LOOKS AT HUMAN BEINGS IN THE WAY THAT THE EARLY SLAVE TRADERS DID, CONCEIVING OF THEIR SPACE REQUIREMENTS SIMPLY IN TERMS OF THE LIMITS OF THE BODY, ONE PAYS VERY LITTLE ATTENTION TO THE EFFECTS OF CROWDING. IF, HOWEVER ONE SEES MAN SURROUNDED BY A SERIES OF INVISIBLE BUBBLES WHICH HAVE MEASURABLE DIMENSIONS, ARCHITECTURE CAN BE SEEN IN A NEW LIGHT. IT IS THEN POSSIBLE TO CONCEIVE THAT PEOPLE CAN BE CRAMPED BY THE SPACES IN WHICH THEY HAVE TO LIVE AND WORK. THEY MAY EVEN FIND THEMSELVES FORCED INTO BEHAVIOUR, RELATIONSHIPS OR EMOTIONAL OUTLETS THAT ARE OVERLY STRESSFUL.

HOW MANY DISTANCES DO HUMAN BEINGS HAVE AND HOW DO WE DISTINGUISH THEM?

## INTIMATE DISTANCE

AT THIS DISTANCE, THE PRESENCE OF THE OTHER PERSON IS UNMISTAKABLE AND AT TIMES MAY BE OVERWHELMING BECAUSE OF THE GREATLY STEPPED-UP SENSORY INPUTS.
INTIMATE DISTANCE – CLOSE PHASE:
THIS IS THE DISTANCE OF LOVE-MAKING AND WRESTLING, COMFORTING AND PROTECTING."
INTIMATE DISTANCE – FAR PHASE:
DISTANCE: SIX TO EIGHTEEN INCHES.

## PERSONAL DISTANCE

IT IS THE DISTANCE CONSISTENTLY SEPARATING THE MEMBERS OF NON-CONTACT SPECIES. IT MIGHT BE THOUGHT OF AS A SMALL BUBBLE OR SPHERE THAT AN ORNANISM MAINTAINS BETWEEN ITSELF AND OTHERS.
PERSONAL DISTANCE – CLOSE PHASE:
DISTANCE: ONE AND A HALF TO TWO AND A HALF FEET.
PERSONAL DISTANCE – FAR PHASE:
DISTANCE: TWO AND A HALF TO FOUR FEET.

## SOCIAL DISTANCE

THE BOUNDARY LINE BETWEEN THE FAR PHASE OF PERSONAL DISTANCE AND THE CLOSE PHASE OF SOCIAL DISTANCE MARKS THE 'LIMIT OF DOMINATION'.
SOCIAL DISTANCE – CLOSE PHASE:
DISTANCE: FOUR TO SEVEN FEET.
SOCIAL DISTANCE – FAR PHASE:
DISTANCE: SEVEN TO TWELVE FEET.

## PUBLIC DISTANCE

SEVERAL IMPORTANT SENSORY SHIFTS OCCURS IN THE TRANSITION OF PERSONAL AND SOCIAL DISTANCES TO PUBLIC DISTANCE, WHICH IS WELL OUTSIDE THE CIRCLE OF INVOLVEMENT.
PUBLIC DISTANCE – CLOSE PHASE:
DISTANCE: TWELVE TO TWENTY-FIVE FEET.
PUBLIC DISTANCE – FAR PHASE:
DISTANCE: TWENTY-FIVE FEET OR MORE.
(HALL, 1969, PP. 116-125)

# PSYCHO-PHYSICAL ASPECTS OF SPACE

PLANNING IS TWO-DIMENSIONAL; THREE-DIMENSIONAL THINKING TAKES US INTO THE REALM OF DESIGN, AND MUCH OF THE ART AND SCIENCE OF DESIGNING IS REVEALED TO THE ARCHITECT/DESIGNER WHEN IT IS REALIZED THAT ONE IS DEALING NOT WITH AREAS BUT WITH SPACES.

## SPATIAL IMPACT

VOLUME IS THE BASIC PHYSICAL ATTRIBUTE OF SPACE. VOLUMES HAVE BEEN DESIGNED FOR THE INTENDED PURPOSE OF TORTURING THE OCCUPANTS. IT HAS BEEN SAID THAT DURING THE SPANISH CIVIL WAR AN ARCHITECT WAS ORDERED TO DEVISE SUCH A CHAMBER. HE DEVELOPED A TRANSLUCENT, MULTICOLOURED POLYHEDRON OF SHARPLY INTERSECTING PLANES— AN INSIDIOUS ENCLOSURE IN WHICH A LOCKED-IN VICTIM FOUND HIMSELF UNABLE TO LIE, SIT, STOOP OR KNEEL WITHOUT TILTING OR TUMBLING THE CUBICLE. THE SURFACES WERE SLIPPERY, BURNING HOT IN THE SUN AND FRIGID IN THE NIGHT COLD. IN ANY LIGHT THE COLOURS WERE DISTRESSING IF SEEN ALONE; IN THEIR DISCORDANT CLASHING, THEY SOON BECAME MADDENING. (SIMONDS, 1983, P. 136)

IT'S WORTH TAKING A LOOK AT THE VARIOUS ABSTRACT QUALITIES OR SPATIAL CHARACTERISTICS OF A SERIES OF VARYING VOLUMES (EACH DESIGNED TO INDUCE A PREDETERMINED RESPONSE).

TENSION:
UNSTABLE FORMS; SPLASH/CLASH OF COLOURS; VISUAL IMBALANCE; NO POINT AT WHICH THE EYE CAN REST; HARSH, BLINDING OR QUAVERING LIGHT; UNCOMFORTABLE TEMPERATURES; PIERCING OR JITTERY SOUND.

RELAXATION:
SIMPLICITY; VOLUMES VARYING IN SIZE FROM THE INTIMATE TO THE INFINITE; CURVILINEAR FORMS AND SPACES; SOFT LIGHT; VOLUME INFUSED WITH QUIET COLOURS.

FRIGHT:
SENSED CONFINEMENT; NO POINTS OF ORIENTATION; SLOPING, TWISTED OR BROKEN PLANES; CONTORTED SPACES; PALE AND QUAVERING OR, CONVERSELY, GARISH BLINDING LIGHT; ABNORMAL MONOCHROMES.

GAIETY:
FREE SPACES; SMOOTH FLOWING FORMS AND PATTERNS; LACK OF RESTRICTIONS; FORMS, COLOURS AND SYMBOLS THAT APPEAL TO THE EMOTIONS RATHER THAN INTELLECT; WARM BRIGHT COLOURS; SPARKLING, SHIMMERING, SHOOTING OR GLOWING LIGHT; LILTING SOUND.

CONTEMPLATION:
MILD, UNPRETENTIOUS SPACE PROVIDING A SENSE OF ISOLATION, PRIVACY, DETACHMENT, SECURITY AND PEACE; SOFT, DIFFUSED LIGHT; TRANQUIL AND RECESSIVE COLOURS; LOW, MUTED STREAM OF SOUND.

DYNAMIC ACTION:
BOLD FORMS; ROUGH NATURAL TEXTURES; MOTION INDUCED BY SWEEPING LINES; STRONG PRIMITIVE COLOURS; MARTIAL MUSIC; RUSH OF SOUND.

SENSUOUS LOVE:
COMPLETE PRIVACY; INWARD ORIENTATION OF ROOM; INTIMATE SCALE; SOFT, ROUNDED FORMS; EXOTIC SCENT; SOFT LIGHT; PULSATING, TITILLATING MUSIC.

SUBLIME SPIRITUAL AWE:
OVERWHELMING SCALE; SOARING FORMS; A VOLUME SO CONTRIVED AS TO LIFT ONE'S EYES AND MIND HIGH ALONG THE VERTICAL; COMPLETE COMPOSITIONAL ORDER; USE OF COSTLY AND PERMANENT MATERIALS; USE OF CHASTE WHITE (OR COOL, DETACHED COLOURS); DIFFUSED GLOW WITH SHAFTS OF LIGHT; USE OF INCENSE; DEEP, FULL SWELLING MUSIC WITH LOFTY PASSAGES.

PLEASURE:
SPACES, FORMS, TEXTURES, COLOURS, SYMBOLS, SOUNDS, LIGHT QUALITY, ODOURS ALL SUITED TO THE USE (WHATEVER IT MAY BE); SATISFACTION OF ANTICIPATIONS, DESIRES OR REQUIREMENTS; HARMONIOUS RELATIONSHIPS; A RESULTANT QUALITY OF BEAUTY.

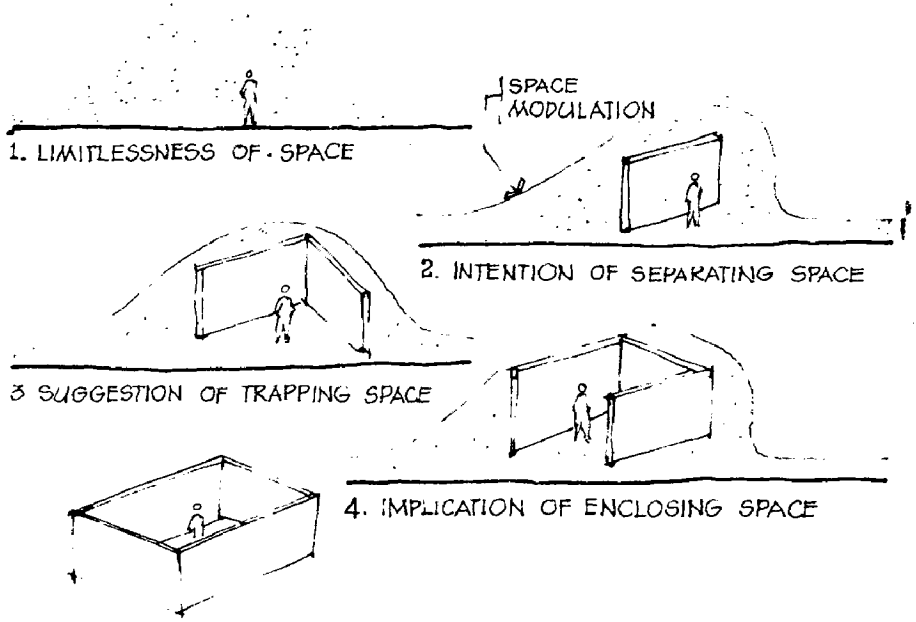
THUS, IF ONE WERE TO LIST THE REQUISITES OF THE IDEAL SPACE FOR EACH OF A SERIES OF VARYING USES, ONE MIGHT BE AMAZED AT THE VARIETY OF SUGGESTED SPATIAL CHARACTERISTICS.

## SPATIAL QUALITIES

THE ESSENCE OF A VOLUME IS ITS QUALITY OF IMPLIED CONTAINMENT.

A CONFINED SPACE MAY BE STATIC; IT MAY DIRECT AND CONCENTRATE INTEREST INWARD, THE WHOLE SPATIAL SHELL MY BE MADE SEEMINGLY TO CONTRACT AND BEAR DOWN. ALTERNATIVELY, A SPACE MAY OPEN OUT; IT MAY FALL AWAY OR SEEM TO EXPAND; OR IT MAY IMPEL OUTWARD MOTION.

A SPACE MAY BE FLOWING AND UNDULATING, SUGGESTING DIRECTIONAL MOVEMENT. A SPACE MAY BE IN EFFECT A VACUUM OR IT MAY HAVE EXPULSIVE PRESSURE. A SPACE MAY BE DEVELOPED AS AN OPTIMUM ENVIRONMENT FOR AN OBJECT OR USE, OR AS A SETTING FOR PERSONS.




1. LIMITLESSNESS OF SPACE

2. INTENTION OF SEPARATING SPACE

3 SUGGESTION OF TRAPPING SPACE

4. IMPLICATION OF ENCLOSING SPACE

5. DEFINITE ENCLOSURE OF VOLUMETRIC SPACE.

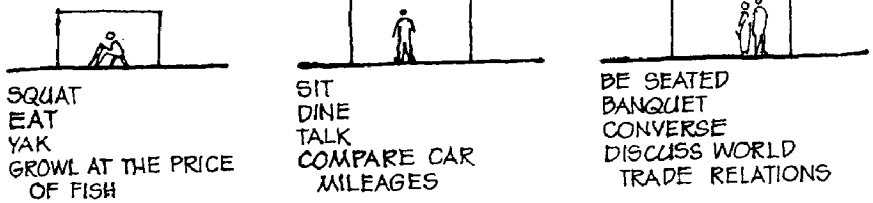
WHEN ANY ACTIVITY IS INTENSIFIED, THE SPACE GETS MODULATED; THE LIMITLESSNESS SEEMS TO END, BUT THE CONTINUITY REMAINS.

A SPACE MAY BE SO DESIGNED AS TO STIMULATE A PRESCRIBED EMOTIONAL REACTION. A COMPLEX SPACE ASSUMES TO A DEGREE THE QUALITIES OF ITS COMPONENT VOLUMES AND SHOULD RELATE THEM INTO A UNIFIED ENTITY.

SPACES MAY VARY FROM THE VAST TO THE MINUTE, FROM THE LIGHT AND ETHEREAL TO THE HEAVY AND PONDEROUS, FROM THE DYNAMIC TO THE CALM, FROM THE CRUDE TO THE REFINED, FROM THE SIMPLE TO THE ELABORATE AND FROM THE SOMBRE TO THE DAZZLING. IN THEIR SIZE, SHAPE AND CHARACTER SPACES MAY VARY ENDLESSLY.

## SPATIAL SIZE

IT IS WELL KNOWN THAT THE SIZE OF AN INTERIOR SPACE IN RELATION TO PEOPLE HAS A STRONG EFFECT ON THEIR FEELINGS AND BEHAVIOUR. THIS FACT MAY BE ILLUSTRATED GRAPHICALLY IN THE SUBSEQUENT DIAGRAMS.




SOME SPACES ARE PERSON-DOMINATED, CONTROLLED IN SIZE BY SUCH FACTORS AS THE REACH OF ONE'S ARM. OTHER SPACES ARE INTENTIONALLY PLANNED TO DOMINATE US. THE MYSTERIOUS STONEHENGE IN ENGLAND, A GREAT CIRCLE OF SPACE CARVED OUT OF THE MOORS WITH MASSIVE STONE POSTS AND LINTELS, IS A DRAMATIC REMINDER THAT EVEN NEOLITHIC PEOPLE KNEW THE POWER OF SPACE TO INSPIRE AND HUMBLE HUMANS.

BETWEEN THE MICRO AND MACRO SPACES WE MAY PLAN SPACES OF AN INFINITE RANGE IN SIZE. THE VOLUMETRIC DIMENSIONS SHOULD NEVER BE INCIDENTAL.

## SPATIAL FORM

IT HAS BEEN SAID THAT, IDEALLY 'FORM MUST FOLLOW FUNCTION.' THIS STATEMENT IS MORE PROFOUND THAN IT SEEMS. IT IS ALSO OPEN TO ARGUMENT UNLESS WE ASSUME THAT AESTHETIC AND INTELLECTUAL CONSIDERATIONS ARE AN INHERENT ASPECT OF FUNCTION. WHAT ALL THIS MEANS IS THAT ANY OBJECT, SPACE OR THING SHOULD BE DESIGNED AS THE MOST EFFECTIVE MECHANISM FOR DOING THE JOB AT HAND; MOREOVER, IT SHOULD LOOK IT. IF THE DESIGNER CAN ACHIEVE AN ACTUAL AND APPARENT HARMONY OF FORM, MATERIAL, FINISH AND USE, THE OBJECT NOT ONLY SHOULD WORK WELL BUT ALSO BE PLEASANT TO SEE.

## SPATIAL COLOUR

SPACES OR THINGS WITHIN SPACES HAVE MEANING ONLY AS THEY ARE EXPERIENCED AND IN CREATING FULFILLING SPATIAL EXPERIENCES THE KNOWLEDGEABLE HANDLING OF COLOUR IS ESSENTIAL.

IN PASSING, IT IS OF INTEREST TO NOTE AN EARLY CHINESE THEORY OF VOLUMETRIC COLOUR DESIGN. ACCORDING TO THIS THEORY, WE HAVE BECOME SO ACCUSTOMED TO THE COLOUR ARRANGEMENTS OF NATURE THAT WE HAVE AN AVERSION TO ANY VIOLATION OF THE ACCEPTED RULE. IT FOLLOWS THAT IN SELECTING COLOURS FOR ANY SPACE, THE BASE PLANE IS TREATED IN EARTHY COLOURS; THE STRUCTURAL ELEMENTS OF WALL AND OVERHEAD ARE GIVEN THE COLOURS OF THE TREE TRUNK AND LIMB; THE RECEDING WALL SURFACES ADAPT THEIR HUE FROM THE WALL OF THE BAMBOO THICKET AND PINE BOUGH; AND THE CEILING COLOURS RECALL THE AIRINESS OF THE SKY. THIS TESTED THEORY OF NATURE ADAPTATION APPLIES AS WELL TO THE USE OF MATERIALS, TEXTURES AND FORMS.

## THE VERTICALS IN SPACE

OF THE THREE VOLUMETRIC PLANES, THE VERTICAL IS THE MOST APPARENT AND THE EASIEST TO CONTROL. IT ALSO HAS THE MOST IMPORTANT FUNCTION IN THE CREATION OF SPACES. THE VERTICALS CONTAIN AND ARTICULATE THE USE AREAS AND MAY EITHER TIGHTLY CONTROL AND ENCLOSE THEM OR MORE LOOSELY DEFINE THEM. VERTICAL ELEMENTS MAY, AT TIMES, BECOME DOMINANT SPATIAL FEATURES AS WELL.

THE VERTICALS OF ANY SPACE ELUCIDATE THE PLAN. THEY MUST ATTRACT, DEFLECT, DIRECT, RECEIVE, DETAIN, AND ACCOMODATE THE PLANNED USE AS THE AREA DEMANDS.

# A HISTORICAL REVIEW OF SPATIAL PERCEPTION

WITHOUT DOUBT, THE CONCEPT OF PERCEPTION IN ARCHITECTURE IS QUITE OLD. BUT, AS REGARDS THE EARLY MESOPOTAMIAN AND INDUS VALLEY CIVILIZATIONS, ONE IS UNABLE TO MAKE ANY DEFINITE COMMENT DUE TO THE WOEFUL LACK OF SURVIVING EVIDENCE. FROM THE RUINS OF THE CENTRES OF THESE CIVILIZATIONS VIZ. BABYLON, AND MOHENJO-DARO AND HARAPPA, ONE CAN ONLY CONJURE UP A VAGUE IDEA OF THE ARCHITECTURE OF THAT ERA.

THE EARLIEST PROOF OF PERCEPTION IN ARCHITECTURE CAN BE SEEN IN THE GREEK TIMES. THIS ASPECT REMAINED THROUGHOUT THE FOLLOWING AGES AND THE CHANGES WHICH OCCURED WERE DUE TO THE USAGE OF DIFFERENT APPROACHES TO THIS CONCEPT.

## THE WEST

THE GREEK TEMPLE IS CHARACTERISED ON ONE HAND BY A GREAT LACK AND ON THE OTHER BY A SUPREMACY WHICH HAS NEVER BEEN REVEALED. THE LACK IS IN THE IGNORING OF INTERNAL SPACE; AND THE SUPREMACY, IN THE MASTERLY APPLICATION OF THE HUMAN SCALE. THIS MAY BE BECAUSE THE GREEK TEMPLE WAS NOT CONCEIVED AS A HOUSE OF WORSHIP, BUT AS THE IMPENETRABLE SANCTUARY OF THE GODS WITH ALL RELIGIOUS RITES TAKING PLACE IN THE OPEN-AROUND THE TEMPLE.

INTERNAL SPACE WAS DEVEOPED ON A GRAND SCALE DURING THE ROMAN PERIOD. MORE OFTEN THAN NOT, THE ROMANS WERE UNABLE TO EXTEND THEIR SPATIAL AND VOLUMETRIC THEMES PLASTICALLY BUT THESE THEMES THEMSELVES WERE A PRODUCT OF A TRULY DARING ARCHITECTURAL INSPIRATION. (INCIDENTALLY, THE ROMANS LACKED THE VIBRANT REFINEMENT OF THE GREEK SCULPTOR-ARCHITECTS WHICH THEY MADE UP IN THEIR GENIUS AS BUILDER-ARCHITECTS). THE FUNDAMENTAL CHARACTERISTIC OF THE ROMAN SPACE IS THAT IT WAS CONCEIVED STATICALLY. IN BOTH, THE CIRCULAR AND RECTANGULAR SPACES THE RULE WAS SYMMETRY AND AN ABSOLUTE AUTONOMY IN RESPECT TO NEIGHBOURING SPACES EMPHASIZED BY THICK DIVIDING WALLS AND BIAXIAL GRANDIOSITY ON AN INHUMAN AND MONUMENTAL SCALE, ESSENTIALLY SELF-CONTAINED, AND INDEPENDENT OF THE OBSERVER.

THE CHRISTIANS TENDED TO REDUCE THE ROMAN PROPORTIONS, BECAUSE A RELIGION OF INTOSPECTION AND LOVE CALLED FOR A HUMANLY CONCEIVED SETTING, CREATED IN THE SCALE OF THOSE IT WAS DESIGNED TO RECEIVE AND ELEVATE SPIRITUALLY. THIS WAS THEIR QUANTITATIVE OR DIMENSIONAL REVOLUTION IN ARCHITECTURE. THE SPATIAL REVOLUTION CONSISTED IN ORDERING ALL ELEMENTS IN TERMS OF MAN'S PATH INSIDE THE CHURCH.

BYZANTINE SPACE WAS NOT SO MUCH EXPANDED SPACE AS SPACE IN THE 'PROCESS OF EXPANSION'. IT CONTAINED A DYNAMIC IMPULSE DEVELOPED IN EARLY CHRISTIAN CULTURE, AND IT MADE USE OF SHINING PLANES, OF VAST LUMINOUS SURFACES-SINCE EVOLVED INTO CHROMATIC TAPESTRIES.

THE ROMANESQUE PERIOD DOSEN'T OFFER A DEFINABLE SPATIAL CONCEPTION. THERE WAS FIRST A TENTATIVE THEN A PEREMPTORY NEGATION OF THE BYZANTINE CONCEPT. THE WALL STRUCTURE WAS GIVEN A GREATER FEELING OF WEIGHT AND ROUGH NATURAL MATERIALS WERE SUBSTITUTED FOR CHROMATIC SURFACES. THE PRINCIPAL SIGNIFICANCE OF THE ROMANESQUE CONTRIBUTION, HOWEVER, LIES IN THE FACT THAT ITS INTERIOR SPACE COULD NO LONGER BE DISCUSSED IN TERMS OF TWO DIMENSIONS; IT NOW CONSISTED OF BAY UNITS, THREE-DIMENSIONAL IN THEMSELVES AND THEMSELVES ENCLOSING ITERNAL SPACE. FOR THIS REASON, THE SPACE AND THE VOLUMETRICS OF THE BOX FORMED BY THE WALLS ARE COMBINED IN A CLOSER ESTHETIC UNITY.

THERE WAS AN IMPORTANT SPATIAL THEME WHICH DISTINGUISHED GOTHIC ARCHITECTURE FROM THE ROMANESQUE; THIS WAS THE BRINGING OF THE DIMENSIONAL FORCES INTO CONTRAST. FOR THE FIRST TIME IN THE GENERAL

HISTORY OF ARCHITECTURE, ARCHITECTS CONCEIVED SPACES WHICH WERE IN DELIBERATE ANTITHESIS OF HUMAN SCALE, WHICH INDUCED IN THE OBSERVER NOT A SENSE OF PEACEFUL CONTEMPLATION BUT A MOOD OF IMBALANCE, OF CONFLICTING IMPULSES AND EMOTIONS, OF STRUGGLE.

FROM A PSYCHOLOGICAL AND SPIRITUAL POINT OF VIEW, THE RENNAISSANCE PERIOD REPRESENTS A RADICAL DEPARTURE. UP TO THEN IT WAS SPACE WHICH DETERMINED THE TEMPO OF MAN'S PROGRESS THROUGH A BUILDING, WHICH LED HIS EYE ALONG THE PATH WILLED BY THE ARCHITECT. BUT DURING THIS PERIOD, IT WAS NO LONGER THE BUILDING THAT TOOK POSSESSION OF THE OBSERVER, BUT THE OBSERVER WHO, BY APPREHENDING THE SIMPLE LAW GOVERNING ITS SPACE POSSESSE THE SECRET OF THE BUILDING.

FROM THE POINT OF VIEW OF ITS SPATIAL THEMES, THE 16 TH CENTURY, DEVELOPED FURTHER THE CENTRALIZING ASPIRATIONS OF THE PRECEDING CENTURY, A VISION OF SPACE AS ABSOLUTE, EASILY GRASPED FROM ANY VISUAL ANGLE AND EXPRESSED IN THE EURHYTHMIC BALANCE OF PROPORTIONS. THUS, THE 16TH CENTURY TRIUMPHED IN A MULTIPLICITY OF VARIATIONS ON THE BASIC THEME OF SYMMETRICAL SPACE.

BAROQUE IS THE LIBERATION OF SPACE. IT IS MENTAL REVOLT FROM THE RULES OF TREATISES, FROM CONVENTION, ELEMENTARY GEOMETRY AND IMMOBILITY. IT IS LIBERATION FROM SYMMETRY AND FROM THE ANTITHESIS BETWEEN INTERIOR AND EXTERIOR SPACE. BAROQUE MOVEMENT IS NOT A SPACE ACHIEVED, BUT A 'PROCESS' OF ACHIEVING SPACE; IT REPRESENTS SPACE, VOLUMETRICS AND DECORATIVE ELEMENTS 'IN ACTION'.

THE SMALL MIDDLE CLASS HOUSE, WHICH WAS ONE OF THE PRINCIPAL THEMES OF THE LATE 19 TH CENTURY AND THE BEGINNING OF THE 20TH, REPRESENTED AS A WHOLE, A TOTAL FAILURE IN TERMS OF INNER SPACE. THESE HOUSES WERE GENERALLY STUNTED, TIGHTLY CLOSED, MISERABLE AND MEAN. NONE THE LESS, COMPARED WITH MUCH OF TODAY'S COMMERCIAL CONSTRUCTION, MANY 19TH CENTURY BUILDINGS SEEM TO HAVE AN ENVIABLE COHERENCY AS WELL AS A CERTAIN DIGNITY. THE TRUE VIRTUE OF THE 19TH CENTURY ARCHITECTURE, HOWEVER, IS IN ITS EXTERIOR SPACE, IN ITS TOWN-PLANNING.

MODERN ARCHITECTURE IS BASED ON THE OPEN PLAN. IT HAS ATTAINED THE SPATIAL DREAM OF THE GOTHIC BY MAKING GOOD USE OF NEW TECHNICS, BY EXECUTING ITS ARTISTIC INSIGHTS WITH GREATER PRECISION AND AUDACITY. USING VAST WINDOWS, BY NOW ENTIRE WALLS OF GLASS, IT HAS ESTABLISHED CONTINUITY BETWEEN INTERIOR AND EXTERIOR SPACE. INTERNAL WALL PARTITIONS, WHICH NO LONGER SERVE STATIC BEARING FUNCTIONS, MAY NOW BE THIN, CURVED, FREELY MOVABLE. THIS CREATES THE POSSIBILITY OF LINKING UP INTERIOR SPACES, OF JOINING TOGETHER THE NUMEROUS CUBICLES OF THE 19TH CENTURY, OF PASSING FROM THE STATIC PLAN OF THE TRADITIONAL HOUSE TO THE FREE, OPEN AND ELASTIC PLAN OF THE MODERN BUILDING.

EVEN IN THE AVERAGE HOUSE THE LIVING ROOM IS MERGED WITH THE DINING ROOM AND STUDY, THE ENTRY IS REDUCED TO ADD SPACE TO THE LIVING ROOM, THE BEDROOM BECOMES SMALLER, SERVICE AREAS ARE DESIGNED TO MAKE MORE BREATHING SPACE FOR THAT LARGE ARTICULATED AREA WHERE THE FAMILY LIVES - THE LIVING ROOM.

ORGANIC ARCHITECTURE RECOGNISES THAT MAN HAS DIGNITY, PERSONALITY, SPIRITUAL MEANING, AND REALIZES THAT THE PROBLEM OF ARCHITECTURE IS AS MUCH QUALITATIVE AS QUANTITATIVE. ORGANIC SPACE IS RICH WITH MOVEMENT, DIRECTIONAL INVITATIONS AND ILLUSIONS OF PERSPECTIVE. ITS MOVEMENT IS ORIGINAL IN THAT IT DOES NOT AIM AT DAZZLING VISUAL EFFECTS BUT AT EXPRESSING THE ACTION ITSELF OF MAN'S LIFE WITHIN IT. THE ORGANIC MOVEMENT IS NOT MERELY A CURRENT IN TASTE OR AN ANTI-STEREOMETRIC AND ANTI-PRISMATIC VISION OF SPACE, BUT IS AIMED AT CREATING SPACES WHICH ARE NOT ONLY BEAUTIFUL IN THEMSELVES, BUT REPRESENT THE ORGANIC LIFE OF THE PEOPLE WHO LIVE IN THEM.

## THE EAST

LIKE THE WEST, IN THE EAST TOO, THE IDEA OF PERCEPTION IS NOT NEW AND IT PRESENTS A SIMILAR PROBLEM— NOT ENOUGH OF IT SURVIVES FOR US TO GET A CLEAR PICTURE OF THE ARCHITECTURE OF THE EARLY AGES. THE DISSERTATION SHALL ATTEMPT TO STUDY TWO ENTIRELY DIFFERENT STYLES OF EASTERN ARCHITECTURE VIZ. JAPANESE AND INDIAN; AND IT SHALL SEE AS TO HOW THE CONCEPT OF PERCEPTION DIFFERS FROM THAT OF THE WEST, AND ITS IMPACT ON THEIR ARCHITECTURE.

JAPANESE ARCHITECTURE:
JAPANESE ARCHITECTURE TOOK THE HUMAN DIMENSIONS AND PERCEPTIONS AS THE BASIS OF ITS ARCHITECTURAL STYLE. THESE WERE THEN INTEGRATED WITH THEIR BUILDING TECHNOLOGIES TO PRODUCE AN EFFECT WHICH WAS QUITE DISTINCT AND DIFFERENT FROM THAT OF THEIR WESTERN COUNTERPARTS.

TO UNDERSTAND THE PERCEPTION OF THE JAPANESE, WE MUST FIRST REALISE THAT A MAJORITY OF THEM ARE BUDDHISTS. BUDDHISM AS PRACTISED BY THEM LAYS A GREAT STRESS ON HUMAN BEING BECOMING A PART OF NATURE (INSTEAD OF DOMINATING IT). THUS, NATURE PLAYS A VITAL PART IN JAPANESE ARCHITECTURE AND THIS ACCOUNTS FOR THE ELABORATE PLANNING THAT GOES INTO THE JAPANESE GARDEN; AND INORDER TO CONSIDER JAPANESE ARCHITECTURE, ONE MUST TAKE INTO ACCOUNT, THE GARDEN ALONG WITH MAIN STRUCTURE.

TO THE JAPANESE, HAVING SIGNIFICANT SPACES MEANT HAVING ENCLOSURES, AND THE CHARACTER OF THE ENCLOSURE DETERMINED THE QUALITY OF SPACE. SPACE TO THEM WAS NOT AN EXPANSIVE THING THAT COULD BE COMPARTMENTALIZED AS PER THE ACTIVITIES. THEY USED THE SAME SPACE FOR VARIOUS ACTIVITIES.

THE SPACE AND PERSON, IN JAPANESE ARCHITECTURE REMAINED STATIC ONLY THE ACTIVITIES CHANGED WITH THE USAGE OF SCREENS. FOR EXAMPLE, IF A JAPANESE, IN THE MORNING, USED A ROOM TO ENTERTAIN GUESTS THEN THE SCREENS WOULD BE SO ADJUSTED THAT THE ROOM WOULD BE LARGE ENOUGH FOR THE ACTIVITY. IF AT A LATER TIME, THE SAME GROUP OF GUESTS WERE TO BE SERVED FOOD, THE SCREENS WOULD BE READJUSTED TO MAKE THE SAME SPACE CONDUCIVE FOR MEALS. THE ONLY ROOM WITH A STATIC FUNCTION WAS THE KITCHEN, WHICH IN MOST CASES WAS SEGREGATED FROM THE MAIN STRUCTURE.

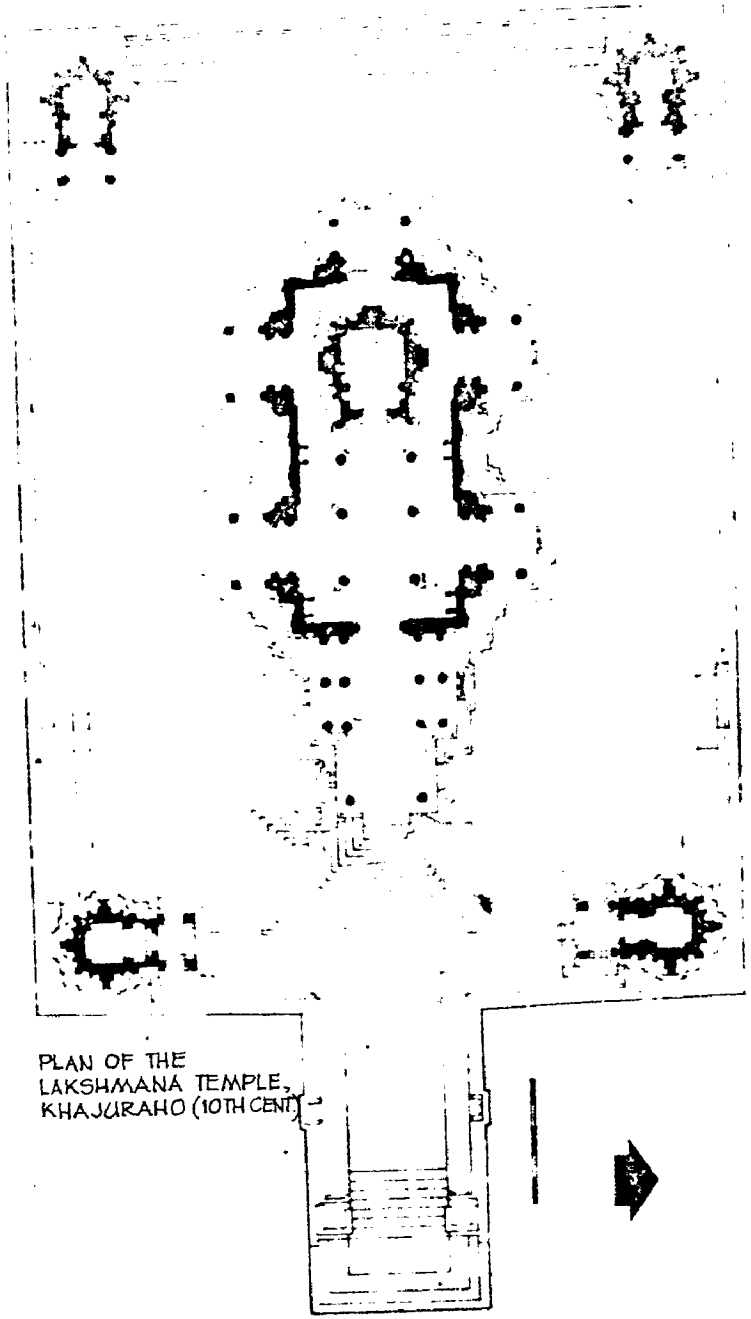
A MAJORITY OF THE ROOMS IN THE JAPANESE HOUSES OPEN INTO COURTYARD GARDENS. THESE GARDENS WERE AESTHETICALLY DESIGNED AND ADDED TO THE SENSE OF EXPANSION WHERE BY THE HOUSE SEEMED TO MERGE INTO THE SURROUNDINGS RATHER THAN DOMINATING IT.

THE ENTIRE EXPERIENCE OF SPACE IN THE MOST ESSENTIAL RESPECTS IS DIFFERENT FROM THAT OF THE WESTERN CULTURE. WHEN WESTERNERS THINK AND TALK ABOUT SPACE, THEY MEAN THE DISTANCE BETWEEN OBJECTS. THE WEST PERCEIVES AND REACTS TO THE ARRANGEMENTS OF OBJECTS AND THINKS OF SPACE AS 'EMPTY.' WHEREAS THE JAPANESE GIVE 'MEANING' TO SPACES – THEY PERCEIVE THE SHAPE AND THE ARRANGEMENT OF SPACES!

SECONDLY, IN THE PERCEPTION OF SPACE (ESPECIALLY IN CREATING GARDENS) THE JAPANESE EMPLOY VISION AND ALL OTHER SENSES AS WELL. OLFACTION, SHIFTS IN TEMPERATURE, HUMIDITY, LIGHT, SHADE AND COLOUR ARE WORKED TOGETHER IN SUCH A WAY AS TO ENHANCE THE USE OF THE WHOLE BODY AS A SENSING ORGAN. IN CONTRAST TO THE SINGLE POINT PERSPECTIVES OF THE RENAISSANCE AND BAROQUE PAINTERS, THE JAPANESE GARDEN IS DESIGNED TO BE ENJOYED FROM MANY POINTS OF VIEW. THE DESIGNER MAKES THE GARDEN VISITOR STOP HERE AND THERE, PERHAPS TO FIND HIS FOOTING ON A STONE IN THE MIDDLE OF A POOL SO THAT HE LOOKS UP AT PRECISELY THE RIGHT MOMENT TO CATCH A GLIMPSE OF THE UNSUSPECTED VISTA. 'THE STUDY OF JAPANESE SPACES ILLUSTRATES THEIR HABIT OF LEADING THE INDIVIDUAL TO A SPOT WHERE HE CAN DISCOVER SOMETHING FOR HIMSELF.' (HALL, 1969, P. 154)

INDIAN ARCHITECTURE:
INDIAN ARCHITECTURE TOO IS BASED ON THE THEORY OF HUMAN SCALE AND PERCEPTION, COMBINED WITH THE LIMITATIONS OF CONSTRUCTION. LIKE JAPANESE ARCHITECTURE, INDIAN ARCHITECTURE ALSO MADE THE PARTICIPANT USE ALL HIS SENSES TO DERIVE MAXIMUM PLEASURE. AS AN EXAMPLE TWO DIVERSE EXAMPLES OF ANCIENT INDIAN ARCHITECTURE WILL BE TAKEN. 1) THE INDIAN TEMPLE AND 2) THE WADA OR RESIDENTIAL PLACE OF THE MARATHAS.

THE INDIAN TEMPLE: BEFORE MOVING ONTO THE



PLAN OF THE
LAKSHMANA TEMPLE,
KHAJURAHO (10TH CENT)

ANALYSIS OF THE INDIAN TEMPLE IT MUST BE NOTED THAT THE INDIAN TEMPLE WAS NOT DESIGNED MERELY AS A PLACE OF WORSHIP. IT WAS A SOCIAL AND CULTURAL CENTRE. MORE OFTEN THAN NOT THE TEMPLE WAS THE FOCAL POINT OF INDIAN LIFE AND THUS IN MANY PLACES IT WAS LOCATED IN THE CENTRE OF THE TOWN OR VILLAGE, INVARIABLY DOMINATING THE REST OF THE TOWN PLANNING. THE INDIAN TEMPLE IS DIVIDED INTO THREE MAIN PARTS. 1) THE SABHAGRIH OR THE ENTRANCE HALL, 2) THE JAGMOHAN OR THE DANCE HALL, AND 3) THE GARBHAGRIH OR THE SANCTUM AROUND WHICH WAS THE PARIKRAMA OR THE CIRCUMAMBULATORY PASSAGE.

AROUND THE TEMPLE WAS A COURTYARD IN WHICH WERE PLANTED EVERGREEN TREES TO COOL THE ATMOSPHERE IN AN OTHERWISE WARM CLIMATE. THIS IN ITSELF ATTRACTED THE PEOPLE, WHO, IN GENERAL, WERE SUBJECTED TO THE ATROCITIES OF THE SUN.

THE ENTIRE TEMPLE WAS RAISED ON A HIGH PLINTH INORDER TO ACCENTUATE ITS HEIGHT. THIS PLINTH WAS TREATED WITH BANDS – EITHER PLAIN OR WITH FIGURINES OR GEOMETRICAL MOTIFS, THEREBY INVITING THE VIEWER TO FEEL IT.

THE SABHAGRIH OR THE MANDAPAM BESIDES BEING THE ENTRANCE TO THE TEMPLE ALSO SERVED AS A PLACE FOR SOCIAL GATHERINGS. ITS SEMI-CLOSED NATURE ALLOWED THE VISION TO WANDER AROUND THE COURTYARD AND ALSO SOFTENED THE IMPACT OF THE TRANSITION FROM OPEN TO CLOSED SPACE.

FROM THE ENTRANCE HALL ONE ENTERED THE JAGMOHAN OR THE HALL WHERE THE DANCERS AND MUSICIANS PERFORMED FOR THE GODS. THIS WAS WITNESSED BY THE DEVOTEES WHO RESPECTFULLY STOOD ASIDE AND ADMIRED THE PERFORMANCES. THE AREA WAS PROPERLY ENCLOSED WITH PORTICOS PIERCING ITS SIDES FOR LIGHTING AND VENTILATION. THE PROPORTIONS OF THIS HALL WERE LARGER THAN THOSE OF THE GABHAGRIH, AND WERE SO PRECISELY CALCULATED THAT THE SOUND OF THE PERFORMERS WAS AMPLIFIED TO AN EXTENT TO ENABLE IT TO BE HEARD THROUGHOUT THE HALL.

FINALLY ONE ENTERED THE GARBHAGRIH OR THE SANCTUM (NO ONE BUT THE PRIEST WAS ALLOWED TO ENTER IT) WHERE THE DIETY WAS HOUSED. PEOPLE CAME ONLY UPTO THE DOOR AND THEN CIRCUMAMBULATED THE SANCTUM. THE CIRCUMAMBULATORY PASSAGE WAS GENERALLY DARK WITH ONLY A FEW SMALL OPENINGS FOR LIGHT PENETRATION. A SMELL OF BURNING INCENSE PREVAILED IN THE SANCTUM AND THE CIRCUMAMBULATORY PASSAGE.

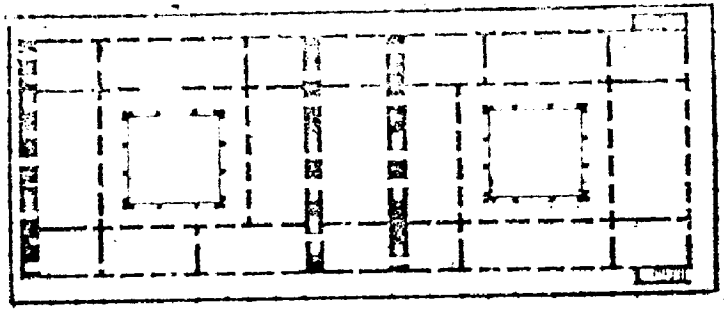
THE DEVOTEE WAS, THUS, LED THROUGH A PROGRESSION— FROM LIGHT TO DARKNESS AND FROM THE VAST UNCLOSED SPACE OF THE OUTSIDE TO THE CLOSED SANCTUARY, WITH THE CULMINATION OF PERCEPTION CONCENTRATED ON THE IDOL. ACCOMPANYING THIS PROGRESSION TOWARDS THE SANCTUARY IS THE ASCENT UPWARDS, TOWARDS A SYMBOLIC MOUNTAIN PEAK WHOSE SUMMIT IS ABOVE THE CENTRE OF THE SANCTUARY. THUS THE IDOL IS PLACED AT A JUXTAPOSITION OF A HORIZONTAL LINE AND A SYMBOLIC VERTICAL AXIS OF PERCEPTION, WHICH IS BOTH SPIRITUALLY MOVING AND REPRESENTATIVE OF THE HINDU IDEALS OF THE UNIVERSE. THIS IS PROOF ENOUGH OF THE FACT THAT PERCEPTION IS WHAT DICTATED THE TEMPLE FORMS IN INDIA.

THE WADA : STEPPING INTO RESIDENTIAL AREAS, SO TO SAY, WE FIND THE MARATHA WADA IS AN EXTENSION OF THE GENERAL HOUSE PATTERN IN INDIA — A PATTERN WHICH MAKES USE OF THE COURTYARD.

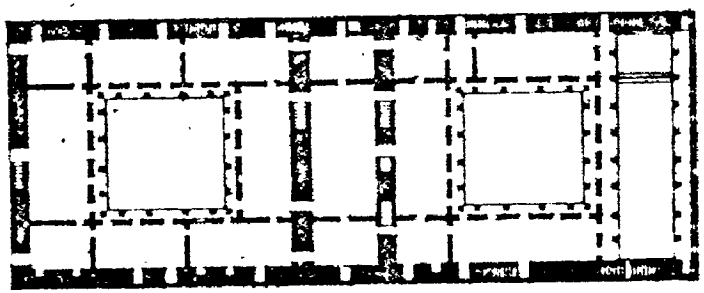
IN INDIA, DUE TO A PREDOMINANT CASTE SYSTEM, THE HOUSES OF THE UPPER CLASS MAINTAINED A DISTINCT SERVICE AREA WITH A SEPARATE ENTRANCE FOR THE LOWER CLASS PEOPLE WHO CAME FOR THE VARIOUS SERVICE FACILITIES. ANOTHER DETERMINING FACTOR WAS AN EQUALLY SHARP DISTINCTION BETWEEN THE LADIES AND THE GENTS. WITH A FEW EXCEPTIONS THE LADIES OF THE INDIAN HOUSEHOLD WERE ALLOTTED SEPARATE AREAS FOR THEIR DAILY CHORES. THESE AREAS WERE GENERALLY SCREENED OFF.

THE WADA HAD TWO COURTYARDS — A REAR AND A FRONT, AROUND WHICH WERE ARRANGED THE VARIOUS ROOMS. ON THE GROUND FLOOR, THE MAIN ENTRANCE OPENED INTO THE FRONT COURTYARD WHICH WAS OF A LARGE SIZE. THIS WAS THE PUBLIC SPACE OF THE HOUSE WHERE THE OWNER OF THE HOUSE CONDUCTED HIS DAILY MEETINGS WITH IMPORTANT PERSONNEL. THE ROOMS AROUND THIS COURTYARD WERE NOT ENCLOSED BY WALLS. THEY WERE MORE LIKE VERANDAHS

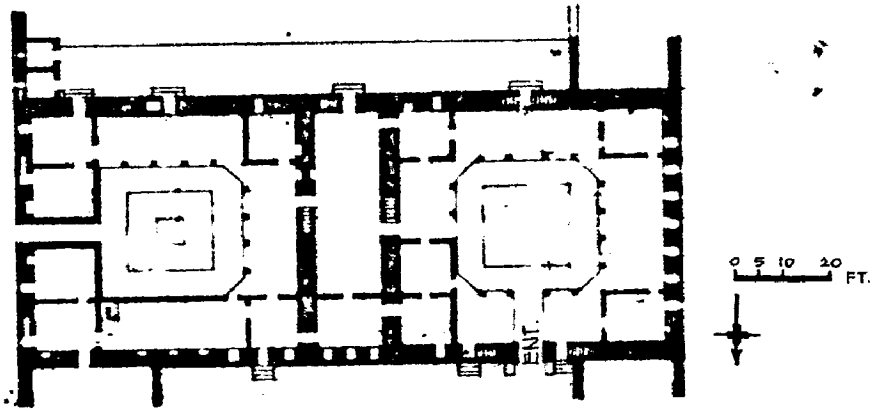
PLANS OF BHASKARRAO VITHAL'S WADA, BARODA.



SECOND FLOOR



FIRST FLOOR




GROUND FLOOR

ENCLOSED BY JALI WORK (STONE GRILLES). THE JALIS GAVE THE REQUIRED SENSE OF PRIVACY AND YET IT DID NOT CONTAIN THE VERANDAH SPACE BUT LET IT FUSE INTO THE COURTYARD.

THE REAR COURTYARD HAD A SMALL ENTRANCE OF ITS OWN, IN ADDITION TO A SEPARATE SERVICE ENTRY. THIS COURTYARD HAD AROUND IT A KITCHEN AND A DINING HALL FOR GUESTS, A STORE AND THE RESIDENCES OF THE GUARDS AND CLERKS OF THE OWNER. THIS COURTYARD WAS SEMI-PRIVATE IN NATURE. THE TWO COURTYARDS WERE DIVIDED BY A HALL WHICH WAS USED TO HOUSE OFFICIAL GUESTS.

THE UPPER TWO FLOORS WERE MORE PRIVATE (WITH THE GENTS AND LADIES SECTIONS SEGREGATED). THE FIRST FLOOR HAD A SEPARATE DINING AND KITCHEN FOR THE FAMILY AND RELATIVES. IT OVERLOOKED THE REAR COURTYARD WHILE OVERLOOKING THE FRONT WERE THE HALLS FOR RELATIVES AND VERY CLOSE GUESTS. THE SECOND FLOOR MAINLY CONSISTED OF HALLS USED AS FAMILY BEDROOMS. THE ENTIRE WADA WAS PLACED ON A LARGE PLOT OF LAND AND WAS SURROUNED BY OTHER SMALLER STRUCTURES LIKE STABLES, CLERKS' OFFICES, SERVANTS' ROOMS, ETC.

LOOKING AT THE WADA ANALYTICALLY, ONE COMES ACROSS A DEFINITE SEQUENCE: FROM THE PUBLIC AREA ONE ENTERS THE SEMI-PUBLIC AREA OF THE WADA,

AND FROM THE SEMI-PUBLIC ONTO THE SEMI-PRIVATE. THEN THERE WAS A VERTICAL DIVISION INTO PRIVATE AREAS AND THE VERY PRIVATE ONES.

PERCEPTION-WISE, THE HUMAN SCALE WAS MAINTAINED THROUGHOUT THE HOUSE EXCEPT THE MAIN DOOR, WHICH WAS MASSIVE TO FACILITATE THE ENTRY OF ELEPHANTS. BUT HUMAN SCALE WAS 'BUILT' INTO THIS TOO - BY HAVING, WITHIN THE MASSIVE DOOR, ANOTHER SMALLER ONE FOR HUMANS.

THE COURTYARD PLAYED AN IMPORTANT ROLE IN INDIAN ARCHITECTURE. THE INDIANS' NEED FOR PRIVACY ALONG WITH OPEN AIR RESULTED IN THE CENTRAL COURTYARD AND FURTHER SEGREGATION OF MALE AND FEMALE SECTIONS OF THE HOUSE LED TO THE EVOLUTION OF TWO COURTYARDS — A PRACTICAL PROPOSITION WHEREIN BOTH, THE NEED OF NATURE COMING INTO THE HOUSE AND THE NEED FOR PRIVACY WERE FULLY SATISFIED.

THE DEMISE OR DOWNFALL OF THE WADAS CAN BE EPITOMISED IN THE MODERN DAY 'CHAWL SYSTEM', SEEN IN URBAN INDIA, WHICH HAS A SIMILAR CONFIGURATION BUT IS A TOTALLY DIFFERENT EXPERIENCE.

- CHAPTER V
  DRAWING A PARALLEL.
  1. BEHAVIORAL DESIGN CRITERIA IN STUDENT HOUSING
  2. AN ARCHITECTURAL SURVEY OF HOW SIX FAMILIES USE SPACE IN THEIR EXISTING HOUSES

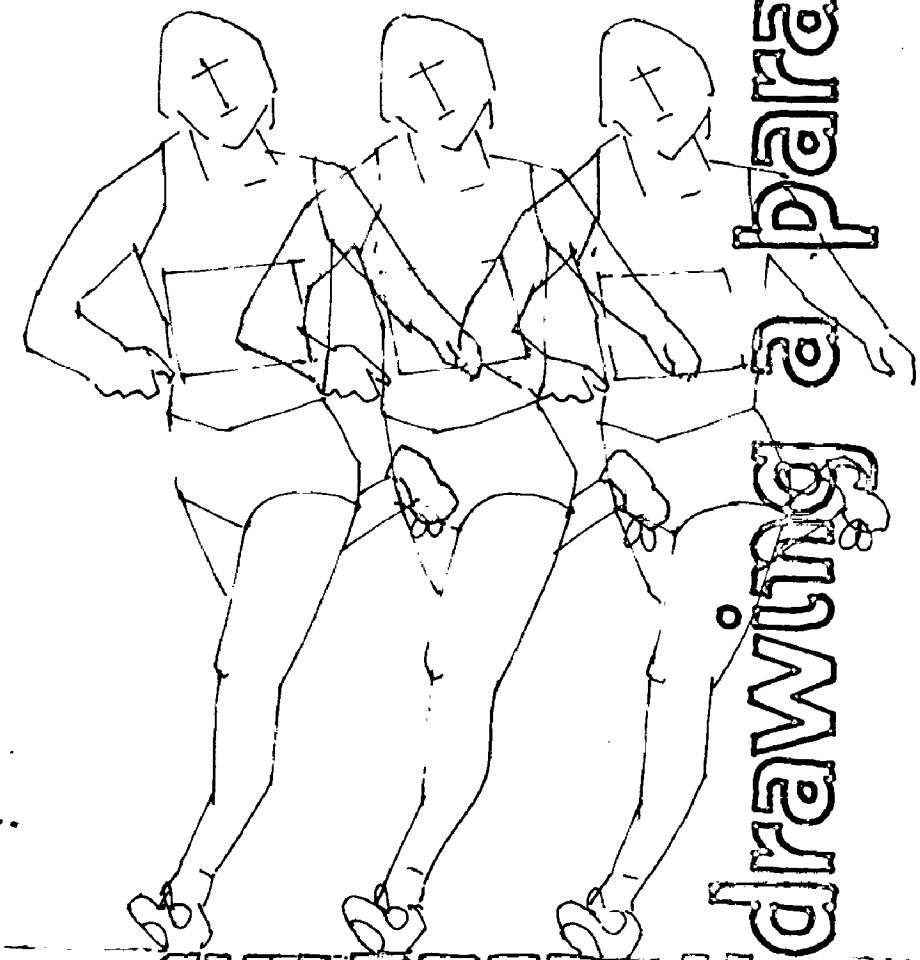
- CHAPTER VI
  THE 'ACTUALITIES'
  - A FEW STRAY THOUGHTS
  - ABOUT THE SURVEY
  - DRAWBACKS
  - SURVEY ANALYSIS
    - GRAPH: 1, SHOWING THE PERCENTAGE OF RESPONDENTS AND THEIR DURATION OF STAY
    - GRAPH: 2, SHOWING THE PERCENTAGE OF SAMPLE AND FAMILY SIZE
    - TABLE: 1A, INDICATING THE RELATIONSHIP BETWEEN SPACES AND ACTIVITIES AND THE DENSITY OF SPACE USE (IN A-TYPE)
    - TABLE: 1B, (IN B-TYPE)
    - GRAPH: 3, SHOWING THE SATISFACTION INDEX OF SPACES.
    - THE LIVING ROOM
    - THE BEDROOMS
    - THE KITCHEN
    - THE BALCONY AND THE PASSAGE

- CHAPTER VII
  THE DERIVATIVES
  - ISSUES AT A GLANCE
  - CONCLUSIONS

# part three

part three

# CHAPTER V drawing a parallel



THE COUPLE OF PAPERS PICKED UP HERE AS CASE STUDIES WERE SELECTED PURELY ON THE MERITS OF THEIR METHODOLOGY. THE FIRST ENTITLED, 'BEHAVIORAL DESIGN CRITERIA IN STUDENT HOUSING' WAS PRESENTED BY WOLFGANG F.E. PREISER, COLLEGE OF ARCHITECTURE, VIRGINIA POLYTECHNIC INSTITUTE, AT THE FIRST ANNUAL CONFERENCE OF THE ENVIRONMENTAL DESIGN RESEARCH ASSOCIATION (EDRA). THE SECOND ENTITLED, 'AN ARCHITECTURAL SURVEY OF HOW SIX FAMILIES USE SPACE IN THEIR EXISTING HOUSES' WAS PRESENTED AT THIRD ANNUAL CONFERENCE OF EDRA, BY LOUIS SAUER AND DAVID MARSHALL OF LOUIS SAUER ASSOCIATES, PHILADELPHIA.

## 1. BEHAVIORAL DESIGN CRITERIA IN STUDENT HOUSING

IN ORDER TO CREATE MORE HABITABLE ENVIRONMENTS IT IS NECESSARY TO UNDERSTAND USERS' ATTITUDES AND PREFERENCES ABOUT ENVIRONMENTS IN WHICH THEY DWELL. AN INTEGRAL PART OF THE BEHAVIORALLY DEFINED DESIGN PROCESS IS THE EVALUATION OF EXISTING ENVIRONMENTS IN REGARD TO USER PERCEPTION AND PERFORMANCE WITHIN A GIVEN SET OF ENVIRONMENTAL FACTORS.

FOR THE QUALITATIVE ASSESSMENT OF THESE FACTORS, MR. PREISER HAS DEVELOPED AN EVALUATIVE TOOL WHICH MEASURES VERBALIZED RESPONSES TO PHYSICAL ENVIRONMENT ON A RELATIVE SCALE OF IMPORTANCE.

THE OBJECTIVE OF MR. PREISER'S STUDY WAS TO MEASURE THE ATTITUDE CONSTRUCT OF THE DEGREE OF ACCEPTANCE, REJECTION OR INDIFFERENCE TOWARD FEATURES OF PHYSICAL ENVIRONMENT (DORMITORIES). HIS METHOD CONSISTS OF TWO MAJOR EXPERIMENT STAGES. STAGE A IS DESIGNED TO HAVE SUBJECTS CONSTRUCT ATTITUDE STATEMENTS ABOUT DORMITORIES. THEN ANOTHER GROUP OF SUBJECTS IS ASKED TO PLACE THESE STATEMENTS ON A RANKING SCALE, THUS DETERMINING CERTAIN FEATURES OF THE ENVIRONMENT. STAGE B IS INTENDED TO VALIDATE THE RESULTS OF STAGE A BY DIFFERENTIATING VARIOUS CATEGORIES OF ENVIRONMENTS (DORMITORIES) QUALITATIVELY. THE SEQUENCE OF STEPS INVOLVED IN THIS METHOD ARE BRIEFLY DESCRIBED SUBSEQUENTLY.

STAGE A

1. CONSTRUCTION OF ATTITUDE STATEMENTS:
BLANK SHEETS OF PAPER WERE DISTRIBUTED TO THE SUBJECTS WHO WERE ASKED TO WRITE BRIEF STATEMENTS WHICH REFLECTED FAVOURABLE, INDIFFERENT OR UNFAVOURABLE ATTITUDES TOWARDS FEATURES OF DORMITORIES AND DORMITORY LIFE. (STATEMENTS WHICH COVERED THE ENTIRE RANGE FROM DESIRABLE TO UNDESIRABLE FEATURES.

2. CORRECTION AND SELECTION OF STATEMENTS FOR SCALING:
THE STATEMENTS WERE CATEGORIZED AND GROUPED INTO 100 DISTINCT CONTENT CATEGORIES WHICH REPRESENTED A CROSS-SECTION OF ALL ATTITUDES EXPRESSED IN FREQUENTLY MENTIONED TOPICS OF STATEMENTS. MAJOR CRITERION FOR THE INCLUSION OF STATEMENTS, AMONG THE 100 WHICH WERE TO BE SCALED, WAS THAT A STATEMENT SHOULD CLEARLY REFLECT CONDITIONS IN DORMITORIES AS THEY WERE EXPERIENCED BY THE INHABITANTS. STATEMENTS WERE DISCARDED IF THEY DID NOT REFER TO DORMITORIES AND THEIR IMPACT ON THE USERS.

3. SCALING OF ATTITUDE STATEMENTS:
THE FIRST OBJECTIVE OF THE SCALING PROCEDURE WAS TO MEASURE THE RELATIVE IMPORTANCE OF CERTAIN FEATURES OF DORMITORIES. THE SECOND WAS TO INVESTIGATE WHETHER THERE IS SUBSTANTIAL AGREEMENT AMONG A NUMBER OF RESPONDEES IN JUDGING THE RELATIVE IMPORTANCE OF THE FEATURES OF THE ENVIRONMENT. THE SUBJECTS WERE INSTRUCTED TO PLACE EACH STATEMENT ON AN 11-POINT SCALE WITH EQUAL APPEARING INTERVALS RANGING FROM -5 TO +5. THE NEGATIVE HALF OF THE CONTINUUM WAS TO REPRESENT STATEMENTS WHICH REFLECT UNDESIRABLE FEATURES OF DORMITORIES, WHEREBY -5 REPRESENTED EXTREMELY UNDESIRABLE FEATURES, AND -3 FAIRLY UNDESIRABLE. ACCORDINGLY, THE POSITIVE HALF REPRESENTED DESIRABLE FEATURES. THE SCALE POSITIONS AROUND THE MID-POINT (ZERO=0) WERE TO REFLECT INDIFFERENT ATTITUDES.

## STAGE B

1. STATISTICAL EVALUATION:
STATEMENTS WERE SORTED INTO CATEGORIES ACCORDING TO THEIR MEAN VALUES AS INDICATORS OF IMPORTANCE OF THE FEATURE CONTAINED IN THE STATEMENT. IN ORDER TO DETERMINE THE DEGREE OF SCALABILITY OF THE STATEMENTS, THEIR STANDARD DEVIATIONS WERE EXAMINED.

2. SELECTION OF STATEMENTS FOR VALIDATION:
FOR A FINAL VALIDATION PROCEDURE, 25 STATEMENTS WERE SELECTED, ABOUT HALF OF WHICH REPRESENTED POSITIVE AND THE OTHER HALF NEGATIVE FEATURES OF DORMITORIES. ONLY STATEMENTS WITH LOW STANDARD DEVIATION, I.E. WHICH HAD ACHIEVED CONSIDERABLE AGREEMENT AMONG THE JUDGING SUBJECTS, WERE INCLUDED.

3. VALIDATION PROCEDURE:
IT WAS TO PROVE THAT THE METHOD OF MEASURING VERBALIZED RESPONSE TO PHYSICAL ENVIRONMENT CAN BE USED AS A RELIABLE EVALUATION TOOL. THE 25 STATEMENTS (SELECTED ABOVE) WERE INCLUDED IN A FINAL VALIDATION QUESTIONNAIRE. THESE STATEMENTS WERE PRESENTED IN A RANDOM MANNER. THE RESPONDENTS WERE TO AGREE OR DISAGREE WITH THE 25 STATEMENTS CONTAINED IN THE QUESTIONNAIRE.

## THE SUBJECTS

THE SUBJECTS WHO PARTICIPATED IN THE EXPERIMENTS FOR STAGE A WERE STUDENTS ATTENDING VIRGINIA POLYTECHNIC INSTITUTE. MOST OF THEM WERE 19 TO 20 YEARS OLD AND 15 PER CENT WERE FEMALE. ALL THE SUBJECTS HAD EXPERIENCED DORMITORY LIFE AND 95 PER CENT OF THEM WERE LIVING IN DORMITORIES AT THE TIME OF THE EXPERIMENTS. THE SUBJECTS FOR STAGE B WERE MALE STUDENTS WHO LIVED IN THREE DIFFERENT DORMITORIES AT THE VIRGINIA POLYTECHNIC INSTITUTE. 157 SUBJECTS PARTICIPATED IN STAGE A1, 191 IN A3, AND 215 IN B3.

THE RESULTS YIELDED INFORMATION ABOUT FEATURES OF DORMITORIES WHICH WERE RELEVANT AND MATTERED TO THEIR USERS, IN THE LANGUAGE SPOKEN BY DORMITORY INHABITANTS.

ANY DESIGN CRITERIA OBTAINED THROUGH THE METHOD OF RELEVANCE SCALES ARE CHARACTERISTIC OF THE PARTICULAR ENVIRONMENT AND SUBJECTS UNDER INVESTIGATION AND CANNOT BE GENERALIZED; THIS IS ONE OF THE MANY CONCLUSIONS DRAWN BY THE AUTHOR. HE ALSO RECOMMENDS THE TESTING OF HIS METHOD IN MORE DIFFERENTIATED ENVIRONMENTS FOR THE PURPOSE OF FURTHER VALIDATION.

# 2. AN ARCHITECTURAL SURVEY OF HOW SIX FAMILIES USE SPACE IN THEIR EXISTING HOUSES

THIS PAPER ATTEMPTS TO RECORD THE HOUSING NEEDS OF THE POTENTIAL USERS. IT IS THE RESULT OF THAT SURVEY WHICH WAS TIMED TO TAKE ADVANTAGE OF A UNIQUE SITUATION. THE WORKING DRAWINGS FOR A HOUSING PROJECT WERE VIRTUALLY COMPLETED, BUT BECAUSE OF INCREASED CONSTRUCTION COSTS, THE ESTIMATES WERE CONSIDERABLY OVER THE BUDGET AND IT WAS APPARENT THAT THE ONLY MEANS OF REDUCING COSTS WAS A REDESIGN. THE ARCHITECTS WERE PREPARED TO ACCEPT ENTIRELY NEW DESIGN CRITERIA AND FELT THAT THIS WAS AN IMPORTANT OPPORTUNITY TO TEST THE EFFECTIVENESS OF RESPONDING TO WHAT THE POTENTIAL USER SAYS IT WANTS AND NEEDS.

LOUIS SAUER AND DAVID MARSHALL FELT, THE RESULTS FROM EVEN A LIMITED SURVEY WOULD HELP THEM DETERMINE NEEDS FOR SIZE, LOCATION AND USE OF SPACE IN THE MAIN LIVING AREAS OF THE HOUSES. THEY USED THE SURVEY AS A DEVICE TO OBJECTIFY THEIR INTUITIONS ABOUT OCCUPANT USE AND PREFERENCE. IN ADDITION, THEY SAW IT AS A MEANS OF ESTABLISHING POST-OCCUPANCY EVALUATION CRITERIA WHICH, AFTER CONSTRUCTION AND OCCUPANCY, COULD PROVIDE MEANINGFUL FEEBACK AND A CHECK ON THEIR DESIGN EVALUATION.

SIX FAMILIES WERE COVERED IN THE COURSE OF THE SURVEY. THE ARCHITECT INTERVIEWER CONDUCTED EACH INTERVIEW ON AN INFORMAL VERBAL BASIS, SEEKING ANSWERS TO QUESTIONS WITHOUT FORCING THE SITUATION INTO A QUESTION AND ANSWER FORMAT. THUS THE DESIRED INFORMATION OUTLINE SERVED ONLY AS A STRUCTURE AGAINST WHICH THE INTERVIEWER SHAPED THE CONVERSATION BUT NOT AS THE LITERAL FORMAT OF THE INTERVIEW. THE DESIRED INFORMATION WAS SOUGHT ON A ROOM-TO-ROOM (SPACE-TO-SPACE) BASIS VIZ. KITCHEN, EATING SPACE, LIVING, BEDROOMS, BATHROOMS, OUTSIDE SPACE, STORAGE SPACE AND COMMUNITY FACILITIES. A SMALL CARDBOARD MODEL WAS ALSO USED IN QUESTIONING PEOPLE ABOUT LOCATION OF SPACE AND SIZE PREFERENCE. (THIS HELPED THE ARCHITECTS TO WEIGH THEIR OWN INTENTIONS AGAINST USERS' DESIRES)

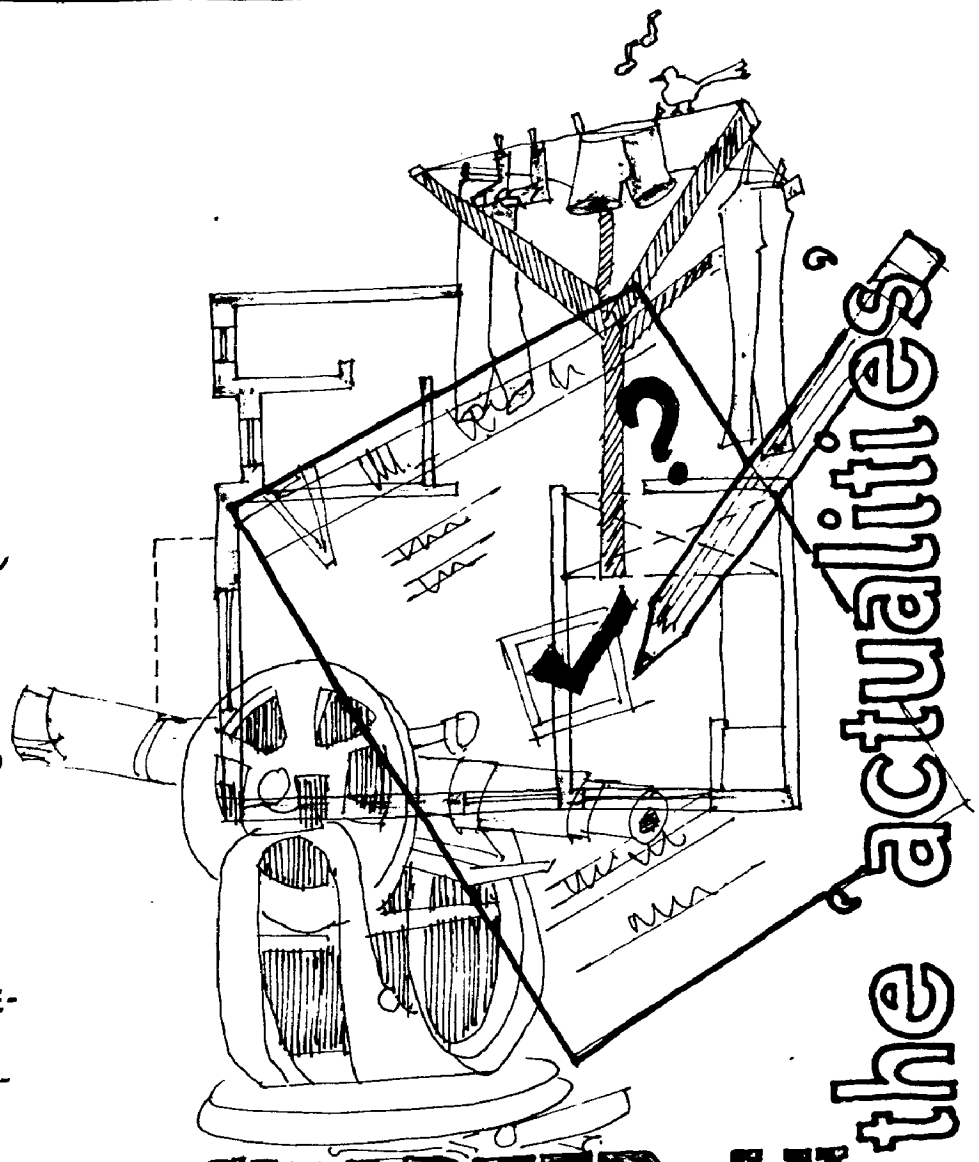
THE LIMITATIONS OF INTERVIEWING SUCH A SMALL SAMPLE WERE FULLY REALIZED, BUT TIME (THE LACK OF IT), AND INABILITY TO IDENTIFY ELIGIBLE FAMILIES, PREVENTED LOUIS SAUER AND DAVID MARSHALL FROM EXPANDING THE STUDY TO OBTAIN RESULTS ON OTHER RELEVANT ISSUES. IN AN EFFORT TO REDUCE THE SCOPE OF THE SURVEY, THE QUESTIONS WERE DIRECTED TO OBTAIN THE MAXIMUM AMOUNT OF INFORMATION REGARDING USE AND NEEDS RELATED TO THE KITCHEN, ITS ADJACENT LIVING AREA AND ITS IMMEDIATE RELATION TO THE OUTSIDE.

DESPITE THE LIMITATIONS, THE MEN CONDUCTING THE SURVEY HAD SPECIAL EXPERIENCE DUE TO THEIR SPECIAL INTERESTS AS ARCHITECTS, IN THE SPACE THAT RELATES TO HOW PEOPLE LIVE. THIS WAS PRECISELY THE REASON WHY THEY WERE, ALSO, ABLE TO DIFFERENTIATE THEIR OWN VIEW POINT FROM THOSE SURVEYED.

# A FEW STRAY THOUGHTS....

TODAY HOUSING RANKS AS ONE OF THE FOREMOST CONTEMPORARY PROBLEMS IN ARCHITECTURE. HOUSING DETERMINES THE CHARACTER OF THE ENVIRONMENT. TO BE ILL-HOUSED IS MAN'S FIRST OBSTACLE TO A HAPPY EXISTENCE.

TO DATE HOUSING HAS BEEN LEFT ALMOST COMPLETELY TO PRIVATE INITIATIVE BUT NOW IT HAS BECOME ONE OF THE MAIN CONCERN-CAUSING ISSUES TO GOVERNMENTAL AND PUBLIC BODIES. INSPITE OF THE EFFORTS MADE BY ARCHITECTS, PLANNERS, SOCIOLOGISTS AND OTHERS TO UNDERSTAND THE PROBLEMS ENCOUNTERED IN THE FIELD OF HOUSING, THE KNOWLEDGE ABOUT THE QUESTIONS AND PHENOMENA PECULIAR TO DWELLINGS IS RATHER MEAGRE. IN CASE OF OTHER BUILDING TYPES LIKE INDUSTRIES, HOSPITALS, AIRPORTS, ETC. IT IS REASONABLY EASY TO COLLECT DECISIVELY IMPORTANT DATA. THIS, UNFORTUNATELY, IS NOT TRUE IN THE CONTEXT OF HOUSING. THE NUMBER OF VARIABLES IS UNLIMITED; CONSEQUENTLY A PERSON DOES NOT BECOME AN EXPERT ON THE PROBLEM OF HOW TO LIVE DUE TO THE INFINITE VARIATIONS POSSIBLE RIGHT FROM REGION TO REGION DOWN TO THE INDIVIDUAL LEVEL.




# CHAPTER VI the actualities

BUT WHAT ABOUT THE ARCHITECTS, DO THEY NOT LIVE-IN HOUSES? DOES NOT THE EXPERIENCE ADEQUATELY EQUIP THEM TO DESIGN HOUSES? APART FROM PERSONAL EVALUATION ARE THEY NOT CONSTANTLY REMINDED BY THEIR WIVES ABOUT THE DRAWBACKS IN THE LAYOUT OF THE KITCHEN, THE SCARCITY OF CUPBOARDS AND OTHER THINGS OF IMPORTANCE? ALL THIS PERSONAL EXPERIENCE GATHERED BY THE ARCHITECTS IS FAR FROM ENOUGH, WHAT THEY SHOULD HAVE IS BASIC INFORMATION ABOUT THE NEEDS AND PREFERENCES OF THE PEOPLE FOR WHOM THEY SHALL BE DESIGNING.

IN THE FIELD OF PUBLIC AND MASS HOUSING THE TRADITIONAL RELATIONSHIP BETWEEN THE ARCHITECT AND THE CLIENT, IN WHICH THE TWO MEET FACE TO FACE TO IDENTIFY NEEDS AND PREFERENCES, AND TO DISCUSS DESIGN SOLUTIONS, NO LONGER OPERATES. THE INDIVIDUAL ARCHITECT DOES NOT HAVE THE TIME TO UNDERTAKE A FULL ASSESSMENT OF THE USER-REQUIREMENTS IN EACH AND EVERY CASE.

FURTHERMORE, ALL HOUSING PROPOSED BY PUBLIC ACTION MUST PASS RESTRICTIVE BUDGETS AND PROGRAM REQUIREMENTS BEFORE HOUSES CAN BE BUILT AND OCCUPIED. THE ABSENCE OF RELEVANT ARCHITECTURAL PROGRAMS MAKES IT DIFFICULT TO DETERMINE WHICH ELEMENTS OF DESIGN MUST BE RETAINED AND WHICH CAN BE ELIMINATED WITHOUT SACRIFICING THE NEEDS OF THE DWELLERS, SINCE THESE PROGRAMS ARE ESTABLISHED WITHOUT CONSULTING PEOPLE THAT MIGHT BE OCCUPYING THE HOUSES AND THEREFORE DESIGNS ARE OFTEN NOT RELATED TO THE LIFE-STYLE OF THE FAMILIES OR THE LIVING PATTERNS OF THE COMMUNITY.

DESIGN IS ALL THE MORE DIFFICULT BECAUSE IT MUST SATISFY SEVERAL CRITERIA. THESE DESIGN (AND EVALUATION) CRITERIA CONSTITUTE A HIERARCHY. FIRST A SPACE MUST BE SAFE AND HEALTHY. A SPACE MUST ENABLE USERS TO PERFORM THEIR FUNCTIONS. A DESIGN SHOULD NOT CAUSE DISCOMFORT. FINALLY A DESIGN MUST BE AESTHETICALLY PLEASING. (BENNETT, 1977, P.11). THE OCCUPANTS SHOULD NOT ONLY BE KEPT ALIVE AND UNHARMED, THEY SHOULD BE ABLE TO PERFORM THEIR INTENDED FUNCTIONS AS WELL. A HOME IS BUILT TO ENABLE PEOPLE TO COOK, EAT, SLEEP AND SO ON. BUT JUST ABOUT ANYTHING PEOPLE COME INTO CONTACT WITH CAN BE UNCOMFORTABLE – LIGHTING (GLARE), SOUND (ANNOYING NOISE), ETC. GENERALLY WE ARE TRYING TO PREVENT DISCOMFORT RATHER THAN CREATE COMFORT AND, MORE OFTEN THAN NOT, PEOPLE TEND TO RESIGN THEMSELVES TO THE DISCOMFORT.

IT IS IN THIS CONTEXT THAT THE PRESENT STUDY WAS UNDERTAKEN – WITH A VIEW TO ASSESS THE WAY IN WHICH THE OCCUPANTS PERCEIVE DESIGNED SPACES AND THE EXTENT OF THEIR SATISFACTION TOWARDS THEM (SPACES).

# ABOUT THE SURVEY

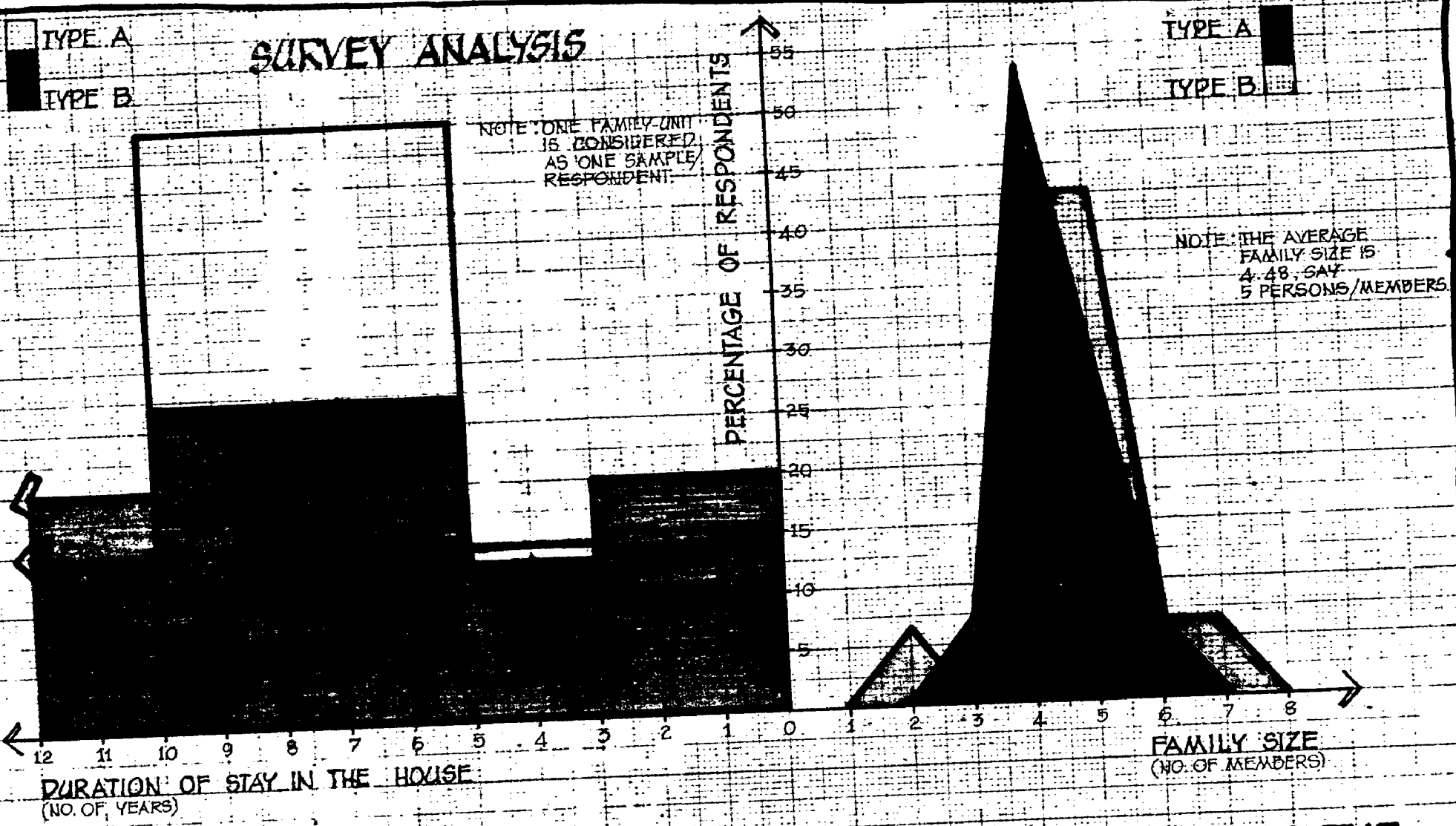
A AND B CATEGORY OFFICERS' QUARTERS OF THE RESERVE BANK OF INDIA AT SANTACRUZ, BOMBAY WERE SELECTED FOR THE PURPOSE OF THE STUDY. THESE RESIDENCES WERE PLANNED AND CONSTRUCTED IN THE SIXTIES. THERE ARE A TOTAL OF SIX BUILDINGS, GROUPED AROUND A GARDEN-CUM-PLAY SPACE (AS SHOWN IN THE SITE PLAN). EACH BUILDING IS A GROUND PLUS THREE STOREYED STRUCTURE WITH FOUR FLATS PER FLOOR. THE TOTAL NUMBER OF DWELLINGS IS 92, OF THESE 44 ARE OF THE A-TYPE AND 48 OF THE B-TYPE. (A DISPENSARY AND A CO-OPERATIVE STORE ON THE GROUND FLOOR OF A1 ACCOUNT FOR THE FOUR FLATS WHICH ARE SHORT IN TYPE-A). THE SURVEY COVERED QUITE A WIDE CROSS-SECTION OF PEOPLE, THE ONLY BINDING FACTOR BEING – EVERY FAMILY HAD ONE MEMBER (USUALLY THE HEAD OF THE FAMILY) WHO WAS AN OFFICER WITH THE RESERVE BANK OF INDIA. (THIS, IN FACT, ENSURED A STANDARD PAY-SCALE AND A CERTAIN MINIMUM EDUCATIONAL QUALIFICATION.

A MODIFIED VERSION (TO SUIT THE NEEDS OF THE STUDY) OF THE QUESTIONNAIRES USED IN SIMILAR STUDIES AT THE UNIVERSITY OF ROORKEE (SWARN PRATAP AND VIJAY KUMAR) AND BY THE CENTRAL BUILDING RESEARCH INSTITUTE, ROORKEE (DATTA AND LAL, 1967) WAS PREPARED. THE QUESTIONNAIRES WERE DISTRIBUTED TO EACH OF THE 92 DWELLINGS. OF THESE 58 WERE FILLED (PRESUMABLY BY THE HEAD OF THE FAMILY) AND RETURNED. THEN INFORMAL INTERVIEWS WERE HELD WITH THE HOUSEWIVES – ABOUT 20, AT RANDOM, AND WITH A FEW CHILDREN. THE VIEWS AND OPINIONS USUALLY CORROBORATED THOSE ALREADY STATED IN THE RESPONSES TO THE QUESTIONNAIRES, MARKED DEVIATIONS AND IMPORTANT SUGGESTIONS WERE, HOWEVER, INCORPORATED IN THE FINDINGS. SOME OF THE RESIDENCES WERE ALSO PHOTOGRAPHED TO HIGHLIGHT SIGNIFICANT POINTS.

# DRAWBACKS

THE DIFFICULTIES OF TRYING TO OBTAIN RESULTS RELEVANT TO AN ARCHITECT WERE COMPOUNDED BY THE FACT THAT FEW PEOPLE CAN VISUALIZE SPACE FROM ABSTRACT DESCRIPTION, MAKING IT VIRTUALLY IMPOSSIBLE FOR THE IDEA TO GET THROUGH. SECONDLY, SUCH A STUDY ON ITS OWN, IS INCAPABLE OF SOLVING THE PROBLEM OF HOW A DWELLING OUGHT TO BE, BUT AT LEAST IT CAN HELP ONE UNDERSTAND AS TO HOW IT OUGHT NOT TO BE. MOREOVER IN A SOCIETY WHERE THE RATE OF CHANGE IS FAIRLY RAPID, USERS' NEEDS DO NOT REMAIN STATIC. THE FINDINGS CAN THEREFORE BE HELD VALID ONLY FOR A LIMITED PERIOD AND THEY ARE CHARACTERISTIC OF THE SELECTED RESIDENTIAL ENVIRONMENT.

# SURVEY ANALYSIS




GRAPH: 1, SHOWING THE PERCENTAGE OF RESPONDENTS AND THEIR DURATION OF STAY.

GRAPH: 2, SHOWING THE PERCENTAGE OF SAMPLE AND FAMILY SIZE.

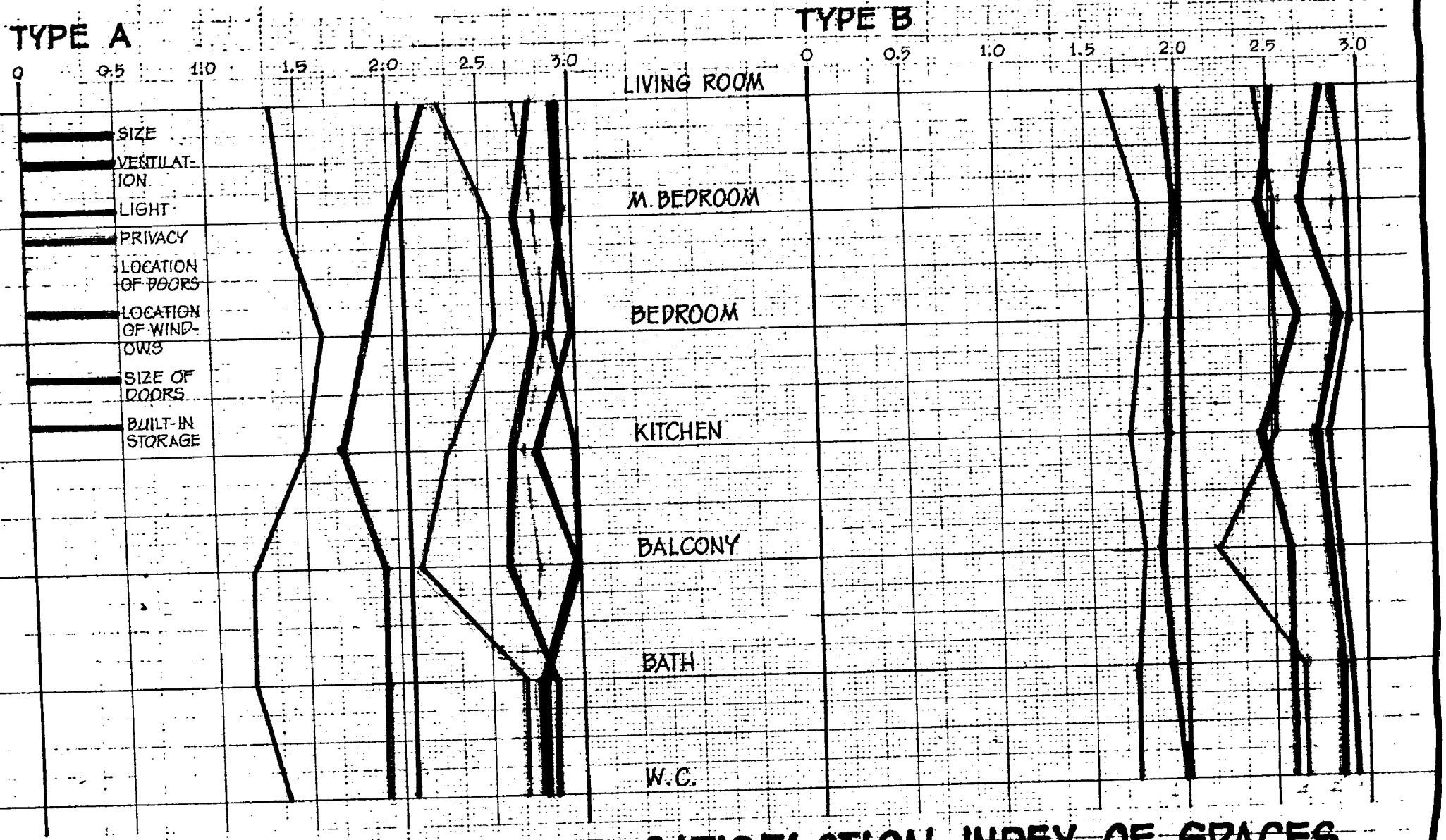
# TABLE: IA, INDICATING THE RELATIONSHIP BETWEEN SPACES AND ACTIVITIES, AND THE DENSITY OF SPACE USE (IN A TYPE)

| ACTIVITIES | LIVING | K.BEDROOM | BEDROOM | KITCHEN | BALCONY | BATH | W.C | PASSAGE | LOFT |
|---|---|---|---|---|---|---|---|---|---|
| 1 STUDYING | | | | | | | | | |
| 2 RELAXING | | | | | | | | | |
| 3 SLEEPING | | | | | | | | | |
| 4 DRESSING | | | | | | | | | |
| 5 DINING | | | | | | | | | |
| 6 COOKING | | | | | | | | | |
| 7 STORING UTENSILS | | | | | | | | | |
| 8 CLEANING UTENSILS | | | | | | | | | |
| 9 DISPOSING GARBAGE | | | | | | | | | |
| 10 WASHING CLOTHES | | | | | | | | | |
| 11 DRYING CLOTHES | | | | | | | | | |
| 12 IRONING CLOTHES | | | | | | | | | |
| 13 ENTERTAINING GUESTS | | | | | | | | | |
| 14 ACCOMODATING GUESTS | | | | | | | | | |
| 15 STORING OTHER ARTICLES | | | | | | | | | |
| 16 WORSHIPPING | | | | | | | | | |
| 17 EXERCISING | | | | | | | | | |
| 18 HOBBIES | | | | | | | | | |

ROOMS/SPACES

LIGHT USE · MODERATE USE · HEAVY USE · DOMINANT USE

TABLE: 1B, INDICATING THE RELATIONSHIP BETWEEN SPACES AND ACTIVITIES, AND THE DENSITY OF SPACE USE (IN B-TYPE)




# GRAPH: 3, SHOWING THE SATISFACTION INDEX OF SPACES. [WITH RESPECT TO SIZE, LIGHT, ETC. (AN OVERALL MEAN)]

(ON A 3-POINT SCALE, THE FIRST REACTION WAS ASSIGNED 3, THE SECOND 2, AND THE THIRD 1 POINT. KINDLY REFER APPENDIX D, PAGE NO. 67)

# THE LIVING ROOM

## ISSUES: FUNCTIONAL

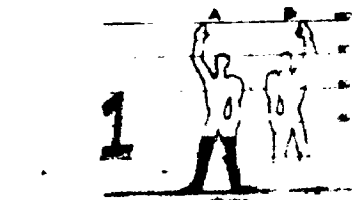
- LIVING ROOM ACTIVITIES NUMEROUS DEPENDING ON THESE AND ON THE SIZE OF THE FAMILY. PEOPLE REGARD IT AS EITHER LARGE OR SMALL. YET ANOTHER CONSIDERS USING IT FOR DINING TOO. THEN IT DOES NEED TO BE SMALL (ESP. IN THE B-TYPE).
- IN A NUMBER OF CASES (OF BOTH A & B TYPE) THE EXTERNAL WALL OF THE LIVING ROOM FACES THE NORTH. THIS DOES NOT ALLOW THE ENTRY OF THE SUN, WHICH INCIDENTALLY HAS BENEFICIAL MEDICAL PROPERTIES.
- DUE TO THE LARGE SKY COMPONENT, INTENSE WINDOW GLARE RESULT IN UNCOMFORTABLE GLARES, SERVING NO VENTILATION FUNCTION EITHER, SINCE MOST LIVING ROOMS ARE LEEWARD FACING.
- WINDOWS ARE INCONVENIENTLY LOCATED, AND THEY, QUITE OFTEN, REINFORCE ONE WALL TOTALLY UNUSEABLE.
- IN THE B-TYPE HOUSES, A PART OF THE LIVING IS CONVERTED INTO A PASSAGE - LEADING FURTHER ON INTO THE HOUSE.
- LACK OF STORAGE SPACE LEADS TO UNWANTED ARTICLES BEING DUMPED ONTO BALCONY SUNSHADES.
- LIVING ROOMS OPEN DIRECTLY IN FRONT OF STAIRCASES - HIGHLY UNDESIRABLE.

## ISSUES: PERCEPTUAL

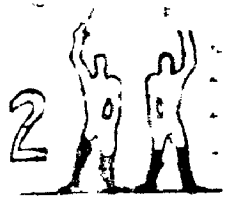
- FAULTY LOCATION RESULTS IN LOSS OF PRIVACY - SO DOES OPENING OF ENTRANCE IN STAIR LOBBY: VISUAL PERCEPTION.
- ALTHOUGH DINING IS CARRIED OUT HERE, THE IDEA OF LIVING-DINING WAS EMPHATICALLY REJECTED BY HOUSEWIVES: PERHAPS
- AUDITORY PRIVACY IS NON-EXISTENT DUE TO THE PROXIMITY OF B-TYPE BLOCKS: AUDITORY-PERCEPTION.
- TO AVOID THERMAL DISCOMFORT, OPENINGS IN OTHER ROOMS HAVE TO BE LEFT OPEN: THERMAL-PERCEPTION.

## OBSERVATIONS

LIVING SPACES SHOULD BE OPTIMIZED. FULL VOLUMETRIC SPACE UTILIZATION IS ESSENTIAL. POSITIONING OF EXTRA ACTIVITIES SHOULD BE RATIONALIZED AND FIXED.
SLEEPING FOLDING FURNITURE CAN BE USED TO INCREASE USE-EFFICIENCY OF SPACES.
IT SHOULD BE A PRACTICE TO PREPARE PLANS WITH A FEW ALTERNATE FURNITURE ARRANGEMENTS TO SUIT DIFFERENT FAMILY SIZES.
VISUAL AND AUDITORY PRIVACY SHOULD BE ENSURED WITH PROPER SITING OF BLOCKS.
OPENINGS SHOULD BE PRUDENTLY POSITIONED SO THAT THEY REINFORCE A MINIMUM WALL AREA FAVOURABLE. AT THE SAME TIME THERE SHOULD BE EASE OF OPERATION.



1. PERCENTAGE OF A TYPE RESPONDENTS WHO FEEL THEIR LIVING ROOM TOO LARGE



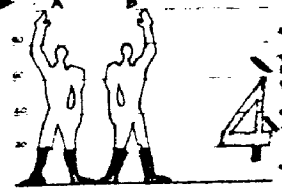
2. PERCENTAGE OF B TYPE SAMPLE FEEL THE



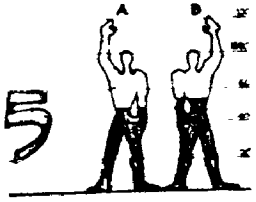





3. B TYPE HOUSES THAT ARE PERCEIVED TO BE LACKING PRIVACY (WITH REFERENCE TO LIVING ROOM).

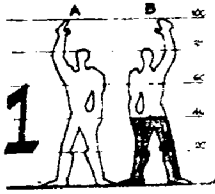


4. PERCENTAGE OF SAMPLE REGARDING WINDOW LOCATION IN THE LIVING AS INCONVENIENT.



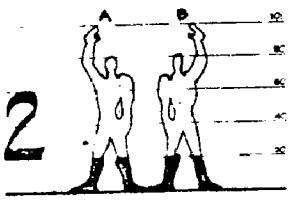
5. PERCENTAGE OF PEOPLE COMPLAINING ABOUT THE DEFICIENCY OF BUILT-IN STORAGE.

# RESPONSES

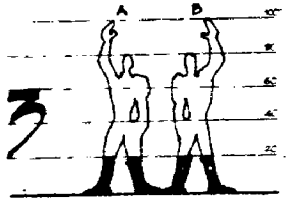



1. PERCENTAGE OF RESPONDENTS WHOSE BEDROOM/S LACK PRIVACY

2. PERCENTAGE OF SAMPLE WHO WANT MORE BUILT-IN STORAGE.




3. PERCENTAGE OF SAMPLE REGARDING THEIR WINDOW LOCATIONS AS INCONVENIENT







## ISSUES: FUNCTIONAL

- DEPENDING ON THE FAMILY SIZE AND NEEDS OF THE INDIVIDUAL FAMILY THERE IS A LOT OF USE-CONVERSION OF SPACES. FOR E.G. IN A-TYPE, MASTER BED IS BEING USED AS A CHILDREN'S BED; WHILE IN B-TYPE, A FAMILY OF TWO CARRIES OUT ALL ITS SUNDRY ACTIVITIES IN THE MASTER BED - THEIR BED BEING ACCOMODATED IN THE OTHER BEDROOM. ON THE OTHER HAND, A FAMILY OF SEVEN HAS PUT IN AN EXTRA BED (IN ADDITION TO THE DOUBLE BED) IN THE MASTER BEDROOM
- PEOPLE ALSO USE THE BEDROOM AS A DINING ROOM, A STUDY AND A PLACE OF WORSHIP, ALL IN ADDITION TO THE PRIMARY ACTIVITY OF SLEEPING.
- MOREOVER, IN THE ABSENCE OF A SPECIFIC DRYING AREA FOR CLOTHES PEOPLE USE THE BEDROOM. USED CLOTHES ARE ALSO HUNG-UP HERE.
- FAULTY LOCATION MAKES WINDOW OPERATION A DIFFICULT JOB, UNLESS BEDS ARE PLACED AWAY FROM THE WALLS, WHICH IS NOT POSSIBLE IN ALL CASES.

## ISSUES: PERCEPTUAL

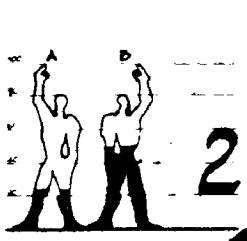
- AS THE BEDROOMS PROVIDE THE NECESSARY ENVIRONMENT, PEOPLE USE IT FOR STUDYING AND WORSHIPPING: BEHAVIORAL ASPECT.
- IN B-TYPE - MASTER BED BEING ADJACENT TO AND ON THE SAME SIDE AS THAT OF THE LIVING, THE ISSUE OF PRIVACY FROM NEIGHBOURING BLOCKS STANDS: VISUAL PERCEPTION AND PSYCHOLOGICAL ISSUE.
- STUFFY CONDITIONS PREVAIL IN THE B-TYPE BEDROOM SINCE ONLY ONE WINDOW HAS BEEN PROVIDED: THERMAL PERCEPTION ISSUE.

## OBSERVATIONS

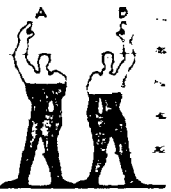
USE CONVERSION OF SPACES CAN BE ALIGHTED BY DEFINING CLEARLY THE SPACES AND THE ACTIVITIES TO BE CARRIED OUT THEREIN.
THE DESIGN OF ONE OF THE TWO BEDROOMS AS A POINT OF MULTI-PURPOSE SPACE CAN OFFSET USE CONVERSION.

PROPER PRIVACY NEEDS TO BE MAINTAINED.
THOUGHTFUL LOCATION OF OPENING CAN SOLVE ALMOST SOLVE A LOT OF HARSHIPS.
WELL PLANNED BUILT-IN STORAGE MAKING FULL USE OF THE CUBIC CONTENTS OF THE ROOM IS EXTREMELY ESSENTIAL.

# THE BEDROOMS

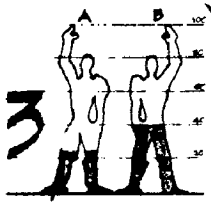



2. PERCENTAGE OF SAMPLE WHO FEEL THAT THEIR KITCHEN IS INADEQUATELY VENTILATED

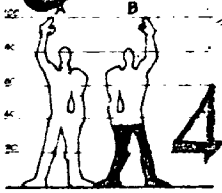



[illegible] PREFER [illegible] KITCHEN

3. PERCENTAGE OF RESPONDENTS WHO WANT MORE STORAGE SPACE IN THEIR KITCHEN




4. PERCENTAGE OF THE SAMPLE WHO FEEL THAT THE KITCHEN LACKS PRIVACY (B-TYPE)







# ISSUES: FUNCTIONAL

- DINING ACTIVITY IS PREFERRED IN THE KITCHEN OR AS AN EXTENSION OF THE KITCHEN BUT IN THIS CONTEXT THE KITCHEN IS TOO SMALL.
- VENTILATION IS HIGHLY INADEQUATE, DUE TO THE ABSENCE OF HIGH-LEVEL VENTILATORS AND EXHAUST FANS. SMOKE STAGNATES AT THE CEILING.
- LACK OF ADEQUATE STORAGE SPACE OFTEN LEADS TO A CLUTTERED KITCHEN.
- EXCESSIVE LIGHT FROM THE PLATFORM-LEVEL WINDOW PREVENTS THE HOUSEWIFE FROM KNOWING WHETHER THE BURNER IS ON OR OFF.
- IN B-TYPE, CLOTHES-DRYING PROVISION IS IN THE KITCHEN—HIGHLY UNDESIRABLE.
- HOUSEWIVES WANT A SINK IN ADDITION TO THE WASHING PLACE AND PROPER GARBAGE DISPOSAL FACILITIES TOO.

# ISSUES: PERCEPTUAL

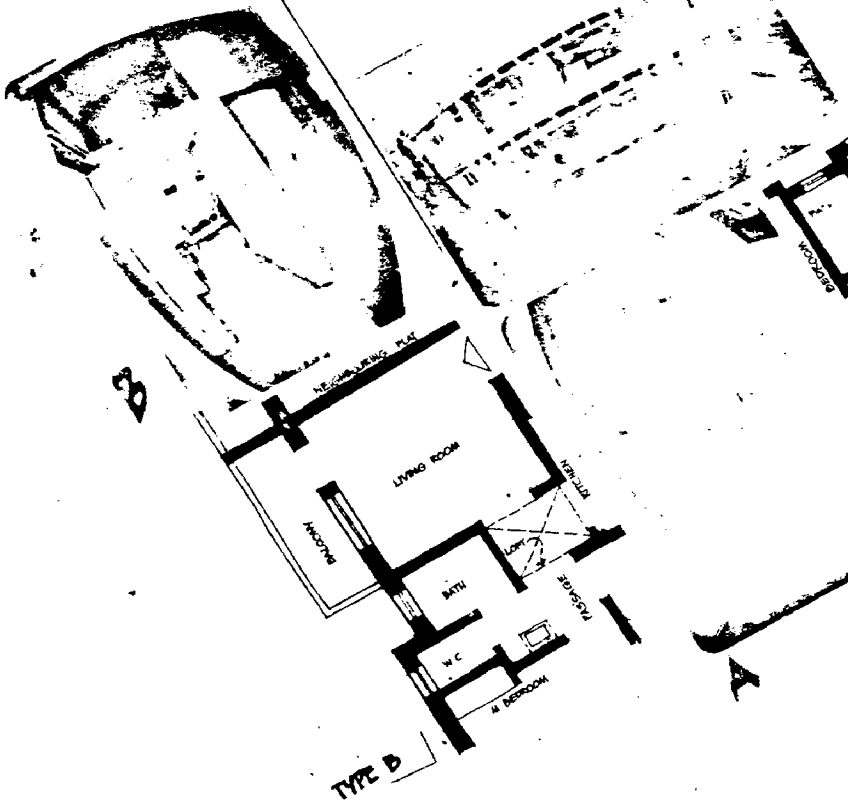
- HOUSEWIVES ARE DISSATISFIED WITH A MAJORITY OF THE KITCHEN ASPECTS.
- THE KITCHEN IS TOO SMALL TO ACCOMODATE THE DINING ACTIVITY. THIS RESULTS IN THE SPILLING OUT OF THE DINING ACTIVITY AND A CONSEQUENT INCREASE IN THE WORKLOAD OF THE LADY OF THE HOUSE: AN IMPORTANT BEHAVIORAL ISSUE.
- GLARING LACK OF OLFACTORY AND VISUAL PRIVACY.
- HAPHAZARD STORAGE AND HANGING CLOTHES GIVE AN UNAESTHETIC LOOK: VISUAL DECEPTION ISSUE
- INCREASE IN THERMAL DISCOMFORT DUE TO IMPROPER VENTILATION.

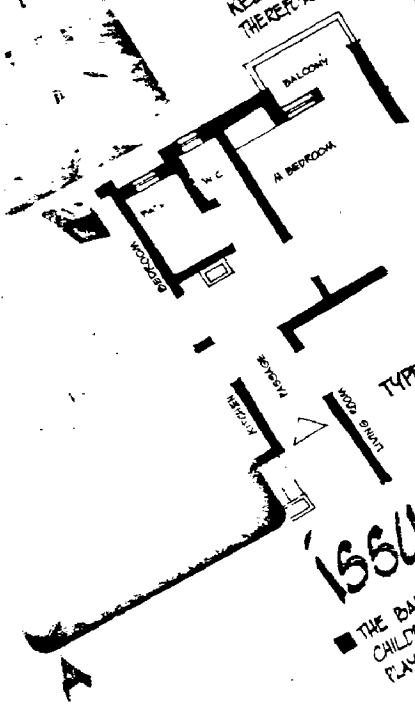
# OBSERVATIONS

AS FAR AS POSSIBLE, DINING ACTIVITY SHOULD BE ACCOMMODATED IN THE KITCHEN WITH THE JUDICIOUS USE OF SLIDING FOLDING FURNITURE.
PROVISION OF A SINK IS DESIRABLE.
STORAGE SPACE SHOULD BE SUFFICIENT.
PROPER GARBAGE DISPOSAL SYSTEM SHOULD BE WORKED OUT.
DRYING OF CLOTHES IN THE KITCHEN SHOULD BE AVOIDED.
VISUAL AND OLFACTORY PRIVACY SHOULD BE CAREFULLY MAINTAINED.

# THE KITCHEN

# THE BALCONY AND THE PASSAGE




## ISSUES: FUNCTIONAL

- APART FROM WHAT IT IS ACTUALLY MEANT FOR, PEOPLE USE THE BALCONIES FOR A NUMBER OF OTHER ACTIVITIES VIZ. DRYING CLOTHES, DRYING FOOTSTUFFS, GROWING PLANTS, KEEPING GARBAGE CANS AND FOOTWEAR AND FOR DUMPING UNWANTED ARTICLES. IT IS NO SURPRISE THEREFORE, THAT THEY FIND THEIR BALCONIES RATHER TOO SMALL
- BALCONIES LACK PRIVACY. BUT THEN, IN THIS RESPECT THEY ARE UNIQUE ENTITIES.
- IN SOME CASES PEOPLE CANNOT DRY ANYTHING IN THEIR BALCONY SIMPLY BECAUSE IT GET NO DIRECT SUNLIGHT AT ALL.
- IN THE A-TYPE, THE WASH BASIN IS PROVIDED IN THE PASSAGE-SMACK IN FRONT OF THE MAIN ENTRANCE AND SO IS THE PROVISION FOR DRYING CLOTHES. BOTH ARE EXTREMELY UNTENABLE
- IN THE ABSENCE OF PROPER GARBAGE DISPOSAL FACILITIES, PEOPLE USE THE PASSAGE (ALONGWITH THE BALCONY AND KITCHEN) FOR KEEPING GARBAGE BINS.
- THE PASSAGE HAS ITS OWN PROBLEMS (WHICH ARE QUITE OBVIOUS) OF LIGHTING AND VENTILATION.

## ISSUES: PERCEPTUAL

- THE BALCONIES ARE USED AS SURVEILLANCE POSTS BY MOTHERS TO KEEP A WATCH OVER THEIR YOUNG CHILDREN PLAYING ON THE GROUND. BUT MANY A TIMES MOTHERS FORBID THEIR CHILDREN FROM GOING OUT TO PLAY SIMPLY BECAUSE THEY CAN'T KEEP AN EYE ON THEM AS THE BALCONIES ARE WRONGLY LOCATED.
- BOTH VISUAL AND THERMAL DISCOMFORT DOMINATE IN THE PASSAGE.
- RANDOM DUMPING OF UNWANTED ARTICLES GIVES THE BALCONIES AN UNAESTHETIC APPEARANCE.

## A FEW GENERAL REMARKS ABOUT OPENINGS AND ORIENTATION.

MANY ROOMS (INCLUDING THE KITCHEN) HAVE BEEN PROVIDED WITH ONE SINGLE WINDOW. THIS IS NOT ADVISABLE BECAUSE IN SUCH A CASE THE SOLITARY WINDOW HAS TO SERVE THREE FUNCTIONS VIZ. THAT OF THE INLET, THE OUTLET AND THAT OF PROVIDING ILLUMINATION.

BESIDES, IT HAS BEEN PROVED BOTH EXPERIMENTALLY AND PRACTICALLY THAT TWO SMALLER OPENINGS ON AN EXTERNAL WALL FUNCTION MUCH MORE EFFICIENTLY THAN ONE LARGE WINDOW OF THE COMBINED AREA. MOREOVER, IT OVERCOMES THE GLARE PROBLEM ALSO. THE USE OF PARTLY LOUVRED SHUTTERS CAN ALSO ENSURE VENTILATION WHEN THE WINDOWS ARE CLOSED.

PEOPLE IN THE MEDICAL PROFESSION HAVE HIGHLIGHTED THE ADVANTAGES OF MORNING-SUN PENETRATION INSIDE THE HOUSE - A DEFICIENT ASPECT OF THE PLANNING OF THE R.B.I. QUARTERS. BUT, OBVIOUSLY SUN-PENETRATION CANNOT BE GUARATEED IN ALL THE ROOMS (OR IN ALL BLOCKS - ON A LARGER SCALE) NOR CAN IDEAL VENTILATION BE ENSURED.

THIS IS WHERE PROPER SITING OF BLOCKS AND A JUDICIOUS COMPROMISE CAN HELP. FOR E.G. IF A BLOCK OF FOUR FLATS IS TO BE ORIENTED, THEN EFFORTS MAY BE MADE TO ASSURE GOOD SUNLIGHT TO TWO OF THEM AND SATISFACTORY VENTILATION TO THE REMAINING TWO.

## ISSUES AT A GLANCE

| ROOMS/ SPACES | FUNCTIONAL ISSUES | | | | | | PERCEPTUAL ISSUES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ACTIVITY | LOCATION | SIZE | LIGHT | VENTILATION | STORAGE | BEHAVIORAL | PSYCHOL. | VISUAL | AUDITORY | OLFACTORY | THERMAL |
| LIVING | ● | ● | ● | ○ | ○ | ○ | ● | ○ | ○ | ○ | | ○ |
| BEDRMS. | ● | ● | ○ | | ● | ○ | ● | ● | ○ | | | ○ |
| KITCHEN | | ● | ● | ○ | ● | ● | ● | ● | ○ | | ● | ● |
| BALCONY & PASSAGE | | | ● | ● | ● | | ○ | | ○ | | | ○ |

NOTE : THE ISSUE OF PRIVACY HAS BEEN INCLUDED UNDER PSYCHOLOGICAL ASPECTS.

● PRIMARY ISSUE

○ SECONDARY ISSUE

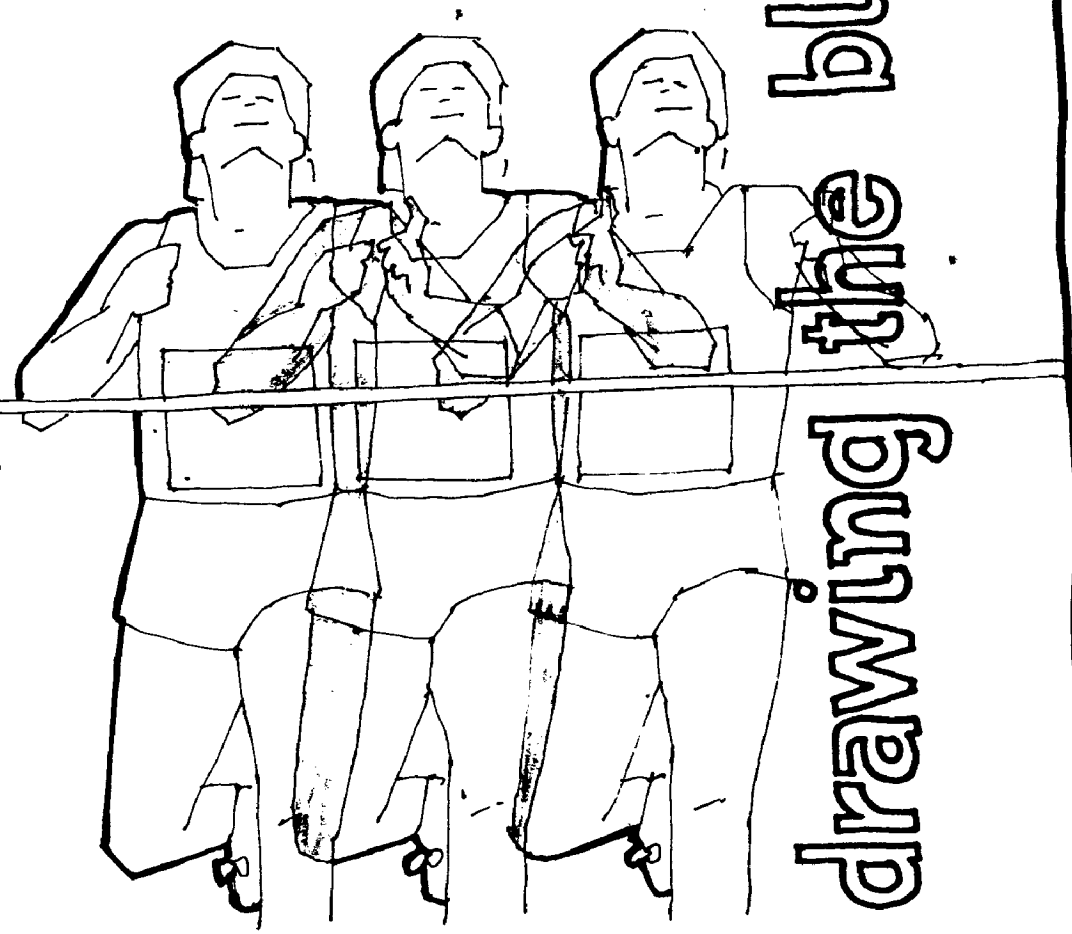
# CHAPTER VII the derivatives

# CONCLUSIONS

(KINDLY REFER TO PREVIOUS CHAPTER FOR NOTE ON OPENINGS AND ORIENTATION)

- OPTIMIZATION OF LIVING SPACES IS IMPERATIVE.
- FULL VOLUMETRIC UTILIZATION OF SPACE MUST BE MADE; IN OTHER WORDS, THE CUBIC CONTENTS OF THE ROOMS MUST BE UTILIZED TO THEIR MAXIMUM CAPACITY.
- USE-EFFICIENCY OF SPACES OUGHT TO BE INCREASED. ONE WAY OF ACHIEVING THIS IS THROUGH A PRUDENT USE OF SLIDING-FOLDING FURNITURE.
- USE CONVERSION OF ROOMS CAN BE AVOIDED BY DESIGNING ONE ROOM AS A MULTI-PURPOSE UNIT.
- VISUAL, AUDITORY AND OLFACTORY PRIVACY MUST BE MAINTAINED.
- THERMAL DISCOMFORT SHOULD BE REDUCED TO A MINIMUM.
- DINING ACTIVITY MUST BE COUPLED TOGETHER WITH THE KITCHEN.
- PROVISION OF A KITCHEN SINK IN ADDITION TO THE WASHING PLACE IS DESIRABLE
- WELL-PLANNED AND ADEQUATE BUILT-IN STORAGE SPACE NEEDS TO BE PROVIDED.
- SPECIAL DISCREET PROVISION SHOULD BE MADE FOR THE DRYING OF CLOTHES.
- PROPER GARBAGE DISPOSAL FACILITIES HAVE TO BE WORKED OUT.

# drawing the blinds



ON THE FACE OF IT, STEEN EILER RASMUSSEN'S CONTENTION THAT, 'THE MAN HAS NOT YET BEEN FOUND WHO CAN PASS JUDGEMENT, LOGICALLY SUBSTANTIATED, ON A BUILDING'S ARCHITECTURAL VALUE', DOES SEEM TO HOLD WATER.

TRYING TO JUDGE ARCHITECTURE, AS ONE WOULD A SCHOOL PAPER – 'A' FOR THIS BUILDING, 'B' FOR THAT ONE, ETC. – IS A RISKY BUSINESS. IT IS QUITE IMPOSSIBLE TO SET UP ABSOLUTE RULES AND CRITERIA FOR EVALUATING ARCHITECTURE BECAUSE EVERY WORTHWHILE BUILDING – LIKE ALL WORKS OF ART – HAS ITS OWN STANDARD. IF ONE CONTEMPLATES IT IN A CARPING SPIRIT, WITH A KNOW-IT-ALL ATTITUDE, IT WILL SHUT ITSELF UP AND HAVE NOTHING TO SAY. BUT IF ONE IS OPEN TO IMPRESSIONS AND SYMPATHETICALLY INCLINED, IT WILL OPEN UP AND REVEAL ITS TRUE ESSENCE.

THE ARCHITECT, THUS, SORT OF PLAYS THE ROLE OF A THEATRICAL PRODUCER, THE MAN WHO PLANS THE SETTING OF ONE'S LIFE. INNUMERABLE CIRCUMSTANCES ARE DEPENDENT ON THE WAY HE ARRANGES THIS SETTING. WHEN HIS INTENTIONS SUCCEED, HE IS LIKE THE PERFECT HOST WHO PROVIDES EVERY COMFORT FOR HIS GUESTS SO THAT LIVING WITH HIM IS A HAPPY EXPERIENCE.

BUT HIS PRODUCER JOB IS DIFFICULT FOR SEVERAL REASONS. FIRST OF ALL, THE ACTORS ARE ORDINARY PEOPLE. HE MUST BE AWARE OF THEIR NATURAL WAY OF ACTING. SECONDLY, HUMAN BEINGS ARE INCALCULABLE AND IF THEY CANNOT 'THRIVE' IN HIS HOUSE ITS APPARENT BEAUTY WILL BE OF NO AVAIL. IT WILL BE NEGLECTED, FALL INTO DISREPAIR AND CHANGE INTO QUITE DIFFERENT FROM WHAT HE INTENDED. INDEED, ONE OF THE PROOFS OF GOOD ARCHITECTURE IS THAT IT IS BEING UTILIZED AS THE ARCHITECT HAD PLANNED.

THUS IF ONE BELIEVES THAT THE OBJECT OF ARCHITECTURE IS TO PROVIDE A FRAMEWORK FOR PEOPLE'S LIVES, THEN THE ROOMS IN THE HOUSES, AND THE RELATION BETWEEN THEM, MUST BE DETERMINED BY THE WAY ONE LIVES IN THEM AND MOVES THROUGH THEM. IN OTHER WORDS, THE DESIGN OF BUILDINGS, WHICH MUST BE STATIONARY, SHOULD BE BASED ON THE MOVEMENT THAT WILL FLOW THROUGH THEM.

AFTER ALL, IT SHOULD BE BORNE IN MIND THAT, (IMAGINARY) PEOPLE WOULD BE INHABITING THE CASTLES THAT HAVE BUILT IN THE AIR, TOO....

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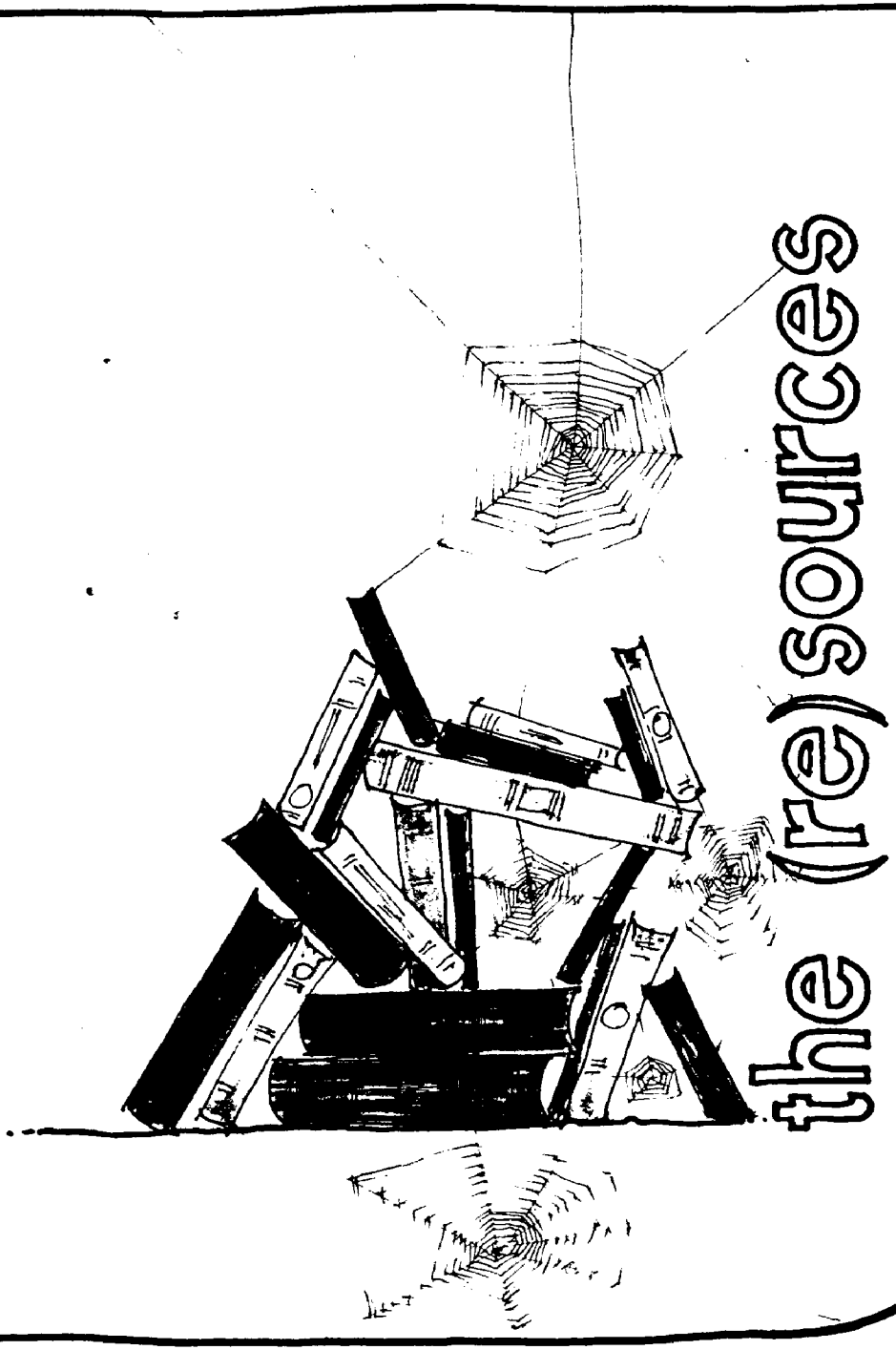

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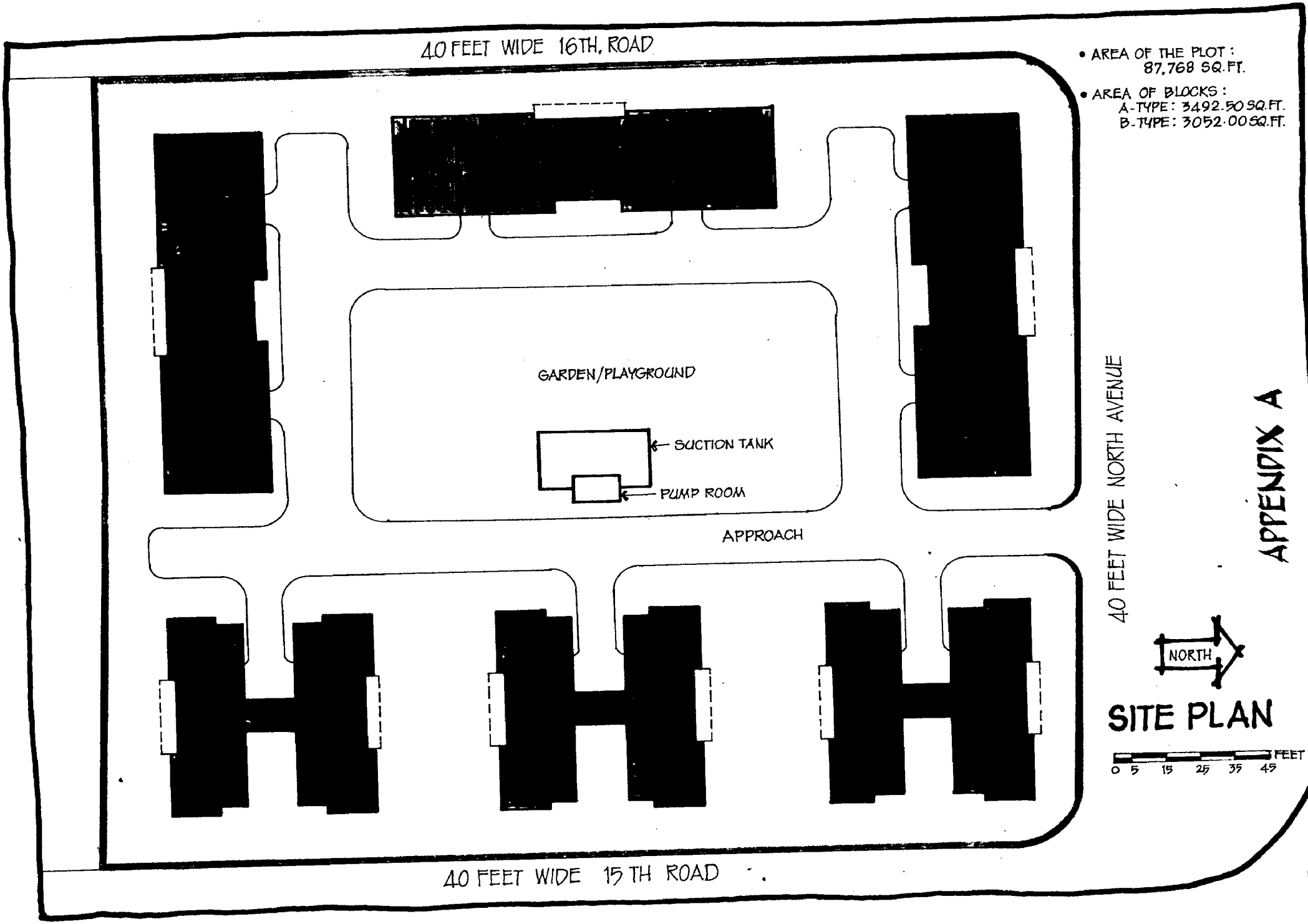
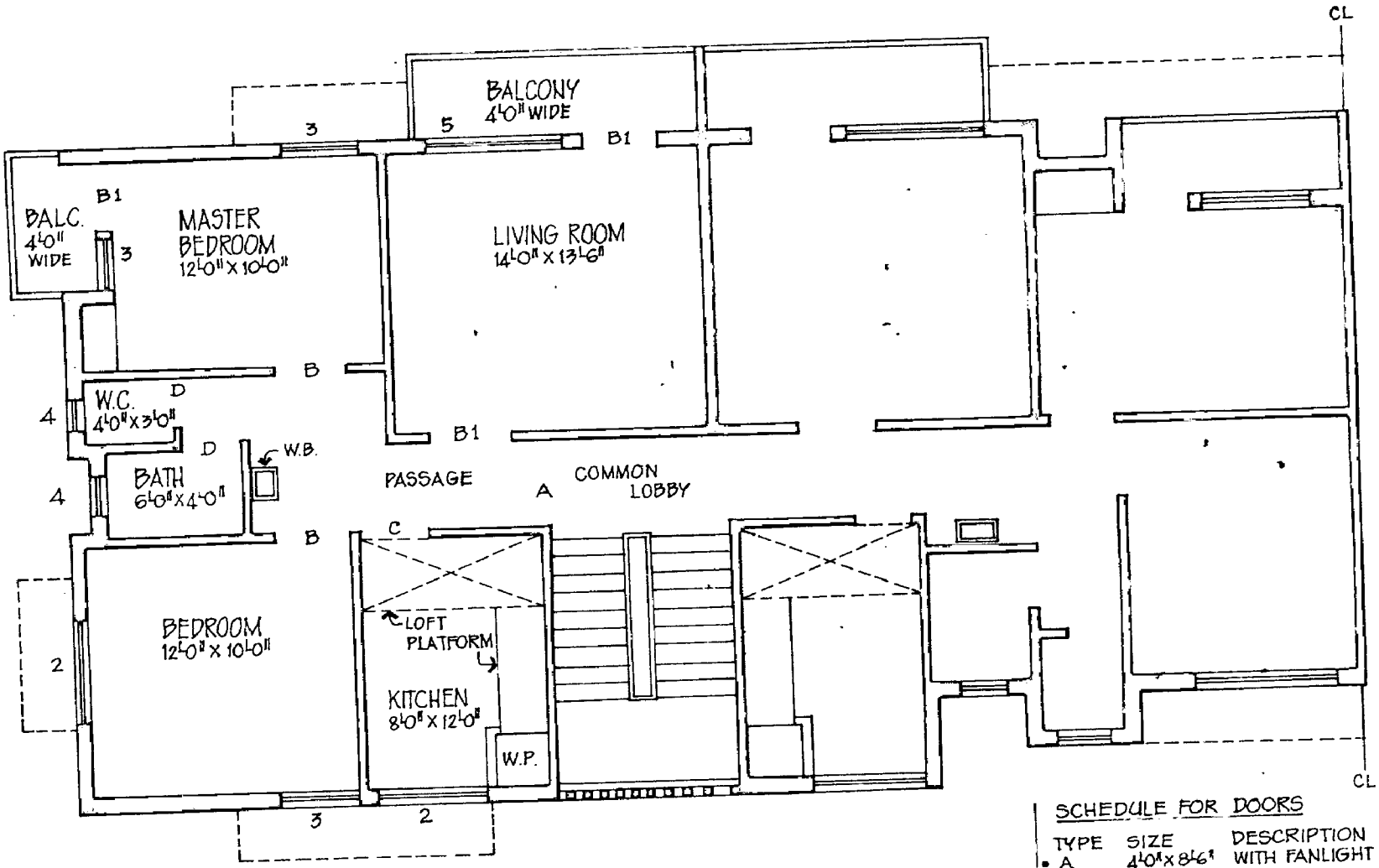

40 FEET WIDE 16TH. ROAD
• AREA OF THE PLOT : 87,768 SQ.FT.
• AREA OF BLOCKS :
A-TYPE : 3492.50 SQ.FT.
B-TYPE : 3052.00 SQ.FT.
GARDEN/PLAYGROUND
SUCTION TANK
PUMP ROOM
APPROACH
40 FEET WIDE NORTH AVENUE
APPENDIX A
NORTH
SITE PLAN
FEET
0 5 15 25 35 45
40 FEET WIDE 15 TH ROAD




# TYPICAL PART PLAN OF A-TYPE BLOCK

- APPROXIMATE BUILT-UP AREA OF EACH FLAT : 850 SQ.FT.

FLOOR-TO-FLOOR HEIGHT
- OF ROOMS : 11'-6"
- OF TOILETS (W.Cs.) : 9'-0"

0 2 4 6 8 10 FEET

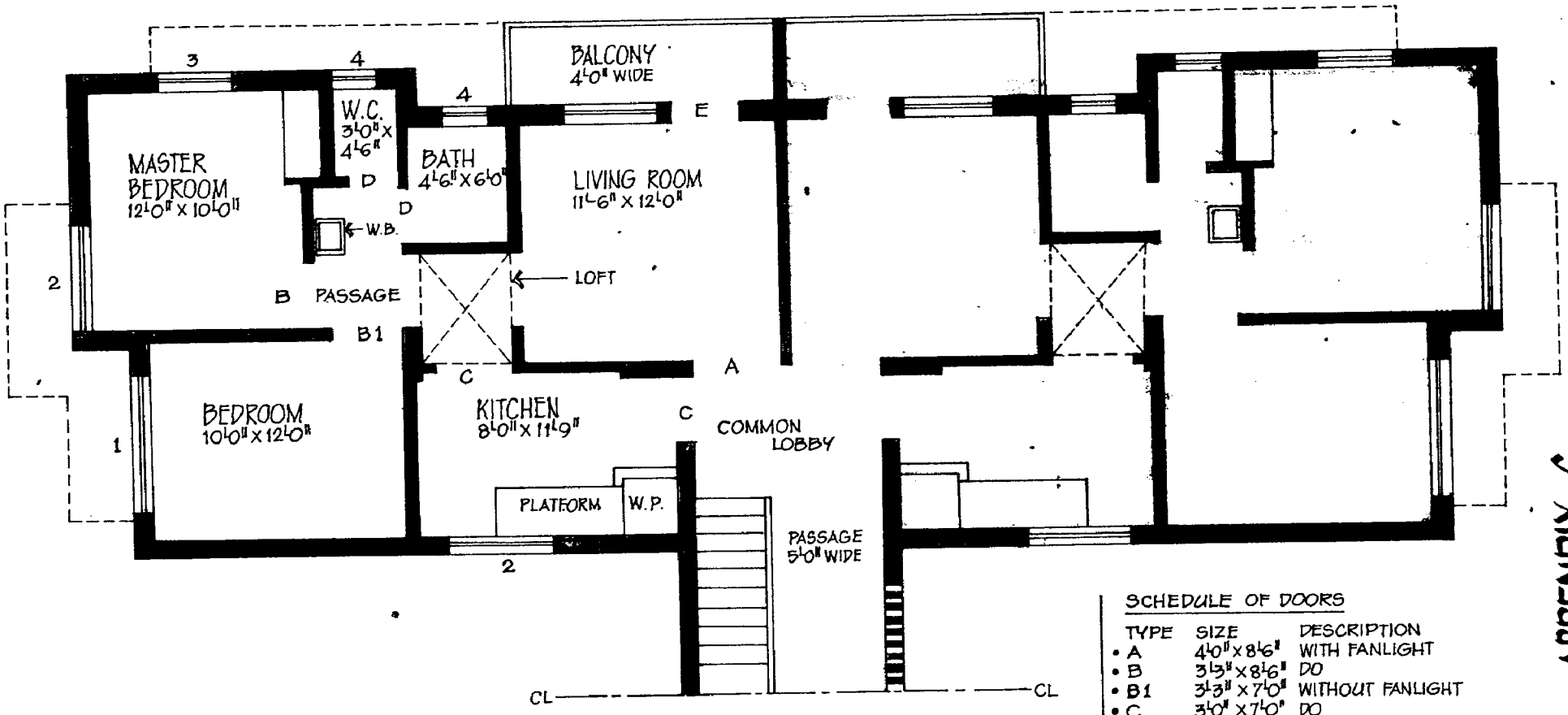
SCHEDULE FOR WINDOWS

| TYPE | SIZE | DESCRIPTION |
|---|---|---|
| • 1 | 7'-0" X 5'-6" | 3'-0" ABOVE F.L. |
| • 2 | 5'-0" X 5'-6" | DO |
| • 3 | 3'-6" X 5'-6" | DO |
| • 4 | 2'-0" X 4'-6" | 4'-6" ABOVE F.L. |
| • 5 | 6'-6" X 5'-6" | 3'-0" ABOVE F.L. |
| • 6 | 6'-0" X 5'-6" | DO |

SCHEDULE FOR DOORS

| TYPE | SIZE | DESCRIPTION |
|---|---|---|
| • A | 4'-0" X 8'-6" | WITH FANLIGHT |
| • B | 3'-3" X 8'-6" | DO |
| • B1 | 3'-3" X 7'-0" | WITHOUT FANLIGHT |
| • C | 3'-0" X 7'-0" | DO |
| • D | 2'-6" X 7'-0" | DO |
| • E | 8'-0" X 8'-6" | DOOR & WINDOW (@ 2'-6" ABOVE F.L.) |
| • F | 6'-0" X 8'-6" | DO |

APPENDIX B




APPENDIX C

SCHEDULE OF DOORS

| TYPE | SIZE | DESCRIPTION |
|---|---|---|
| • A | 4'0" X 8'6" | WITH FANLIGHT |
| • B | 3'3" X 8'6" | DO |
| • B1 | 3'3" X 7'0" | WITHOUT FANLIGHT |
| • C | 3'0" X 7'0" | DO |
| • D | 2'6" X 7'0" | DO |
| • E | 8'0" X 8'6" | DOOR & WINDOW (@ 2'6" ABOVE F.L.) |

SCHEDULE OF WINDOWS

| TYPE | SIZE | DESCRIPTION |
|---|---|---|
| • 1 | 7'0" X 5'6" | 3'0" ABOVE F.L. |
| • 2 | 5'0" X 5'6" | DO |
| • 3 | 3'6" X 5'6" | DO |
| • 4 | 2'0" X 4'0" | 4'6" ABOVE F.L. |

# TYPICAL PART PLAN OF B-TYPE BLOCK

- APPROXIMATE BUILT-UP AREA OF EACH FLAT : 740 SQ.FT.

FLOOR-TO-FLOOR HEIGHT
- OF ROOMS : 11'0"
- OF TOILETS (W.Cs.) : 9'0"

FEET
0 2 4 6 8 10

# APPENDIX D

Respected Sir/Madam,

As a student of Master of Architecture, at the University of Roorkee, I am currently engaged in preparing a thesis and this survey forms an internal part of it.

I shall, therefore, be extremely grateful, if you would kindly fill-in the following questionnaire.

Thanking you

( Abhijit Shirodkar )

Part A : GENERAL

1. Name of the occupant : _____

2. Designation : _____

3. House Number : _____

4. Floor of residence : Ground/First/Second/Third

5. Duration of stay inthe house : _____ Years _____ Months

6. Composition of the household :

| Sr No. | Name | Relation | Age | Eduacation of Children |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| 8. | | | | |

Part B : USE SATISFACTION OF SPACES :

Please indicate the room/space where you carry out the following activities.

Do you feel that the rooms/spaces where these activities are carried out, adequately promote them? (Please tick either yes or no.)

| SrNo. | Activity | Rooms/ Spaces | Yes | No | Remarks |
|---|---|---|---|---|---|
| 1. | Studying | | | | |
| 2. | Relaxing | | | | |
| 3. | Sleeping | | | | |
| 4. | Dressing | | | | |
| 5. | Dining | | | | |
| 6. | Cooking | | | | |
| 7. | Storing utensils | | | | |
| 8. | Cleaning utensils | | | | |
| 9. | Disposing wastes | | | | |
| 10. | Washing clothes | | | | |
| 11. | Drying Clothes | | | | |
| 12. | Ironing clothes | | | | |
| 13. | Entertaining guests | | | | |
| 14. | Accomodating guests | | | | |
| 15. | Storing other articles | | | | |
| 16. | Worshipping | | | | |
| 17. | Exercising | | | | |
| 18. | Hobbies | | | | |
| 19. | Other activities (please specify) | | | | |

Part C EVALUATION AND ASSESSMENT OF SPACES :

Kindly indicate your reaction to rooms/spaces in your house (by inserting a tick-mark where applicable) :

| Sr No | Item | Reactions | Room/Spaces: Living | Master Bed | Child Bed | Kit | Bal | Bath | W.C. |
|---|---|---|---|---|---|---|---|---|---|
| 1. | Size | Too large | | | | | | | |
| | | Adequate | | | | | | | |
| | | Small | | | | | | | |
| 2. | Ventilation | Good | | | | | | | |
| | | Adequate | | | | | | | |
| | | Poor | | | | | | | |
| 3. | Light | Good | | | | | | | |
| | | Adequate | | | | | | | |
| | | Poor | | | | | | | |
| 4. | Privacy | Good | | | | | | | |
| | | Enough | | | | | | | |
| | | Lacking | | | | | | | |
| 5. | Location of doors | Convenient | | | | | | | |
| | | O.K. | | | | | | | |
| | | Inconvenient | | | | | | | |
| 6. | Location of windows | Convenient | | | | | | | |
| | | O.K. | | | | | | | |
| | | Inconvenient | | | | | | | |
| 7. | Size of doors | Too large | | | | | | | |
| | | Adequate | | | | | | | |
| | | Small | | | | | | | |
| 8. | Built-in storage | Too much | | | | | | | |
| | | Adequate | | | | | | | |
| | | Less | | | | | | | |

9. Location of main entrance : Good/O.K./Faulty

10. Open space around the building : Too much/Adequate/Less

11. Staircase size : Too wide/Adequate/Narrow

12. Staircase location : Good/O.K./Bad

13. Overall circulation pattern in the house : Good/Workable/Faulty

PART II OVERALL SATISFACTION TO SPACES :

On the whole how satisfied are you with the various rooms/ spaces in the house? (Please tick, where applicable)

| Sr No | Room/ Spaces | Scale | | | | |
|---|---|---|---|---|---|---|
| | | Most Sat sf. | Satis-factory | Just O.K. | Un-satis factory | Highly unsati |
| 1. | Living | | | | | |
| 2. | Master Bed | | | | | |
| 3. | Child. Bed | | | | | |
| 4. | Kitchen | | | | | |
| 5. | Bath | | | | | |
| 6. | W.C. | | | | | |
| 7. | Balcony | | | | | |

PART E : MISCELLANEOUS : (Please tick where applicable)

1. Where do you prefer to dine?
   Sitting on the floor/Sitting at the dining table

2. What do you use your balcony for?

   Given an option, would you like to enclose your balcony? Yes/No

3. Which of the following combinations do you prefer?

   (i) Combined living-dining
   (ii) Combined Kitchen-dining
   (iii) Combined Bath -W.C.

4. Do you feel the ceiling height is
   Too much/adequate/less

5. Do you prefer more colour in the interiors than white-wash? Yes No

6. Would you prefer
   a) a number of rooms of small size Or
   b) a number of rooms of large size

7. If provided with an additional room/space, what activities would you use it for?

8. How do you find your house in terms of comfort, convenience and efficiency ~~on terms~~ use of spaces?

9. Given a chance, would you like to make any additions/alterations/modifications in your house ? Yes/No

   If yes, Please specify.

10. Any other problems/comments/remarks.

THE EXPLICIT PURPOSE OF THIS PAPER IS TO C LECT BRICKS, BATS AND BRICK-BATS....

YOU ARE THEREFORE REQUESTED, TO KINDLY PEN ON ; YOUR VALUABLE SUGGESTIONS/COMMENTS/CRITICISMS AND/OR REMARKS ABOUT THE DISSERTATION.