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ALEX TOMMERUP

DESIGN THROUGH PHYSICAL SENSES

(ON-CAMPUS SINGLE STUDENT RESIDENCE)

by

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A thesis submitted in partial fulfillment
of the requirements for the degree

of

BACHELOR OF ARCHITECTURE

SCHOOL OF ARCHITECTURE

Approved:

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I N T R O D U C T I O N

After four years at Montana State University, I looked back to see how I would have changed things to make it more worthwhile. My years had been 'down' for me because I had not become interested in life. Everything was boring and the more I looked around the worse things became. So I decided that my life could have been a lot better if my environment would have been different. I started imagining things I would have changed.

The first thing I thought of was my living quarters and its relationship to the University. Inside, it was a search to find answers to changes which would inspire me to learn, to be happy, to make life better.

I thought of many ways I would like things different, but I couldn't answer why they would be better or even if they would be better. With many questions about making a better environment, I began my thesis to find some answers.

THESIS STATEMENT

ARCHITECTURE SHOULD NOT ONLY MEET THE UTILITARIAN NEEDS OF THE USER, BUT SHOULD ALSO TAKE INTO CONSIDERATION THE PHYSICAL SENSES SO AS TO CREATE AN ENVIRONMENT WHICH IS 'PLEASING' TO OUR PSYCHOLOGICAL SENSE.

CHAPTER I

SPACE AFFECTS PEOPLE

S P A C E A F F E C T S P E O P L E

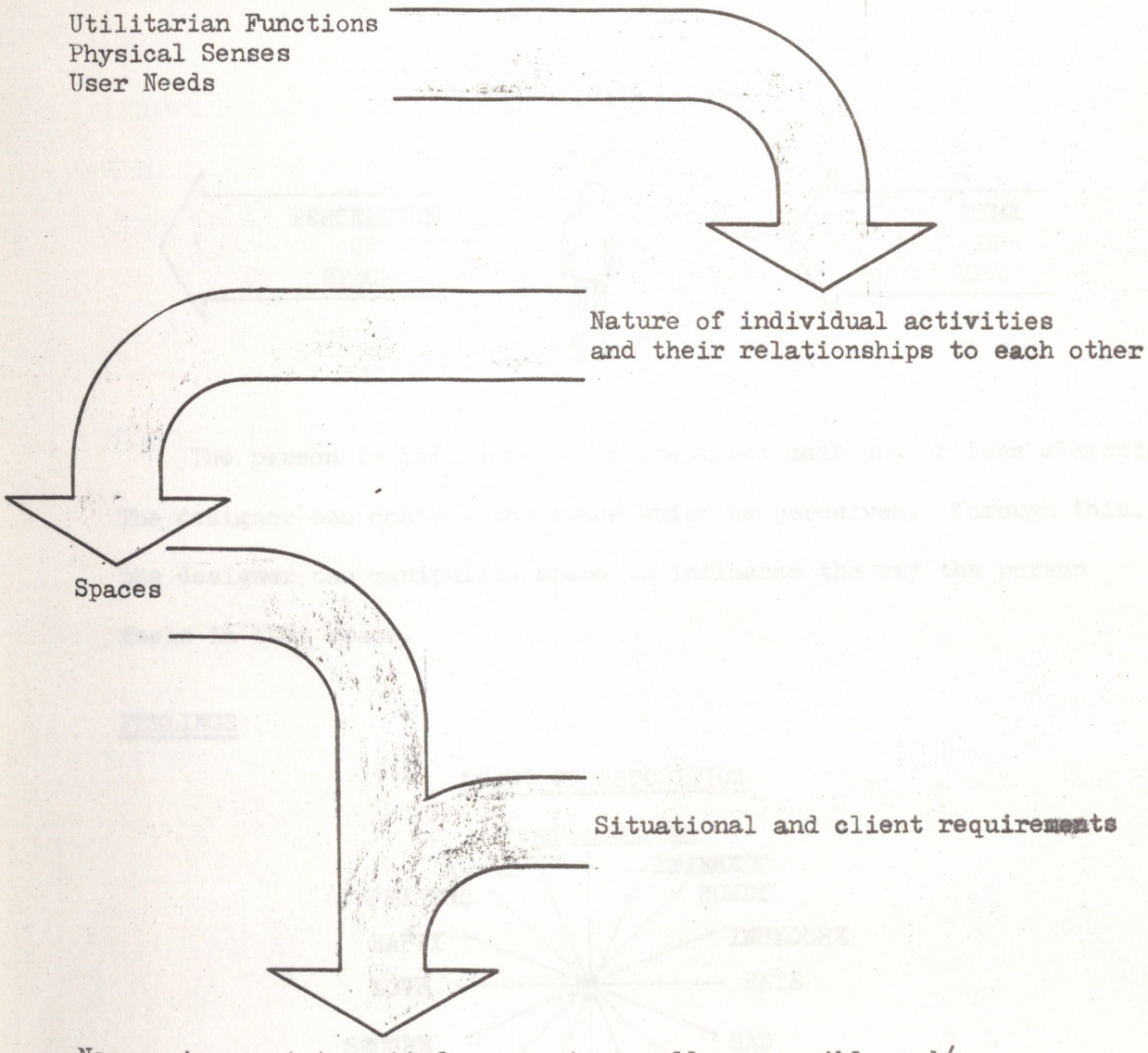
To find out what was happening I had to go back to what affects the way a person lives and how he perceives the environment. This led me to the essential elements necessary for modern man to exist. I call them the 'utilitarian functions' (eat, sleep, excrete, work, and social interaction). From these basic elements I could design a minimum environment by satisfying only those.

I was seeking something more than an environment to meet only the utilitarian functions. I wanted the environment to be 'pleasing'. I then decided I should find out how a person perceives the environment. I concluded that the physical senses were the devices that determine how we 'feel' (psychologically) in the environment. It was then apparent that we could determine a design of spaces if I understood these two completely.

To apply this study to on-campus student residence I had to determine the users' needs. With all three basic elements I would determine activities because I did not want spacial design to yet affect the study. After this I could determine what spaces could best be designed for the activities.

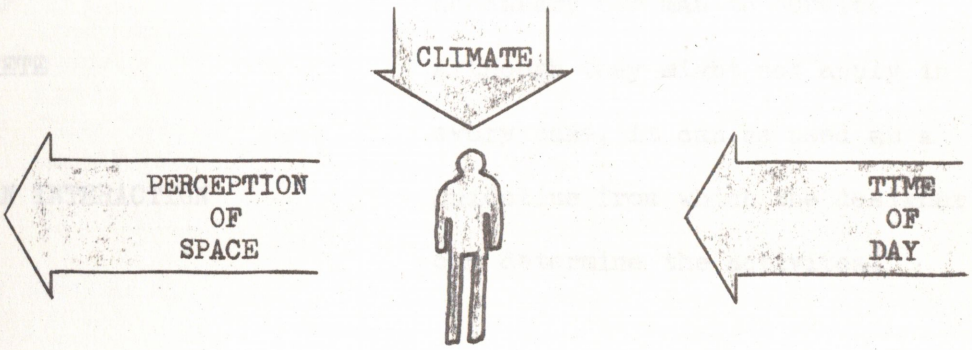
The design would not be complete unless I took into account the situational (i.e. topography, climate, etc.) and client requirements (i.e. budget, space, etc.).

Then, hopefully, this would result in a new environment which would be 'pleasing'.


Utilitarian Functions
Physical Senses
User Needs
Nature of individual activities
and their relationships to each other
Spaces
Situational and client requirements
New environment to satisfy present as well as possible and/or
predictable future needs.

DEFINITIONS

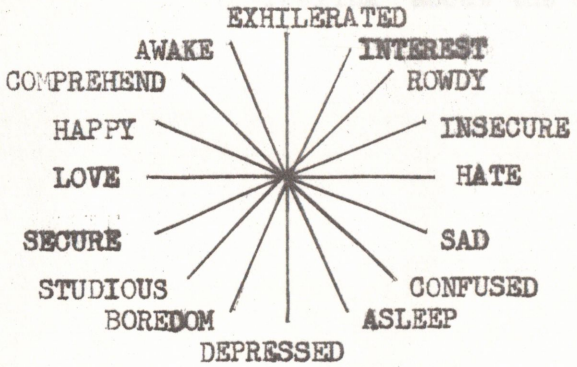
PSYCHOLOGICAL SENSE



The person is influenced by these three main and obvious elements. The designer can control the space which he perceives. Through this, the designer can manipulate space to influence the way the person feels in that space.

FEELINGS

CHART OF OPPOSITION



NOTE: These feelings are not all the possible feelings; they act only as a guide by which the architect can determine media desired in spaces.

UTILITARIAN FUNCTIONS

EAT
SLEEP
EXCRETE
WORK
HUMAN INTERACTION

These are the basic elements necessary for man to survive. Although they might not apply in every case, it can be used as a guideline from which the designer can determine the activites.

PHYSICAL SENSES

SIGHT
HEAR
SMELL
TASTE
TOUCH

These senses receive data from our surroundings and transmit them to our brain. Our brain then analyzes and synthesizes this data to form a psychological sense which is our 'feeling' about the environment.

ACTIVITIES

1. "Definition of elements as activities rather than as physical entities, such as rooms, provides a better basis for responding to the particular characteristic of a situation."[1]

Adornment	Entertainment	Dine
Hygiene	Excrete	Cook
Garden	Clothe	Sex
Circulation	Study	
Communication	Sleep	

2. "Relationships between activities form a primary basis for allocating space."[1]

'No': When the activity will be disturbed if the physical sense is possible between that activity and another.

	sight	smell	hear	touch
circulation				
garden				no
communication			no	
entertainment	no		no	no
cook	no			no
dine	no			no
adornment	no			no
sleep	no	no	no	no
hygiene	no		no	no
excrete	no	no	no	no
clothe	no	no		no
sex	no	no	no	no
study		no	no	no

NOTE: The sense of taste has been excluded; It has no obvious affect on the perception of an environment that the architect creates.

[1]Stuart W. Rose, LOCATE: The Translation of User Preference Into the Allocation of Space (Washington D.C.: Robert/James Associates, n.d.).

WHAT IT MEANS

Least number of 'nos' - Activities which are more 'open' and will not be disturbed by other activities nearby.

Most number of 'nos' - Activities which should take place in private and should not be interferred with by other activities.

Number of nos	0	1	2	3	4	
Most open	Circulation	garden communication	cook dine adornment	entertainment hygiene clothe study	sleep excrete sex	closed

NOTE: The activities which are under the same columns have similar characteristics which means they may be compatible in the same space. However, they may not be able to function together with the other activities. Another relationship matrix between the activities themselves will determine their compatibility.

3. "Types of relationships should be specified; the concept 'relationship' is too general."[1]

	STUDY	CIRCULATION	GARDEN	COMMUNICATION	ENTERTAINMENT	COOK	DINE	ADORNMENT	SLEEP	HYGIENE	EXCRETE	CLOTHE	SEX
Study													
Circulation	b c d												
Garden	c d												
Communication	b c d		c										
Entertainment	a b c d	a d	b c d										
Cook	b c d	a c d	c										
Dine	b c d	a c d	c										
Adornment	c d	a d	a c	c									
Sleep	a b c d	a b c d	a b c d	a b c d	a b c d	a b c d	a b c d	a b c d					
Hygiene	a d	a d	a c	a	a	a	a	a	a d				
Excrete	a b c d	a b c d	a b c d	a b c d	a b c d	a b c d	a b c d	a b c d	a b c d	a b c d			
Clothe	a d	a d	a c	a	a b c	a c d	a d	a d	a d	a d	a b c d		
Sex	a b c d	a b c d	a b c d	a b c d	a b c d	a b c d	a b c d	a b c d	b c d	a d	a b c d	a d	

a_____sight

b_____smell

c_____hear

d_____touch

To understand the relationships between activities this matrix was made to show the physical senses which are in conflict if the activities were to be performed together. The letter representing the sense is put in the box which is conflicting between the two activities.

[1]Stuart W. Rose, LOCATE: The Translation of User Preference Into the Allocation of Space (Washington D.C.: Robert/James Associates, n.d.) p.

	STUDY	CIRCULATION	GARDEN	COMMUNICATION	ENTERTAINMENT	COOK	DINE	ADORNMENT	SLEEP	HYGIENE	EXCRETE	CLOTHE	SEX
Study													
Circulation	1												
Garden	2	4											
Communication	1	4	3										
Entertainment	0	2	1	4									
Cook	1	1	3	4	4								
Dine	1	1	3	4	4	4							
Adornment	2	2	2	3	4	4	4						
Sleep	0	0	0	0	00	0	0	0					
Hygiene	2	2	2	3	3	3	3	3	2				
Excrete	0	0	00	0	0	0	0	0	0	0			
Clothe	2	2	2	3	1	1	2	2	2	2	0		
Sex	0	0	0	0	0	0	0	0	1	2	0	2	

4 Compatible

3

2

1

0 Incompatible

SPACES

From the list of activities, the architect can determine the spaces needed for these activities and their relationship to each other. Then the spaces can be ranked according to the importance for function of the environment.

PRIMARY	SECONDARY	OPTIONAL
bedroom	patio or deck	lounge
bathroom	work area	shower room
kitchen	laundry	lavatory
eating space	storage space (extra)	garden
study areas		recreation
social interaction (living areas)		library
		seminar and conference areas
hall		

The next step was a study of the relationships between media and 'feelings'. After studying these relationships it became more apparent to me that not only are these relationships inconsistent from person to person, but when the media are combined it becomes too complex for the designer to predict exactly how these combinations will affect 'feelings'.

MEDIA

Media by which the architect can affect the psychological sense in spaces and their relationship to the physical senses:

	SIGHT	SMELL	HEAR	TOUCH
SHAPES	x		x Acoustics	x
MATERIALS	x	x	x Acoustics	x Texture
COLORS	x			
SIZE	x		x Acoustics	x
LIGHT	x			
FUNCTION	x	x	x	x
ODOR		x scents		
VENTILATION		x	x	
HEATING			x	x
COOLING			x	x

We become conditioned in life to perceive primarily through our sense of sight.[1] Our brain makes an association between some experiences by our other senses and the sense of sight. Thus, we experience a good deal of 'feelings' of our other senses when we see the environment. (Of course, this applys only to those who can see). Odor, ventilation, heating, and cooling are media which are primarily controlled by the user and not the architect; therefore, they do not have to be considered as primary elements in spatial design. (Although in this study they are not studied, they are as important in total design).

[1]Arnold Friedmann, John F. Pile, and Forrest Wilson, Interior Design (New York: American Elsevier, Inc., 1970), p. 24.

CHAPTER II

MEDIA AFFECTS PEOPLE

M E D I A A F F E C T S P E O P L E

After realizing that the 'feelings' desired in an environment could not mathematically be predicted, I decided to study the affects of the media on our physical senses and to use the results of this study to design an on-campus single student residence.

From the pervious study I chose the media: Shapes, lighting, colors, and texture. All the other media, I believe, would be controlled by the user, therefore, would not be as significant in design in my study. However, I acknowledge the fact that to design, you must take into account all the elements or media in the environment.

SHAPES OF AND IN GEOMETRIC SPACE*

PROPORTION

One of the important ideas of the design of shapes in proportion. In order for the shape to be pleasing, it must project some clear quantitative analogies. To make a space beautiful there must be some sort of order. p. 79

To demonstrate this order we must consider the wedding of space and number — the ratio. We could think of it in terms of symmetry — dynamic or static. Or we might show it with two lines one of which might be three times as long as the other. This would be a ratio of 1 to 3 or 1/3. p.77

TYPES OF SHAPES

It becomes interesting when we think of the different types of shapes we must deal with — the dot, the line, the plane, and the volume. The volume is the three dimensional shape and can be subdivided into mass which is solid matter of the volume, and space which is defined as that which is characterized by dimension only. p. 84

CHARACTER OF SHAPE

The character of the shape is a sum of its size, of its direction, and of any change in its direction in relation to its size. p. 84

direction size change in measure

*Victoria K. Ball, The Art of Interior Design (New York: The Macmillan Co., 1960).

DOMINANT SHAPE TRAITS

The first step in a room design is choosing the dominant shape traits. In terms of the types shapes we must begin thinking about the architectural shape character, physical strength of certain shapes, and expressive message shapes convey. p. 84

It is important to understand these things that are happening to the shapes. The expressive power could be seen by the size of the shape, the direction(s) or the outline of an object.

The size is relative to the size of the surroundings and only in relation to these is it significant in conveying an expressive message. p. 85

Directions derive their expressive quality from the imaginary projections of the human body in directional positions: p. 85

Horizontal - shows the greatest stability and greatest movement along earthbound space

Diagonal - greater activity

Vertical - lesser activity

Change in directions - when the degree of change is great there is greater mental activity and therefore increased dynamics.

When we notice an object, really what we see is its outline. Because of this we can analyze a room by understanding the outline of furnishings, linear patterns on walls and floor, and imaginary lines which exist between objects because of their relative positions. p. 86

STRAIGHT LINE p. 86

feeling in terms of	modified in terms of		
	vertical	horizontal	diagonal
physical response rigidity, strength, stiffness	less stable	most stable	least stable
simple emotional response directness positiveness forcefulness	spirited	calm	energetic
complex intellectual response projection of character meaning formality dignity	austere spiritual	earthy	youthful

The line is rhythmic when it changes its width or direction according to an ordered proportion or graceful when the order of its change is continuous and not abrupt. p. 88

"As compared to the suggestions made by straight lines, all curves veer in the direction of flexibility, weakness, indirection, informality, frivolity, and grace." p. 86

SHAPE FORCES

There are many devices to use shapes to gain attention. Attraction to a shape can be attained by: p. 88

(1) Large size or a grouping of smaller shapes seen as one large shape

(2) Diagonal direction - greatest attention getter

(3) Shapes that change direction frequently and abruptly

(4) Gaining force from its neighbor - visual repetition will augment, but care must be taken to avoid visual monotony.

TEXTURE *

"The surface texture of grass, concrete, metal, burlap, silk, newspaper, or fur, strongly suggestive of qualities of touch, we experience visually in a kind of intersensory blend. We see, not in light and dark, but qualities of softness, coldness, restfulness—sight and touch are fused into a single whole." Gyorgy Kepes p. 167

"Texture is basic to artistic work because textures really determine shapes and colors." p. 168

Standards for evaluation must be made in relation to some desired result.

1. Suitability for a certain physical use.
2. Suitability in certain design relations.
3. Expressive qualities.

"The successful aesthetic handling of any component depends upon a sensitivity to its attributes. Because the component texture has so many facets no comprehensive listing of its attributes or systemizing of textural traits has been made. Different lists would relate to the physical qualities of texture and to the aesthetically apprehended qualities. Other lists would be applicable to qualities perceived through various senses." p. 171

*Victoria K. Ball, The Art of Interior Design (New York: The Macmillan Co., 1960).

ATTRIBUTES APPRECIATED PRIMARILY THROUGH TOUCH —THE FEEL OF MATERIAL

	Physical Expression	Emotional Expression	Character Expression
Surface Contour			
Uneven	roughness		crudity
Even	smoothness		refinement
Surface Friction			
Harsh			brusqueness
Skippery			slickness
Thermal Character			
Hot			friendliness
Cold			austerity

ATTRIBUTES APPRECIATED THROUGH KINAESTHESIS

Compressibility (resistance to pressure)			
Hard	rigidity		masculinity
Soft	plasticity		femininity
Flexibility (resistance to bending)			
Stiff	unbending		severity
Pliable	yielding		grace
Weight (resistance to lifting)			
Heavy	strength		stolidity
Light	delicacy		imaginativeness

ATTRIBUTES SOMETIMES CALLED THE HAND OF THE MATERIAL —THE REACTION TO HANDLING

Elasticity (reaction to stretching)			
Elastic			uncertainty
Inelastic			stability
Firmness (tendency to resist change of internal position)			
Firm			substantiality
Sleazy			fraudulency

	Physical Expression	Emotional Expression	Character Expression
Resiliency (tendency to return to position after deformation)			
Resilient	liveliness		youthfulness
Nonresilient	lifelessness		age

ATTRIBUTES APPRECIATED THROUGH SIGHT

Amount of reflection			
Shiny	activity		ornateness
Dull	passivity		simplicity
Continuity of specular reflection			
Changeable	livelienss, busyness	restlessness	flashiness
Constant	lifelessness	restfulness	constancy
Depth of reflection			
Deep	warmth		luxury
Surface	brittleness		ostentation

ATTRIBUTES APPRECIATED THROUGH SEVERAL SENSES

Size of structure			
Coarse	heaviness, strength		crudeness
Fine	lightness delicacy		refinement
Density of structure			
Compact	sturdy		trustworthy
Open	airy		ethereal

To design a 'pleasing' textural quality, careful consideration must be made of function, expression, and the existing design character. First a dominant texture must be chosen. This dominant texture is then strengthed by a textural grouping of members of which have family traits:

Wood: pp. 178-180

Textiles: pp. 184-205

Glass: pp. 211-214

Metals: pp. 214 - 217

Stone: p. 217

Plastics: p. 217

"After securing a textural harmony, it should be arranged to aid the design. This means the ordering of textural forces. Intrinsic textural force may be found in extremes of rough and smooth textures. The first will attract because of the contrasts of surface and the second because of the amount of light reflection. Any texture will be made more forceful when it is incorporated in a rhythmic sequence or if it's constrasted with its textural surroundings." p. 174

COLOR*

Color can be used to create a 'pleasing' space by relating the colors. One can produce color harmony by grouping the colors in a pleasant ensemble. There are basically three fundamental ways of relating colors: p. 130

(1) Repetition of a color attribute trait, i.e., the repetition of the exact hue, or lightness, or saturation. Care must be taken because repetition can create monotony. Therefore, some change from the original color must be considered, either in hue, lightness - darkness, or in saturation.

a. exact hue

effect of hue			
feeling in terms of	red toward	green toward	blue or purple
physical response (effects interpreted as affecting us bodily)	advancing hot loud glowing		retreating cool quiet
simple emotional response (effects interpreted as affecting us emotionally)	exciting stimulating	restful cheerful (especially yellow)	depressing subduing
complex intellectual response (projection of character meaning)	garnish primitive vivid	youthful	regal conventional dub

b. lightness

lightness - darkness effects will modify those of hue			
	light	medium	dark
physical effect	light		heavy stable
emotional effect	cheerful gay	restful	depressing
intellectual response	frivolous feminine	mysterious	dignified masculine impressive somber

(2) Orderly arrangement of color intervals, i.e., the repetition or ordered variation of the spacing between colors as visualized on a color order system.

(3) Positioning of colors in a design so as to utilize optical laws which will create illusions of the above.

Through color interrelations spacial illusions can be created: p. 134

(1) To create space through color:

a. Use cool hues

b. Use light tones

c. Use dull saturations

d. Keep contrasts to the minimum dictated by the necessity of relieving monotony.

e. Use color rhythms to direct the eye to more expansive space

(2) Do the reverse of one to contact space

(3) To lower a ceiling:

a. Use warm hues

b. Use dark tones

c. Use strong saturations

(4) Do the reverse of (3) to heighten a room

(5) To shorten a room:

a. Duplicate any of the suggestions under 2 on the narrow wall of the room

*Victoria K. Ball, The Art of Interior Design (New York: The Macmillan CO., 1960).

(6) Do the reverse of (5) to lengthen room

(7) To take away from the squareness of a room:

a. Use different hues, lightness, or saturations on one or several walls.

(8) To obliterate an undersirable feature:

a. Use colors for the surroundings which present little color contrast with the object.

b. Break up the object by color areas so that it can no longer be seen as a complete object.

c. Extend the object through the use of color to make it part of a move desirable object.

LIGHT

There are two kinds of sources from which we can receive light — natural and artificial.

The natural sources are things such as the sun, a fireplace, candlelight, etc. In regard to the sun we can define the design elements which become sources of light as a window or a skylight. After the desired effects have been determined we can design the elements needed according to size, type and placement.

Artificial light can be designed by taking into account the kind of light, i. e., incandescent, fluorescent, etc., fixture characteristics, i.e., shapes, size, transparency or opaqueness, and color, and finally the type of lighting.*



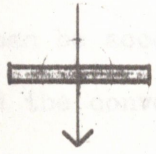
multi-directional concentrating

impression of moderate contrast and brightness concentration



multi-directional diffusing

reducing shadow and contrast, and creating a bright, generally uniform lighting condition



downward concentrating

low general brightness with high brightness accents



downward diffusing

low concentration of brightness
ceiling area adjacent to fixture receives no direct illumination and remains relatively dark

*John E. Flynn and Samuel M. Mills, Architectural Lighting Graphics (New York: Reinhold Publishing Corp., 1962).



upward diffusing

produces a relatively flat, low contrast environment impression of diffusion and general brightness
inefficient for providing illumination on the floor or horizontal work plane



upward concentrating

to relieve extreme contrast while adding visual interest through surface pattern and brightness variation

When designing the light should be able to meet the effects designed. With this in mind we can set criteria by which we can design power, direction of the light (direct or indirect) and the number of lights needed.

Some of the basic effects to be met can be predicted:

Effects of Lighting*

(1) "What kind of lighting furthers conversation? In amount it should be a medium high level of comfortable illumination, neither too high nor yet too low. Thus it will steer between the Scylla and Charybdis of being too stimulating or too depressing. Good conversation is sided by a cloistered feeling of shelter and privacy. This can be accomplished by reducing the light in the room areas beyond the conversation group to as low a brightness as is compatible with the recommended five to one functional brightness ratio. Low-placed lighting fixtures aid the feeling of intimacy requisite to a conversation area. Particular care should be taken to see that the lighting is warm in tone." p. 155

*Victoria K. Ball, The Art of Interior Design (New York: The Macmillan Co., 1960).

(2) "gaity and heightened spirits", "pleasantries and chatter", "greetings exchanged", etc. - "glareless lighting is certainly required but a pleasurable and exhilarating exchange of light and shadow from directional sources should play its part too in this sort of decoration." p. 155

(3) dining - "The general lighting of the room could be low in amount and diffused. But there should be a higher level of more dramatic light directed onto the table. Such spotlighting will make the table appointments gleam and will be flattering to the guests. One should be careful to see that no light shines in the eyes of any person seated at the table. This precaution is particularly important when the table is lighted by candles. Candles burn down and are apt to come to eye level. Otherwise candlelight is soft, warm toned, dramatic light for dining." p. 155

(4) hall - "lighting of a hall should be especially cheerful" p. 156

(5) sleeping - "no glare within the angle of vision of the person in bed." "The lighting should be cheerful, warm in tone and of sufficient brightness not to be depressing. However, it must likewise be restful. It is necessary to be able to darken a bedroom for sleeping." p. 156

(6) work areas - "good functional lighting" p. 156

CHAPTER III

BEDROOM

The next step was to design the space of the bedroom by taking into account the physical senses. By pleasing these senses, the design would be laid for a 'pleasing' environment.

My first step was to define the activities which would take place in the bedroom:

sleep	clothe	entertainment
study	adornment	communication

With the activities defined, I would determine the user's needs for space and furnishings and design these according to the physical senses.

spacial need	sight
furnishings	touch
	hearing
	smell
	taste

With the design criteria complete I could then build a scaled model, photograph it and study the effects created by varying the shapes, textures, colors and lighting.

BEDROOM

"FOR THE MOST PART STUDENTS WILL WANT TO CHANGE FROM DOUBLE TO SINGLE ACCOMODATIONS AS THEY PROGRESS THROUGH SCHOOL." p. 74 (1)

"....STUDENTS WANT A PERSONAL SPACE (CAPABLE OF CONTAINING ALL THEIR FURNISHINGS AND EQUIPMENT) THAT IS VISUALLY SEPARATE FROM THEIR ROOMMATE." p. 74 (1)

"STUDENTS WANT TO HAVE VISITORS IN THEIR QUARTERS WITHOUT INCONVENIENCE TO OTHERS." p. 74 (1)

"BED IS A POPULAR STUDY LOCATION"-"FREE-STANDING OR HUNG FROM A WALL (BED UNIT INCLUDES ADJUSTABLE BACKREST, INTEGRAL LIGHTING FIXTURE, SWING AWAY NIGHT TABLE)." p. 72 (1)

SMELL & TASTE

THE SENSES OF TASTE AND SMELL ARE NOT AFFECTED BY ANY ACTIVITY SPECIFICALLY. HOWEVER, THERE IS (IN REGARD TO SMELL) A NEED TO REMOVE UNPLEASANT ODORS WHEN THEY EXIST. THEREFORE, GOOD VENTILATION IS ESSENTIAL WHEN THERE IS A NEED. TASTE AND SMELL WILL NOT BE CONSIDERED IN THE INDIVIDUAL ACTIVITIES.

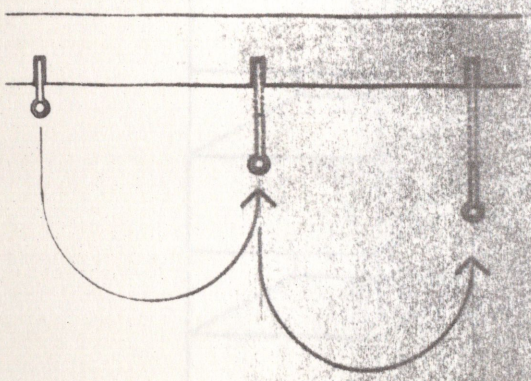
TOUCH

TO MAKE A SPACE 'PLEASING' IT SHOULD BE COMFORTABLE. COMFORTABLE IN TERM OF HOT COLD. THE TEMPERATURE SHOULD BE VARIABLE TO MEET THE USERS IMMEDIATE DESIRE FOR COMFORT. THEREFORE, THE HEATING AND COOLING SYSTEM SHOULD BE CONTROLLED BY THE USER WITH IMMEDIATE RESULTS.

HEARING

THE ROOM SHOULD BE SOUND-PROOFED SO NEIGHBORING ACTIVITIES WILL NOT BE DISTURBED OR DISTURBING. THE SOUND SHOULD BE ABLE TO BE REGULATED ACCORDING TO THE DESIRES OF THE USER. THIS IS A GENERAL CRITERIA FOR ALL ACTIVITIES. THE SENSE OF HEARING WILL, THEREFORE, BE DISCUSSED NO FURTHER.

"STUDENTS WANT TO EXTENSIVELY "PERSONALIZE" THEIR ROOMS; THIS INVOLVES TACKING, PAINTING, HANGING, ETC., ON WALL SURFACES." p. 72 (1)



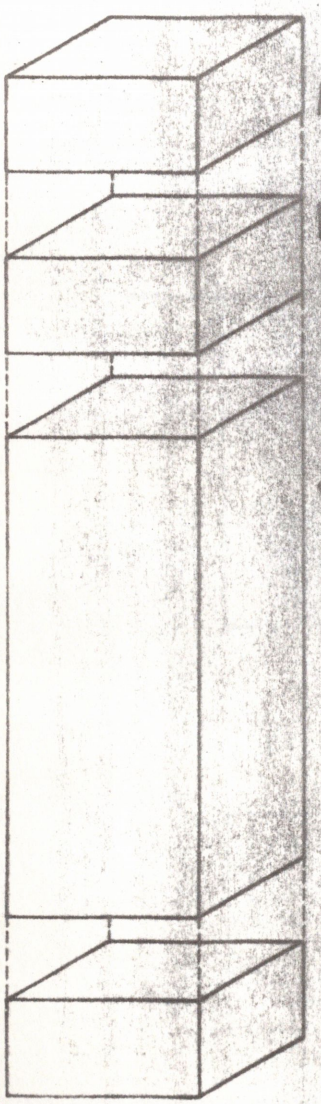
SECTION

DEVICES TO HANG THINGS FROM THE CEILING OR WALL - ABILITY TO REMOVE AND MOVE TO A DIFFERENT LOCATION.

TACKBOARD : TO FIT MODULE OF BED SO IT COULD ALSO BE MOVED AS THE BED CAN BE CHANGED IN HEIGHT AND ROOM LOCATION (SEE BED).

"STUDENTS TRY TO VISUALLY "BREAK-UP" THEIR ROOM SPACE." p. 72 (1)

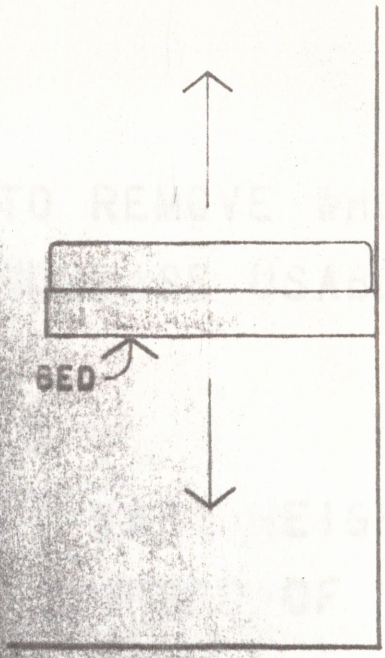
"STUDENTS WANT TO REARRANGE THEIR FURNITURE FROM TIME TO TIME." p. 72 (1)



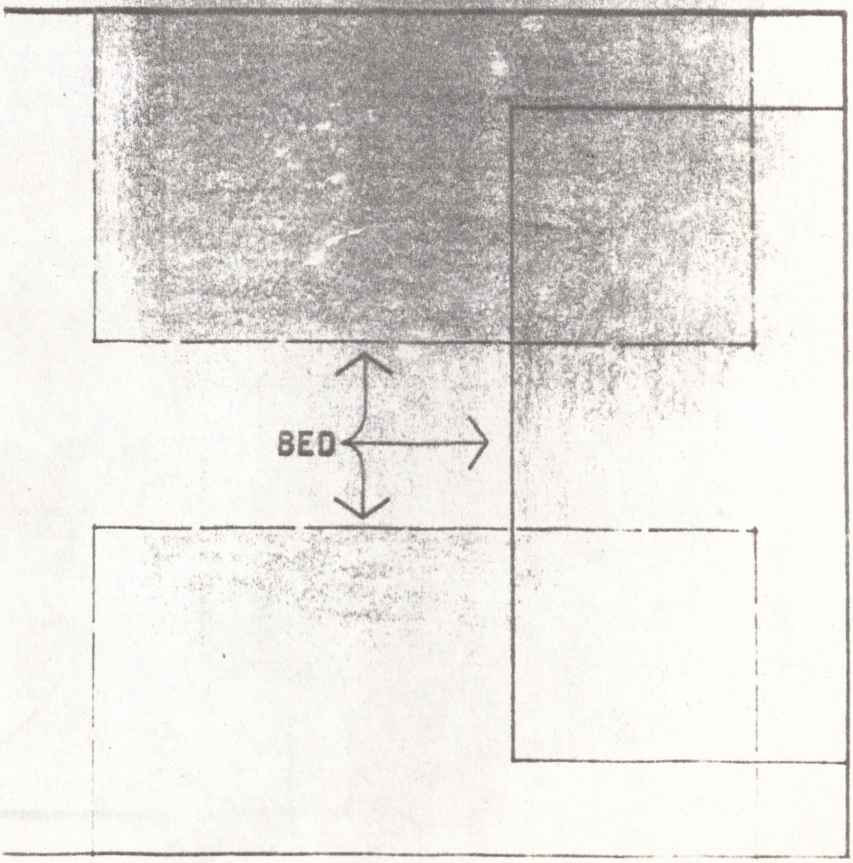
DRAWERS AND CLOSET :
MODULAR (STACK AND COMBINE)
TOP SURFACE TO SET THINGS ON OR SIT ON.

ISOMETRIC

THE BED HEIGHT AND LOCATION IN THE ROOM SHOULD BE VARIABLE.



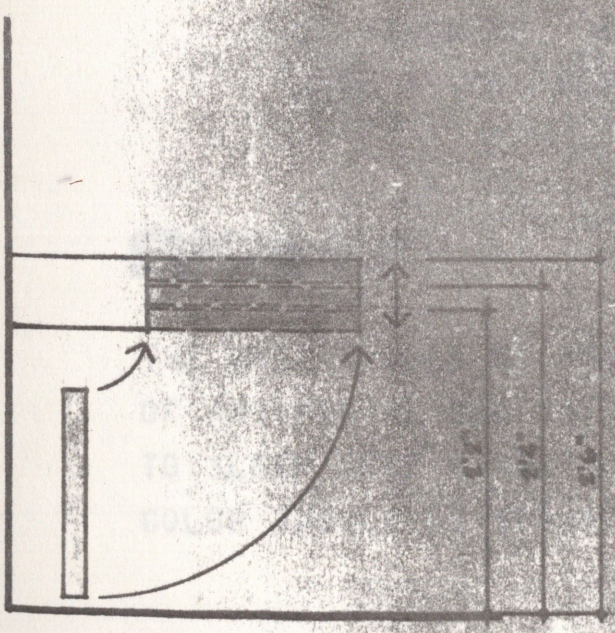
ELEVATION



PLAN

DESK : SHOULD BE MADE TO REMOVE WHEN NOT IN USE TO INCREASE USABLE SPACE IN THE ROOM.

SHOULD BE MADE TO VARY HEIGHTS TO FIT THE DESIRED NEED OF THE STUDENTS.



ELEVATION

SLEEP

SPACIAL NEED

THE USER : ABLE TO GET COMFORTABLE
ABLE TO RELAX
SECURITY

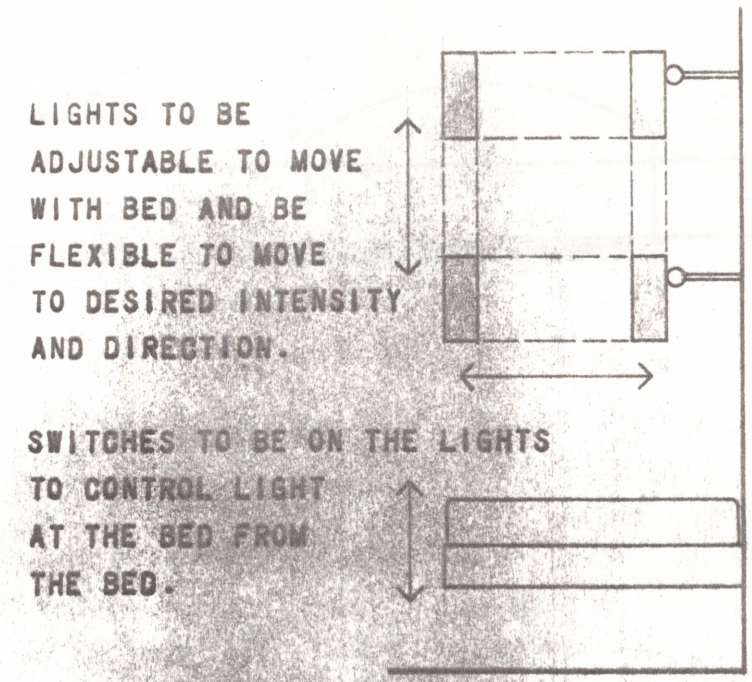
FURNISHINGS

BED : TO ACCOMODATE THE WIDE RANGE IN SIZE OF STUDENTS - LARGE ENOUGH TO ACCOMODATE A TALL PERSON COMFORTABLY

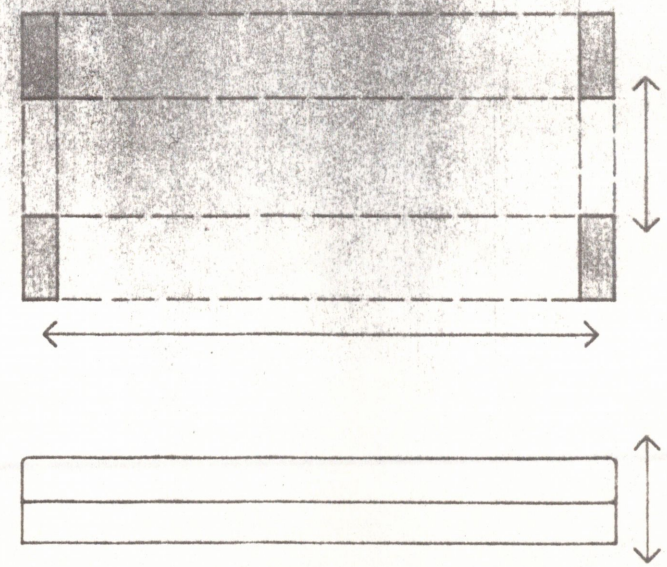
SIGHT

THE USER SHOULD BE ABLE TO CONTROL THE AMOUNT OF ARTIFICIAL AND NATURAL LIGHT HE REQUIRES TO SLEEP COMFORTABLY. SHAPES, TEXTURES AND COLOR SHOULD BE VISUALLY RELAXING.

ARTIFICIAL LIGHT

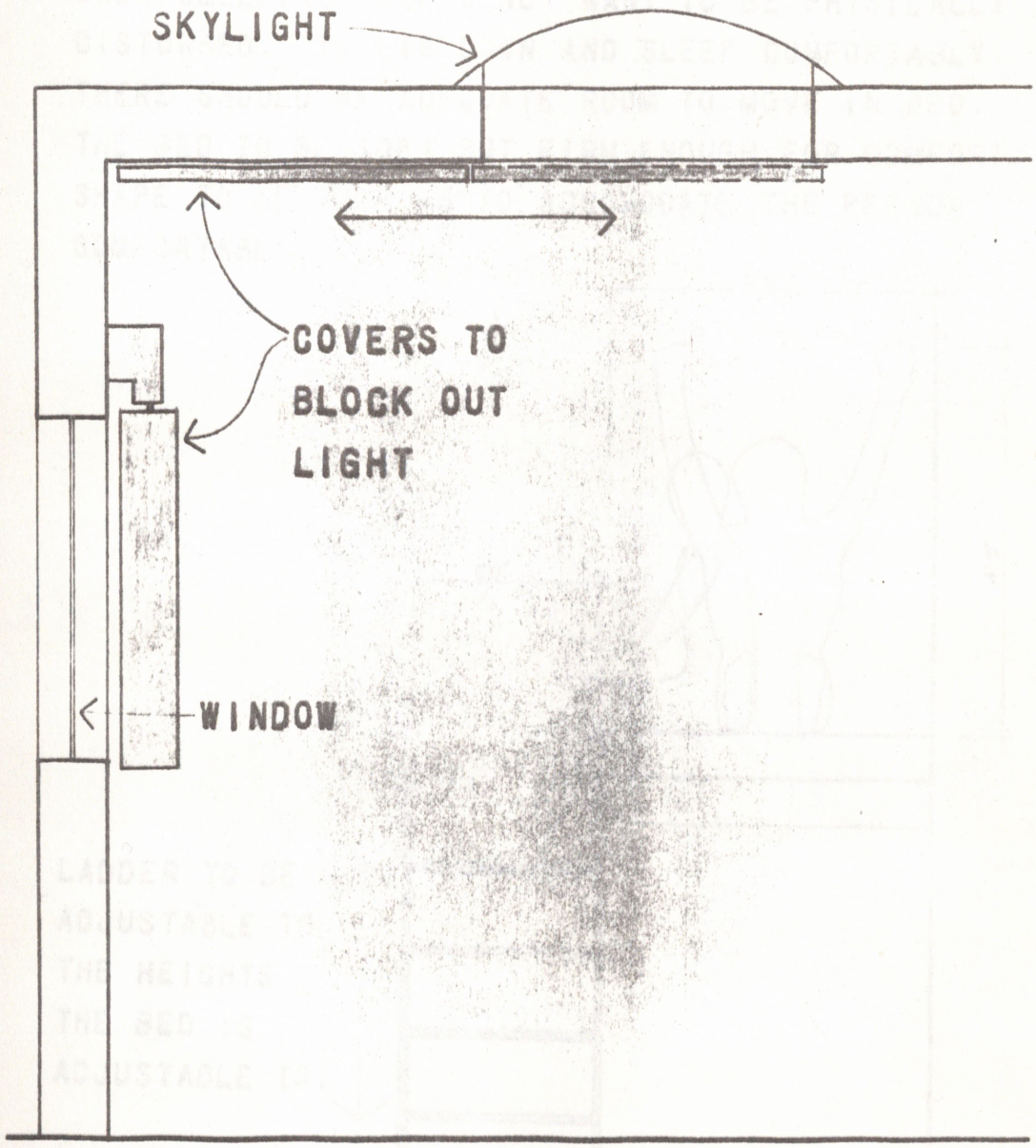


ELEVATION



ELEVATION

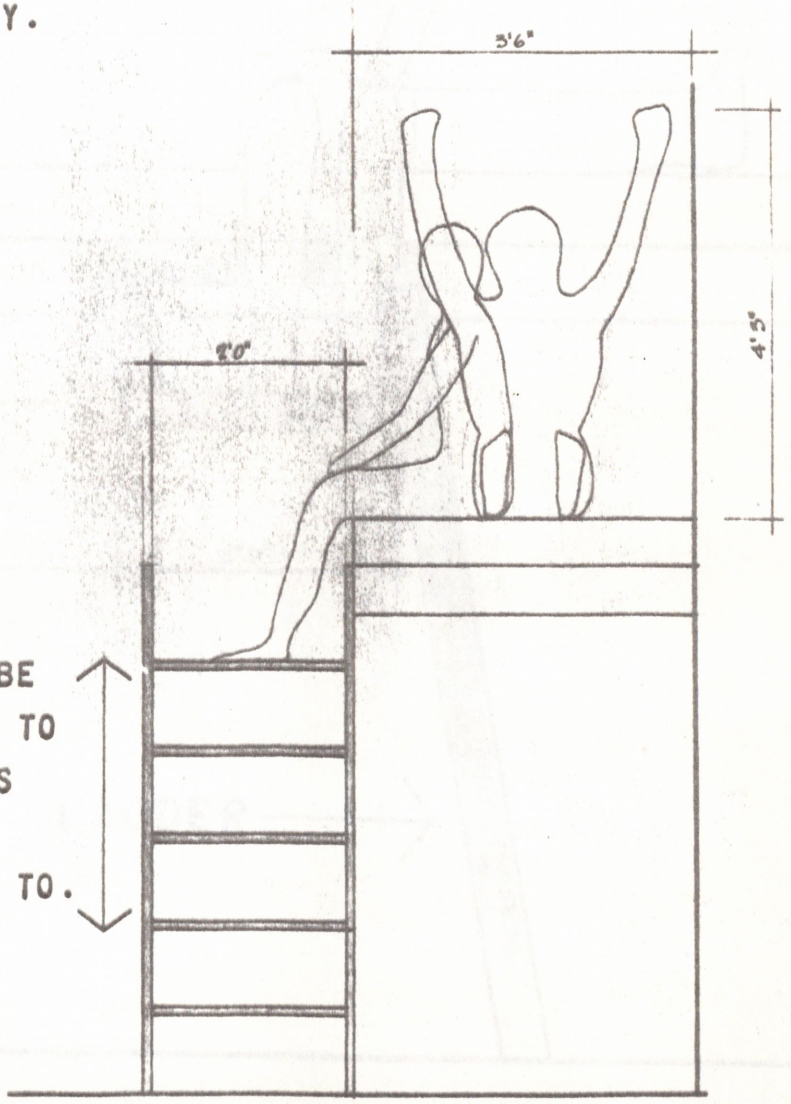
NATURAL LIGHT



SECTION

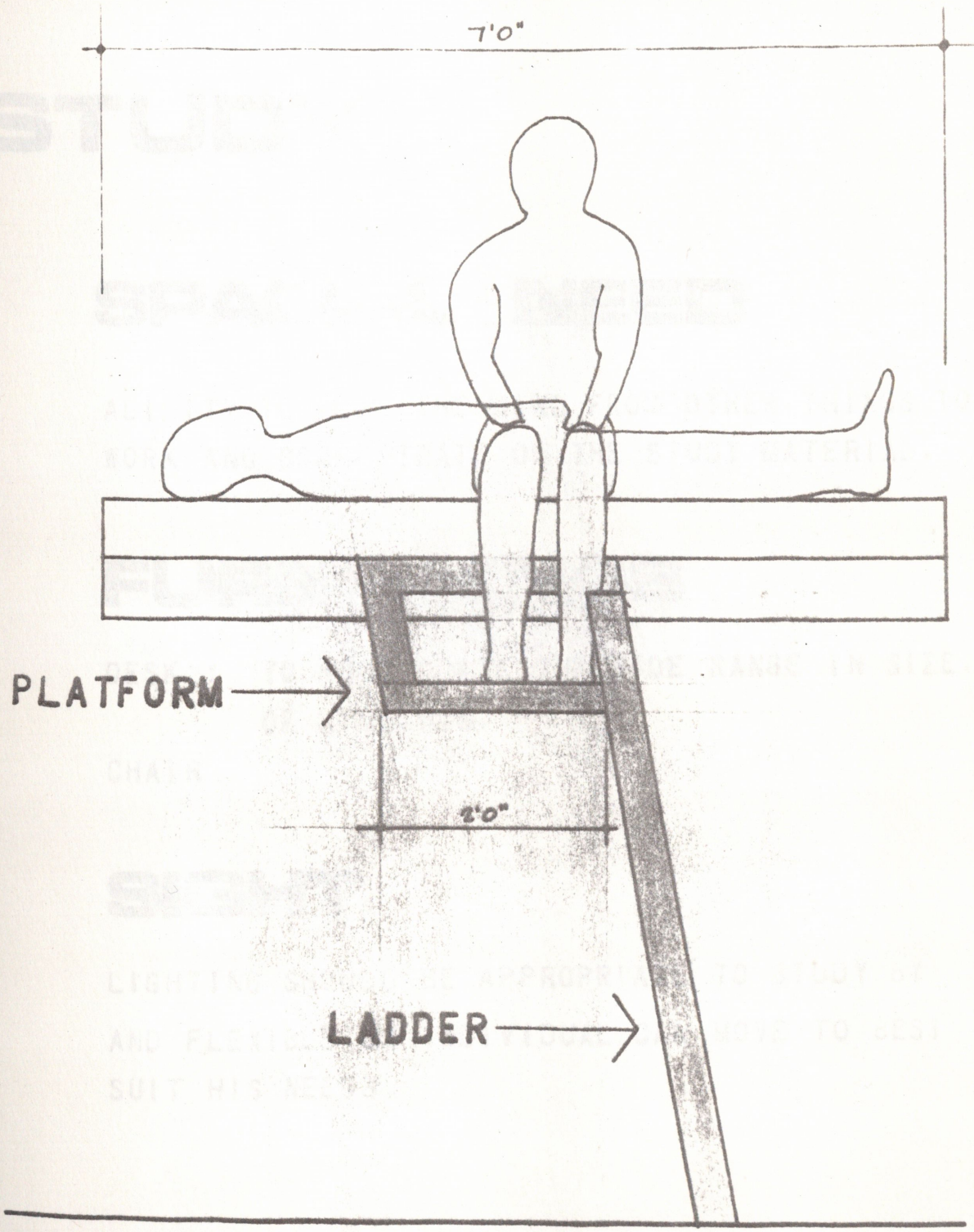
TOUCH

WHEN SLEEPING YOU DO NOT WANT TO BE PHYSICALLY DISTURBED. TO LIE DOWN AND SLEEP COMFORTABLY, THERE SHOULD BE ADEQUATE ROOM TO MOVE IN BED. THE BED TO BE SOFT BUT FIRM ENOUGH FOR COMFORT. SHAPE TO BE SUCH AS TO ACCOMODATE THE PERSON COMFORTABLY.



LADDER TO BE ADJUSTABLE TO THE HEIGHTS THE BED IS ADJUSTABLE TO.

ELEVATION



ELEVATION

STUDY

SPACIAL NEED

ABILITY TO FREE THE MIND FROM OTHER THINGS TO WORK AND CONCENTRATE ON THE STUDY MATERIAL.

FURNISHINGS

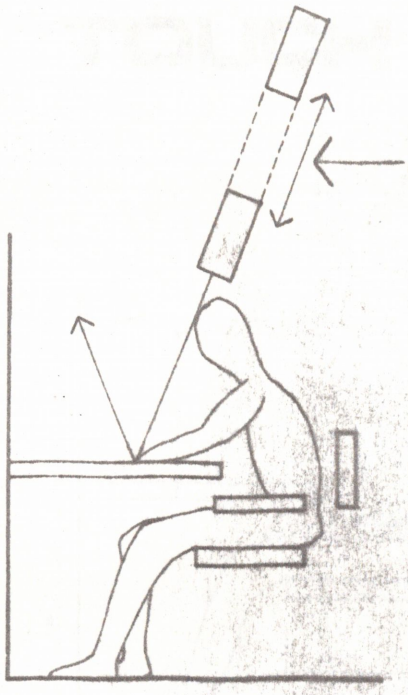
DESK : TO ACCOMODATE THE WIDE RANGE IN SIZE OF STUDENTS.

CHAIR

SIGHT

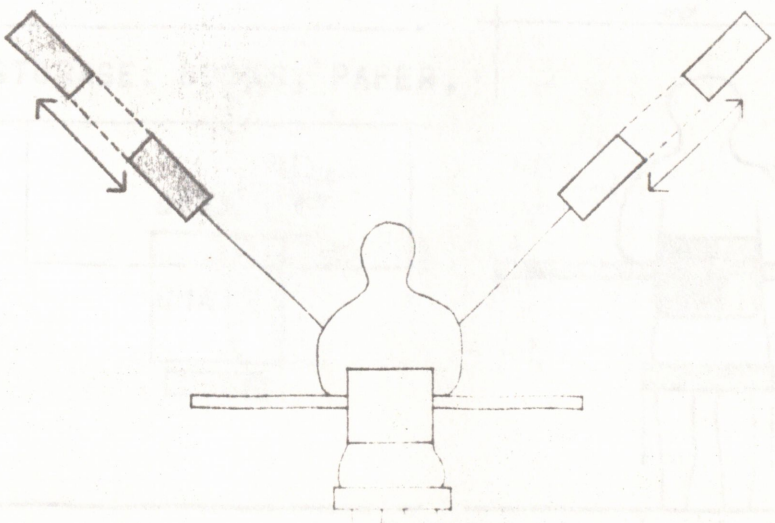
LIGHTING SHOULD BE APPROPRIATE TO STUDY BY AND FLEXIBLE SO INDIVIDUAL CAN MOVE TO BEST SUIT HIS NEEDS.

ELIMINATE GLARE AND DISTRACTING BRIGHTNESS



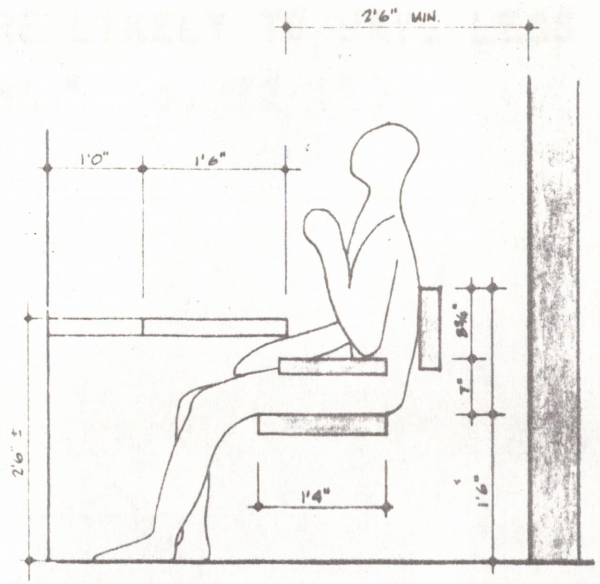
ELEVATION

NEVER CREATE A REFLECTION ON THE TASK.



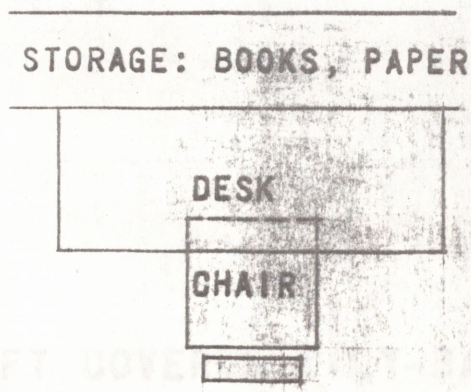
ELEVATION

TOUCH

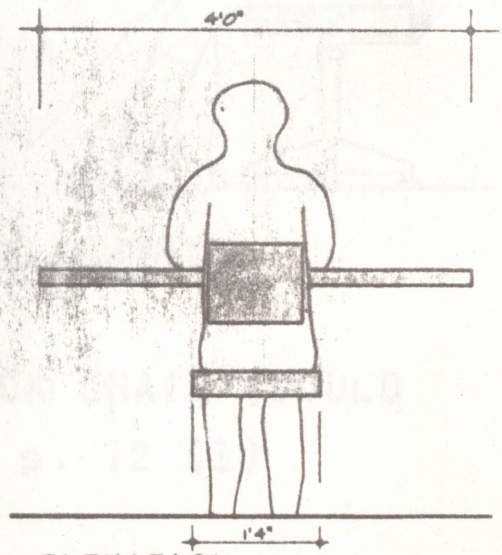


ELEVATION

DESKS MUST PERMIT COMFORTABLE STUDY INVOLVING TWO OR THREE BOOKS, TYPEWRITER AND PAPERS.

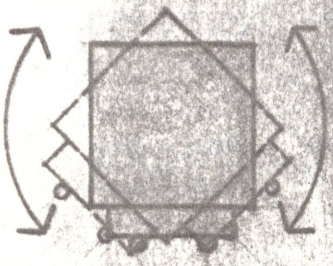


PLAN

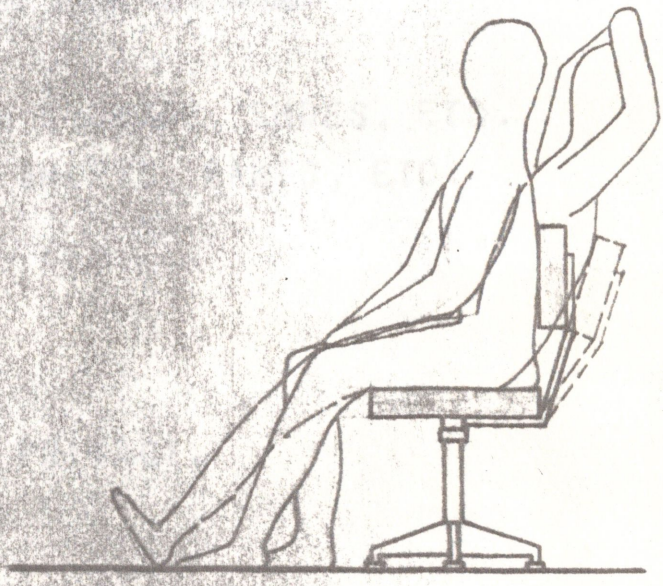


ELEVATION

"DESK CHAIR MUST PERMIT FREE SHIFTING, TILTING, LEG STRETCHING, ETC., COMFORTABLY; WHEN STUDENTS CANNOT MAKE SUCH ADAPTATIONS THEY ARE LIKELY TO HAVE LESS PRODUCTIVE STUDY SESSIONS." p. 72 (1)



PLAN



ELEVATION

SOFT COVERED TILT-BACK CHAIR (COULD DOUBLE AS AN EASY CHAIR). p. 72 (1)

CLOTHE

SPACIAL NEED

SPACE TO CLOTHE AND TO STORE CLOTHING.

FURNISHINGS

CLOSET : HANGING STORAGE, SHOES, ETC.
DRAWERS: SOCKS, SHIRTS, PANTS, ETC.

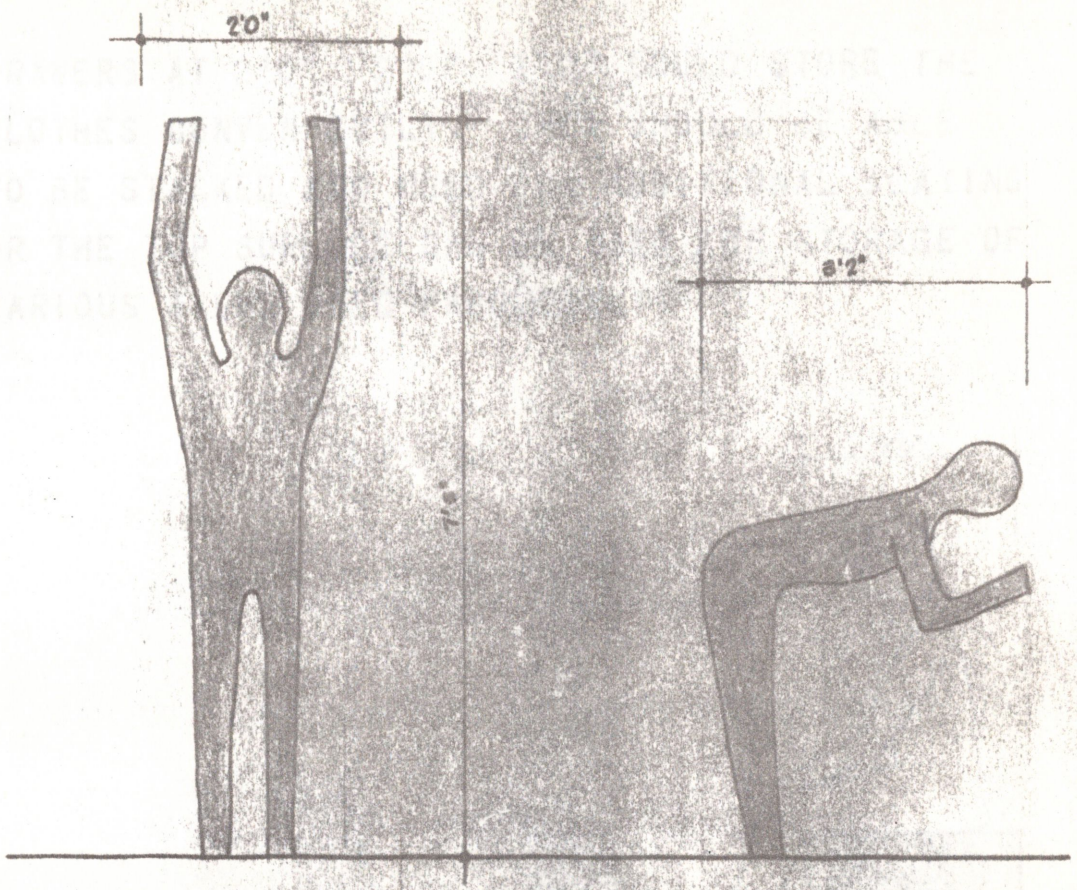
SIGHT

SHOULD BE VISUAL PRIVACY.

TOUCH

APPROPRIATE SPACE FOR DRESSING.

(NEXT PAGE)



ELEVATIONS

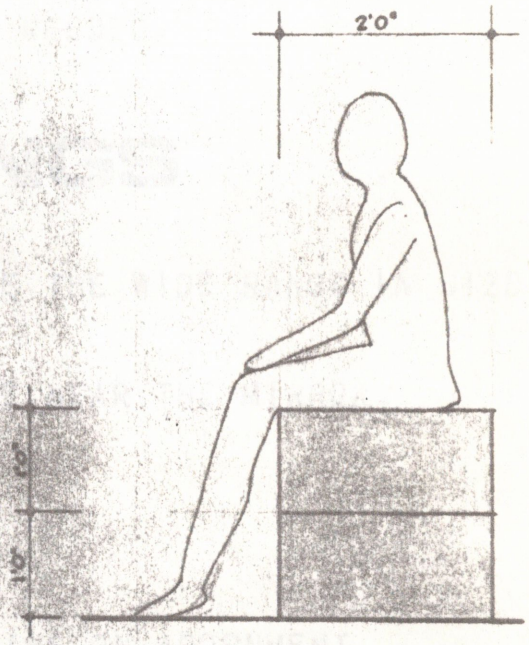
APPROPRIATE SPACE TO STORE CLOTHING.



SHIRTS & PANTS

LARGER CLOTHES TO BE STORED IN DRAWERS.

DRAWERS AT 2'0" 2'0" 1'0" COULD STORE THE CLOTHES CONVENIENTLY. THEY SHOULD BE ABLE TO BE STACKED AND USED FOR ADDITIONAL SEATING OR THE TOP SURFACE CAN BE USED FOR STORAGE OF VARIOUS ITEMS USED FREQUENTLY.



ELEVATION

"THE CLOSET UNIT IS FREE-STANDING AND MOVABLE; .... SOME MINIMUM DIMENSIONS FOR CLOSET UNIT:" p. 72 (1)

FULL LENGTH HANGING SPACE: 60" H 20-30" W

1/2 LENGTH HANGING SPACE: 30" H 16" W

ADORNMENT

SPACIAL NEED

SPACE TO ADORN (MAKE-UP, COMB, ETC.) AND STORAGE FOR THE THINGS NEEDED.

FURNISHINGS

MIRROR : TO ACCOMODATE THE WIDE RANGE IN SIZE OF STUDENTS.

STORAGE : ABILITY TO BE NEAR THE MIRROR.

SIGHT

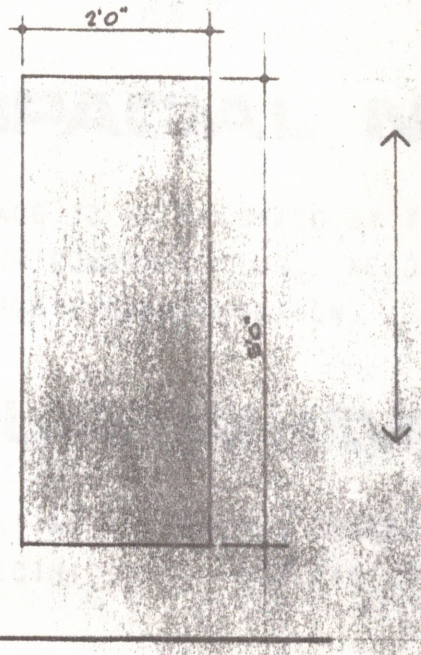
SHOULD BE DIRECT LIGHTING ON ADORNMENT.

MIRRORS : MOVABLE ON WALL DEVICES TO HANG HANG THINGS FROM (SEE BEDROOM).

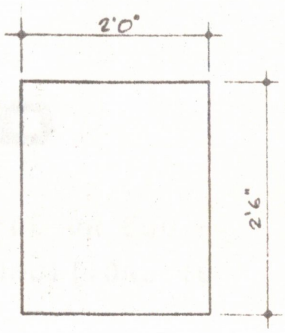
FULL LENGTH & REGULAR

(NEXT PAGE)

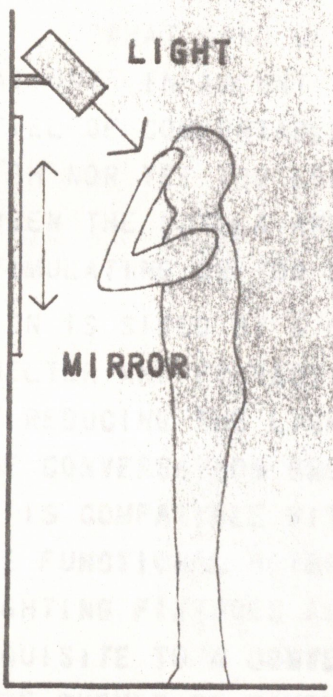
FULL LENGTH



REGULAR



ELEVATIONS



ELEVATION

COMMUNICATION

SPACIAL NEED

SPACE TO BE OCCUPIED BY THE PEOPLE OR EQUIPMENT COMMUNICATING. NEED FOR CONDITIONS TO PROMOTE COMMUNICATION.

FURNISHINGS

SEATING : CHAIRS, DRAWERS, AND BED
ELECTRICITY : OUTLETS CONVENIENT FOR USE.

SIGHT

"WHAT KIND OF LIGHTING FURTHERS CONVERSATION? IN AMOUNT IT SHOULD BE A MEDIUM HIGH LEVEL OF COMFORTABLE ILLUMINATION, NEITHER TOO HIGH NOR YET TOO LOW. THUS IT WILL STEER BETWEEN THE SCYLLA AND CHARYBDIS OF BEING TOO STIMULATING OR TOO DEPRESSING. GOOD CONVERSATION IS SIDED BY A CLOISTERED FEELING OF SHELTER AND PRIVACY. THIS CAN BE ACCOMPLISHED BY REDUCING THE LIGHT IN THE ROOM AREAS BEYOND THE CONVERSATION GROUP TO AS LOW A BRIGHTNESS AS IS COMPATIBLE WITH THE RECOMMENDED FIVE TO ONE FUNCTIONAL BRIGHTNESS RATIO. LOW-PLACED LIGHTING FIXTURES AID THE FEELING OF INTIMACY REQUISITE TO A CONVERSATION AREA. PARTICULAR CARE SHOULD BE TAKEN TO SEE THAT THE LIGHTING IS WARM IN TONE." p. 155 (2)

ENTERTAINMENT

SPACIAL NEED

SPACE TO ENTERTAIN A FEW OTHERS AND TO BE OCCUPIED BY THE EQUIPMENT THE PERSON NEEDS TO ENTERTAIN WITH (TV, RADIO, HOBBIES, ETC.).

FURNISHINGS

SEATING : CHAIR, DRAWERS, AND BED.
ELECTRICITY : OUTLETS CONVENIENT FOR USE.

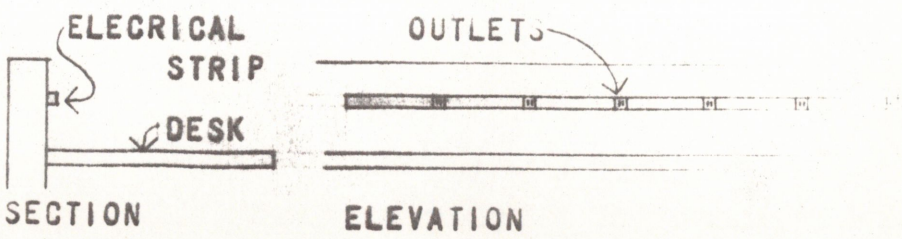
SIGHT

LIGHT SHOULD BE FLEXIBLE TO SET THE DESIRED MOOD.

TOUCH

SPACE FOR UP TO 4 PEOPLE.

ELECTRICITY



CHAPTER IV

MEDIA VARIATION

M E D I A V A R I A T I O N

By taking into account my research on how the shapes, textures, colors, and lighting affected people and the criteria set for the design of the bedroom, I could design several variations of the space. It was my objective to use this type of study to get a better understanding for the design of the environment.

Therefore, I built a model of the bedroom and made it highly flexible so changes could easily be set up. By varying the individual media, I could determine the 'feelings' created in that space by projecting myself into it.

I then took a slide of each variation. By projecting these on the wall, I could imagine myself in that space. With this I could crit the space as to the good and bad use of the various media.

SUMMARY

After completing the slides, I found that I could not arrive at conclusions I had previously hoped. The study had many faults which prevented accurate deductions.

I realized that my reactions and 'feelings' in the environment would not necessarily be the same as someone elses. It was therefore invalid to use my deductions for someone else. To overcome this, I would suggest a presentation to numerous and varied people. To do this a scoring method would have to be devised. These 'scores' would then be analyzed to show some general 'feelings' about certain media set-up in the environment.

The slides posed a problem also. The camera was moved to different distances and some spaces felt different because of the variations caused by sizes, angles of view and lighting. These would have to be carefully controlled to make possible a valid comparison in media changes.

And finally there were numerous variations that were possible. It just was not possible to make a complete study in two quarters.

With these things taken in mind, a study such as this has potential for being a study very pertinent to the designer. Because my time was spent trying, experimenting and researching, this study has a good foundation from which to work. It is a study that is needed and can be useful.

In conclusion, I would like to strongly encourage someone to pick up where I left off to continue this study to find the answers to questions often asked. Only theories and conjectures have been made. With something as this, designers could understand the media by which he designs with a more concrete foundation.

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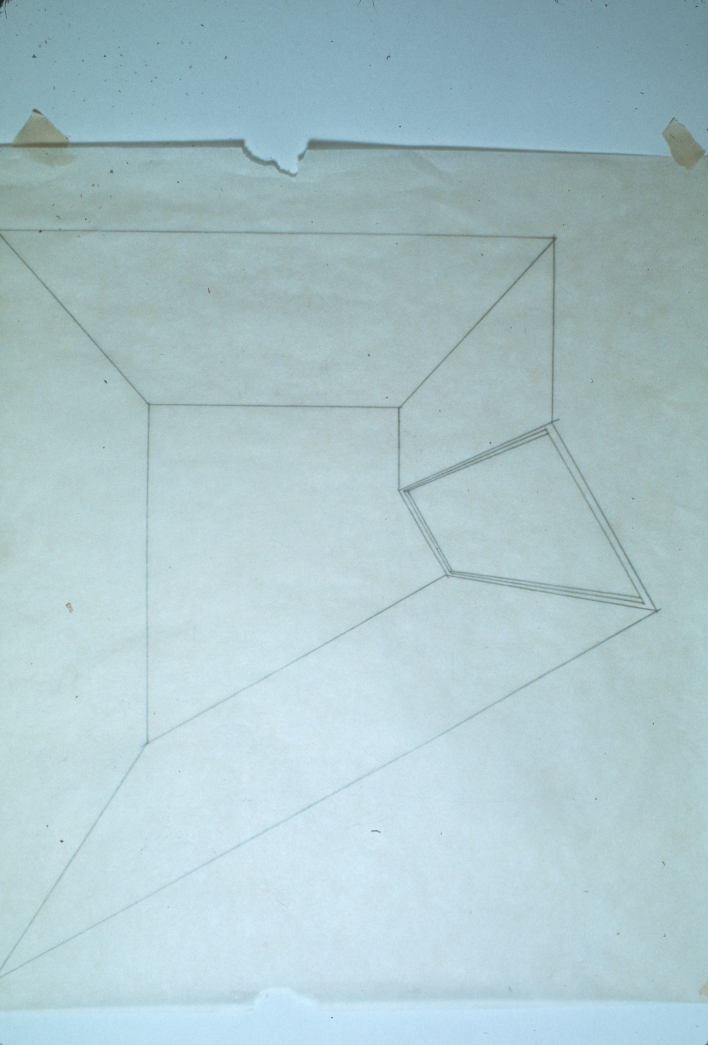


















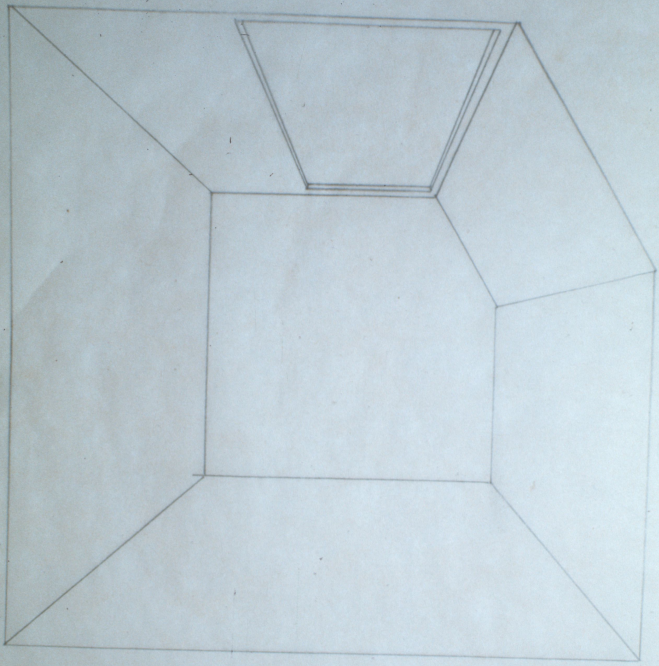


























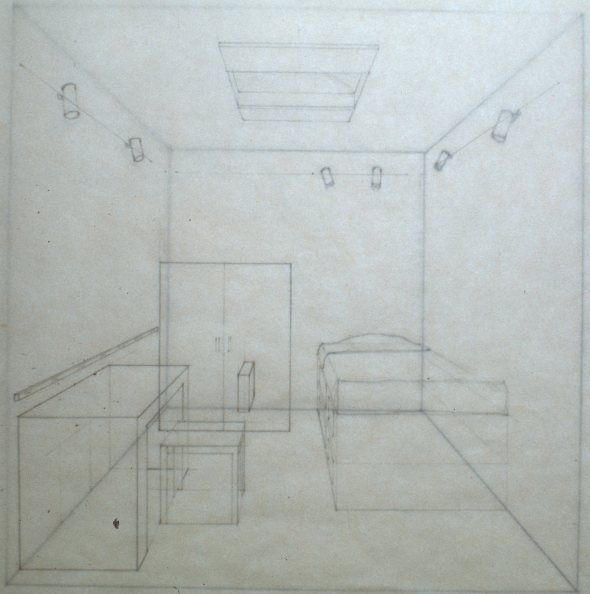




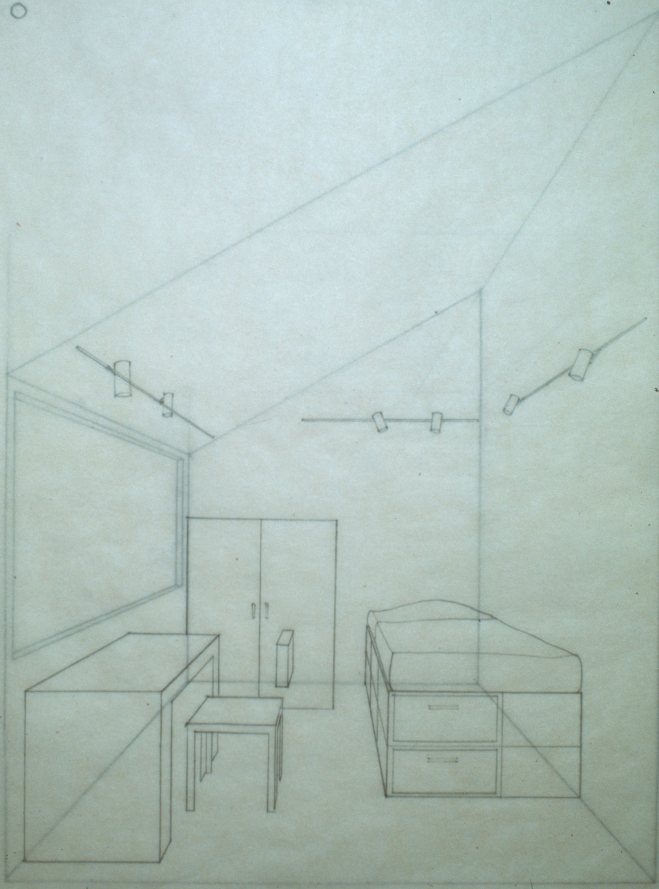






























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