To the Graduate Council:

I am submitting herewith a thesis written by James William Ellis entitled "The Condition of Challenge: A Tool for Experiential Design." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Architecture.

Tracy Moir-McClean, Major Professor

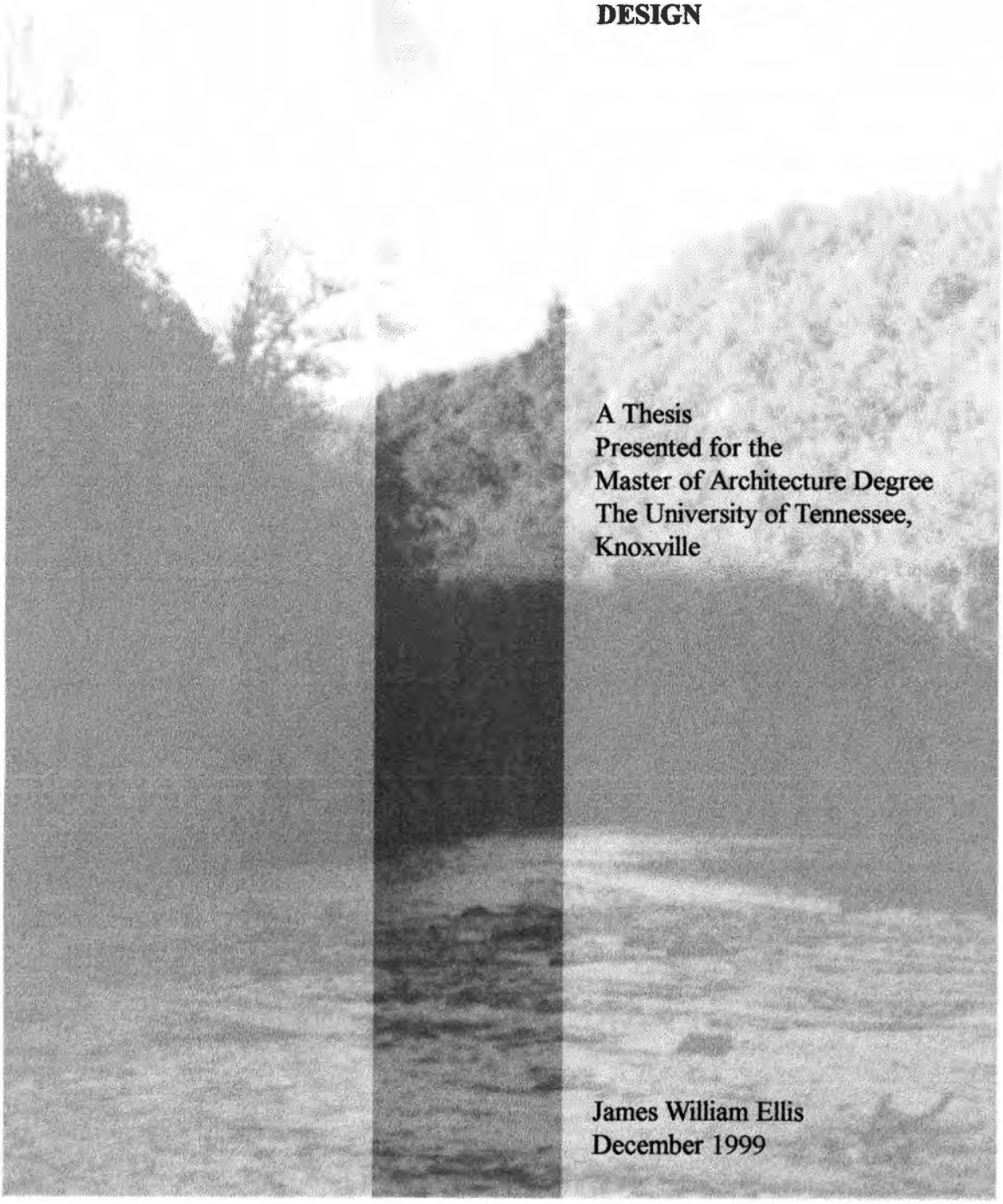
We have read this thesis and recommend its acceptance:

Accepted for the Council:

Associate Vice Chancellor and
Dean of The Graduate School

THE CONDITION OF CHALLENGE:

A TOOL FOR EXPERIENTIAL DESIGN



A Thesis
Presented for the
Master of Architecture Degree
The University of Tennessee,
Knoxville

James William Ellis
December 1999

DEDICATION

> *Finally, brothers, whatever is true, whatever is noble, whatever is right, whatever is pure, whatever is lovely, whatever is admirable – if any thing is excellent or praiseworthy – think about such things.* – Phil. 4:8

If any portion of this body of work is worthy of admiration or praise,

give God the glory.

The Lord is my rock, my fortress, my deliverer...
– Ps. 18:2

ACKNOWLEDGMENTS

This endeavor would not have been possible without the commitment and support of a number of individuals. I would like to thank the faculty members who served on my committee, Dr. J. William Rudd, Tracy Moir-McClean, Michael Ware, and Christina Betanzos, each of whom meaningfully contributed to the success of this investigation. In particular, I would like to thank Tracy Moir-McClean for her reassurance and encouraging words when times became a bit stressful.

My family has always been a source of encouragement to me, and I would like to thank my parents, Jim and Julie, for their love and selfless support over the years.

There have been many outstanding individuals whom I have come to know during my years in graduate school who have lent support in countless ways. I especially want to thank Alicia Blevins for always being there to hear my frustrations and for believing in me.

Finally, I would like to thank Larry Alexander, a true friend and brother who has been a consistent source of strength and motivation throughout this journey. Thank you for sharing your knowledge, vision, and loving support, and for helping me to see the potential for excellence that lies within each of us.

THESIS STATEMENT

The experience of challenge in the natural environment provides opportunities for achievement that lead to psychological growth such as increased self esteem. This inquiry addresses the potential role of environmental challenge and comfort in environments designed to facilitate psychological growth and learning. By studying physical, psychological, and sensory experiences of challenge in a landscape, it may be possible to incorporate similar physical, psychological, and sensory experiences into man-made interventions in the same landscape strengthening the potential support for psychological growth and learning in the total experience of environment.

TABLE OF CONTENTS

I. INTRODUCTION 1
- Thesis Statement 2
- Rationale 2
- Architectural Issues 5

II. ISSUES EXPLORATION 9
- Perception 10
- Strength 17
- Gravity 22
- Environment 23

III. PROGRAM EXPLORATION 30
- Rationale 31
- Typeologies 33
- Precedents 41

IV. PROGRAM REQUIREMENTS 46
- Overview 47
- Lodge Facility 50
- Dormitory 53
- Out Buildings 54

V. SITE EXPLORATION 58
- Rationale 59
- Site Analysis 62
- Site Design 65

VI. SCHEMATIC DESIGN 74
- Focus Area 75
- Design Forces 75

EPILOGUE 85

BIBLIOGRAPHY 92

APPENDIX 96

VITA 117

LIST OF FIGURES

FIGURE	TITLE	PAGE
1.1	Architectural Issues Diagram	6
2.1	Desert Masonry	10
2.2	Paulk Residence	11
2.3	Chimney, Watson House	12
2.4	"Fire Stair," Villa Mairea	12
2.5	Inglenook Hearth	12
2.6	Bonfire	13
2.7	Pine Branch	13
2.8	Cascading Stream	14
2.9	Mountain-top View	15
2.10	Sunset Terrace, Taliesin West	15
2.11	Pinecote Pavilion	16
2.12	Pinecote Pavilion Interior	16
2.13	Thorncrown Chapel	16
2.14a	Distant View (Portuguese monastery)	17
2.14b	Final Ascent to Chapel	17
2.14c	Point of Arrival	17
2.15	Garden Room, Taliesin West	18
2.16	Social Zoning Diagram (Garden Room)	18
2.17	Frontispiece	19
2.18	Lumberman's Cabin	19
2.19	Roman City Wall	20
2.20	Medieval Fortress	20
2.21	Defensive Wall	20
2.22	Civil War Infantry Fortification	21
2.23	View From East Rim (Big South Fork)	21
2.24	Grand Canyon Watchtower	21
2.25	Stairs in the Forest	22
2.26	Shear Rock Face	23
2.27	Attic Room, Shaker Village at Pleasant Hill, Ky.	24
2.28	Wood Grain	24
2.29	Kansai International Airport, Terminal	25
2.30	Patcenter, Cable Roof Structure	26
2.31	Patcenter, Load Path Diagram	26
3.1	Summary of Experiential Education Principles	34
3.2	Diagram of the Experiential Learning Cycle	34
3.3	Diagram of the Adventure Wave	35
3.4	Full Value Contract	35
3.5	Human Knot	36
3.6a	Trolley (Part I)	36
3.6b	Trolley (Part II)	37

3.7 Marshmallows Diagrammed 37
3.8 Marshmallows Performed 37
3.9 Trust Lean 38
3.10 Willow-in-the-Wind 38
3.11 Trust Fall 38
3.12 Spider's Web 39
3.13 Spider's Web Performed 39
3.14 Mohawk Walk 39
3.15a-b Mohawk Walk Performed 40
3.16 Two-Line Bridge Performed 40
3.17 Belay Team 40
3.18 Pamper Pole 41
3.19 Zip Line Performed 41
3.20 Cope Tower, Camp Davey Crockett, diagrammed 42
3.21 Cope Tower, Camp Davey Crockett 42
3.22 Cope Tower in Use 42
3.23 Tree-Top Ropes Course 43
3.24 Vertical Playpen 43
3.25 Cat Walk, Project Adventure 43
3.26 Climbing/Rappelling Tower 44

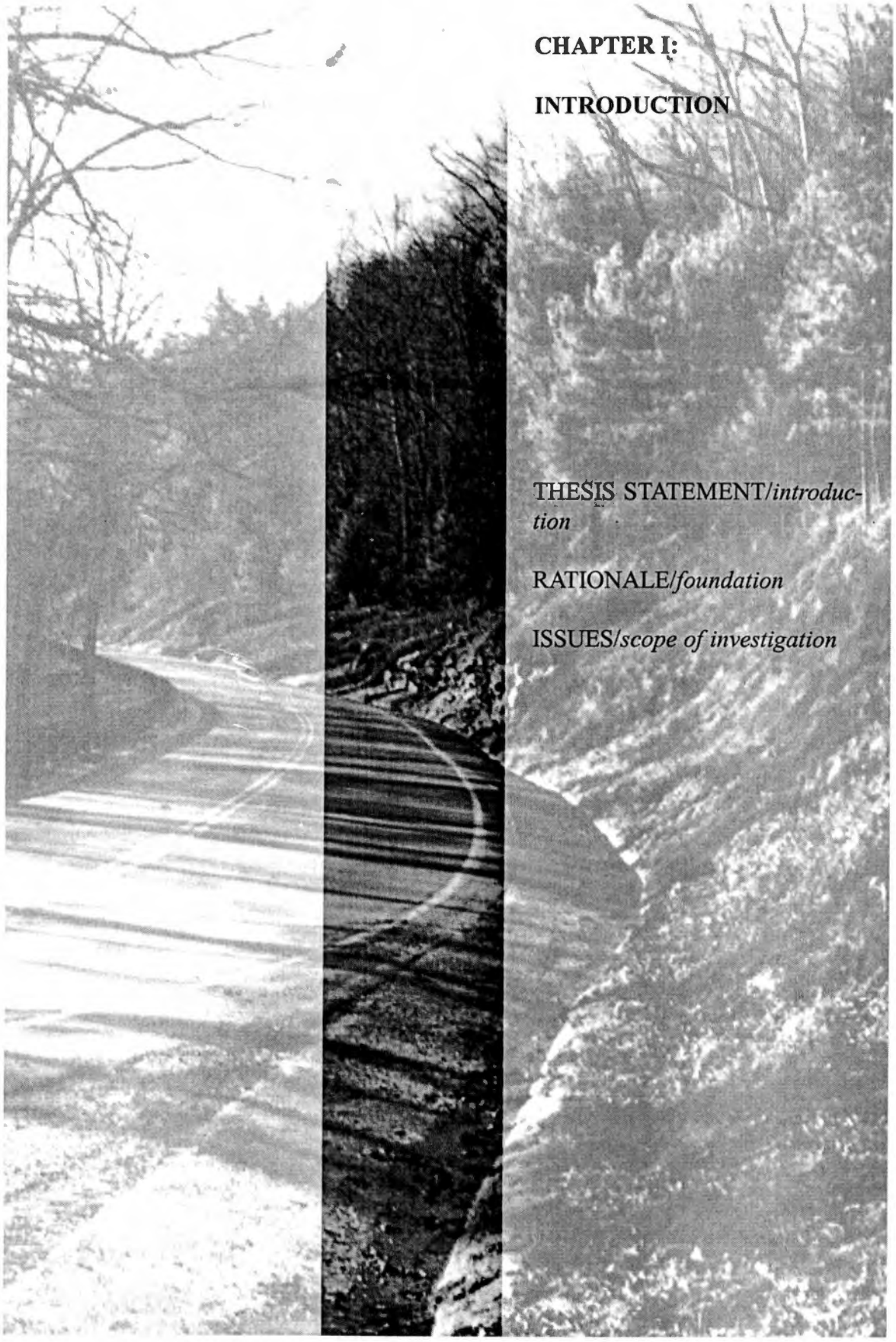
4.1 Square Footage Calculations for Program Spaces 48
4.2 Upper Activity Space 51
4.3 Lower Activity Space 51
4.4 Portico Spaces 51
4.5 Meeting and Administration Spaces 52
4.6 Stronghold Level 52
4.7 Terrace Level 52
4.8 Suspension Platform 53
4.9 Cottage Rooms 53
4.10 Bunk Room and Bath 54
4.11 Open Air Cabin Plan 54
4.12 Challenge Platform Plan 55
4.13 Staff Cabin Floor Plan 56

5.1 Topographic Map 59
5.2 Topographic Rendering 59
5.3 Rock Wedge Failure 60
5.4 Relief Model 61
5.5a Site Features: Runoff 62
5.5b Man-made Infrastructure 62
5.5c Significant Slope 62
5.5d Clearings 62
5.5e Sun Exposure 62
5.6 Viewpoint A 63
5.7 Viewpoint B 63
5.8 Viewpoint C 63
5.9 Dark and Light Prospect 64

5.10 Site Scheme 1 65
5.11 Site Scheme 2 65
5.12 Site Scheme Diagram 65
5.13 Ropes Course Site Plan 66
5.14 Lodge Site Forces 67
5.15 Relationship Between Activity Lodge and Dormitory 67
5.16 Cabin Area 68
5.17 Open-Air Cabin 68
5.18 Adirondack-Style Lean-to Shelter 68
5.19 Access to Site 69
5.20 Campfire Ring 69
5.21 Challenge Platform 70
5.22 Comfort Loop 71
5.23 Challenge Loop 71
5.24 Dynamic Loop 71
5.25 Lodge Site, Plateau Peninsula 72
5.26 Eastern Extent of Program 72
5.27 Eastern Edge of Site 72
5.28 Western Edge of Site 73
5.29 Interrelation of Dynamic and Challenge Loops 73
5.30 Relationship Between Comfort and Dynamic Loops 73

6.1 Lodge Diagram 75
6.2 Parti Diagram 75
6.3 Transparency Through Spaces 76
6.4 Fortification of Building Site 78
6.5 Prospect and Refuge 78
6.6 Exposure of Suspension Platform 79
6.7 Climbing Wall and Belay 80
6.8 Access to Suspension Platform 81
6.9 Load Bearing Diagram 82
6.10 Structural Relief Section 82
6.11 Chimney Model 83
6.12 Chimney Axonometric Model 83

7.1 Lodge Approach 86
7.2 Lodge Model 86
7.3 Pinwheel Entry 86
7.4 Main (Upper) Level Plan 87
7.5 Section Through Climb Area 87
7.6 Section Through Cargo Net 88
7.7 Perspective View in Main Activity Space 89
7.8 Lower Level Plan 89
7.9 Section of Covered Porch 90
7.10 Hearth Along Porch 90
7.11 Section Through Stronghold 90



CHAPTER I:

INTRODUCTION

THESIS STATEMENT/*introduction*

RATIONALE/*foundation*

ISSUES/*scope of investigation*

INTRODUCTION

Man-made interventions in the environment have traditionally addressed comfort. This goes back to the idea of the primitive hut, when a modest structure provided protection from the elements. The earth provided the foundation, while trees and other vegetation provided materials for structure and enclosure. Over time, the shelter has evolved into a vast array of building types which control ground planes, climate, light, and other elements providing a comfortable atmosphere for many different uses, including working, learning, and dwelling. However, opportunities for growth and learning exist beyond this fine-tuned environment when the individual is challenged by the unknown, unexpected, and unpredictable.

The quality of comfort as a steady-state condition of the built environment provides a point of departure from which challenge, a form of discomfort, can be perceived. A challenging condition, such as exploring an unknown landscape or hiking a rugged terrain, places individuals in a state of awareness in which the physical, sensual, and psychological self are engaged. This engagement leads to psychological benefits which can only be achieved when the steady state of comfort is relinquished in exchange for a challenging experience.

STATEMENT OF THESIS

The experience of challenge in the natural environment provides opportunities for achievement that lead to psychological growth such as increased self esteem. This inquiry addresses the potential role of environmental challenge and comfort in environments designed to facilitate psychological growth and learning. By studying physical, psychological, and sensory experiences of challenge in a landscape, it may be possible to incorporate similar physical, psychological, and sensory experiences into man-made interventions in the same landscape strengthening the potential support for psychological growth and learning in the total experience of environment.

RATIONALE

The natural environment is an appropriate setting in which to explore the experiential aspects of heightened states of awareness such as challenge. Although an elevated level of awareness can occur in many different cultural settings and environments, nature offers an original condition that is relevant to this study. Going back to the notion of the primitive hut, the original human intent was to provide comfort and control in the form of a shelter. This idea of shelter and enclosure was a means of mitigating the impact of the unknown, unexpected, and unpredictable elements of *nature* - man's original environment. Man had created a controlled physical environment within the naturally occurring environment. Since comfort evolved out of response to the discomfort of the

natural environment, it is appropriate to return to this environment as a source of challenging conditions.

Challenge can be defined in a number of ways:

(1) n. – (a) an invitation to engage in a contest or controversy of any kind; a defiance; (b) a claim or demand.
(2) v. – (a) to call to a contest; to call to answer; (b) to claim as due; to demand as a right; (c) to assert a right; to claim a place.
(Webster 1913, ARTFL Project)

These descriptions are typical, very forthright definitions of challenge. It is interesting to note that in these brief descriptions, architectural issues begin to surface as a possible manifestation of challenge. For instance, in definition 1a, the issue of engagement is the central idea. Definition 2c has strong implications for architecture with the notion of claiming a space. The issue of claiming, or positioning oneself within a space, connotes effort; effort implies challenge; and challenge gives rise to a heightened state of awareness – engaging the psychological and sensual self in the process of accomplishing the task of claiming a place.

A number of assumptions will be taken on scholarly authority, focusing on psychological influences and sensory engagement in the human experience of environment. The first assumption is that positive psychological growth and learning can occur when the mind is stimulated by psychological experiences pertaining to human environment. (Boud, 19) This is a widely accepted principle in the field of experiential education. Summarily, experiential education is a process through which a learner constructs knowledge, skill, and value from direct experiences. (Luckmann, 6) A branch of this field is adventure therapy, which is the embodiment of the previous definition. "...an antidote to the patient's low self-esteem and damaged integrity. Mastery of events introduces the patient to a sense of his power and self-worth. The patient gains strength from experiencing his power to overcome conflict and frustration... He becomes a believer in himself and his integrity. He discovers the power to reshape his life." – Melvin Weiner, clinical psychotherapist. (Johnson, 21) Through the discourse of this investigation, 'psychological issues' will refer to qualities of the human environment which effect an awareness of comfort or the lack thereof. In short, the psychological issues that engage the human "comfort zone" will explored.

The second assumption is that sensory experience contributes to a strong sense of place and belonging which, in turn, elicits a memorable experience. (Bloomer, x) "The experience of our bodies (sensually) is not locked into the immediate present but can be recollected through time." (Bloomer, x) The memory of a meaningful experience can become a foundational point of reference for future experiences rather than a mere recollection of a past event. This notion is closely related to the process of experiential learning, in which memorable experience fosters learning.

The third assumption is that the natural environment can offer sensory experiences that are different from those of the built environment. "I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach.... (Thoreau, 91) This quote from Thoreau's *Walden* illustrates that idea that, by removing one's self to an unfamiliar place, unique experiences can be had and knowledge can be gained. Throughout the book, Thoreau discusses his experiences of living in the woods; the sights, sounds, and seasons were all described from sensory experience. Thoreau knew what life was like in cities and towns, and he was concerned with the dulling of senses that can result when life is lived routinely. He saw the potential of escaping the contrived environment of man in exchange for the opportunities for growth and learning in the natural environment. (Thoreau, 81-91)

Similar views on the experience of man in environment have been expressed in the late Twentieth Century. In *The Green Imperative*, Victor Papanek addresses this issue: "Today most of us live in highly artificial environments that dull all our natural senses with artificial substitutes, or deny part of our sensory and sensual apparatus by neutralizing organic stimulus." (Papanek, 76)

The notion of engaging unfamiliar, and thus challenging experiences in the natural environment can also be seen in the area of adventure therapy. "The context of more complex and unpredictable environments such as those of a wilderness area are experienced as more meaningful..." (Johnson, 21)

The fourth assumption is that discomfort (in this case, challenge) can heighten sensory awareness, yielding positive results. This is derived from the following passage: "Comfort is confused with the absence of sensation. The norm has become rooms maintained at a constant temperature without any verticality or outlook or sunshine or breeze or discernible source of heat or center or, alas, meaning. These homogeneous environments require little of us, and they give little in return besides the shelter of a cubicle cocoon." (Bloomer, 105)

These assumptions lay the foundation for the claim that the challenge found in nature can offer meaningful sensory and psychological experiences which can be incorporated into man-made interventions. This claim will be the central focus of this thesis investigation. The conditions of the human environment embedded in the assumptions above can be manifest in the physical environment by exploring a series of architectural issues which provide a connection between the psychological, sensual, and the physical. Herein lies the criteria for the design investigation.

ARCHITECTURAL ISSUES

The dialogue between comfort and challenge has been established as an overall focus of this investigation. As a means of transition between the theoretical ideas and the physical design investigation, it will be necessary to explore the experiential aspects of the human condition in two principle areas: (1) the *psychological* and (2) the *sensual*. These areas are important as a means of establishing the criteria for the design investigation which will provide a *physical* manifest of these ideas.

As these three human aspects (psychological, sensual, and physical) are very broad categories, a range of issues will be established in order to focus the discourse. The following discussion of specific architectural issues is intended to define the parameters of the psychological and sensory aspects as they will be explored in the design investigation.

The primary discourse of this exploration is the progression between the human conditions of comfort and challenge. Comfort was introduced as the driving force behind the built environment. Man originally built shelter to provide comfort. Over several millennia, man has taken the primitive idea of shelter to amazing new levels. Whole cities of buildings with artificial lighting and climate have been achieved – buildings for many different uses and of many different sizes, shapes, and types. However, the original idea of shelter is still an underlying motive behind every piece of architecture. Comfort is a continuously sought quality and will be important to the design investigation in providing a starting point, or a point of departure, from which the entire investigation will unfold.

Although there is no ultimate set of criteria for determining which architectural elements affect comfort, this investigation will accept certain issues that can generally be thought of as determinants of comfort. The diagram in Figure 1.1 establishes three principle categories of architectural issues which feed the dialogue between challenge and comfort. These categories collectively frame the discourse of the human experience of environment which is central to this investigation.

PERCEPTION

The sphere titled *Perception* is closely tied to the sensory aspects of environment. These issues include touch, texture, view, sound, smell, vision/view, transparency, and climate. If *comfort and challenge* exist as the primary discourse of this investigation, then *acuteness and unawareness* serve as the central idea behind the category of perception. One could think of these conditions as opposites or extremes, perhaps arranged along a scale numbered from one to ten, with one being the highest degree of "acute" and ten being the highest degree of "unaware."

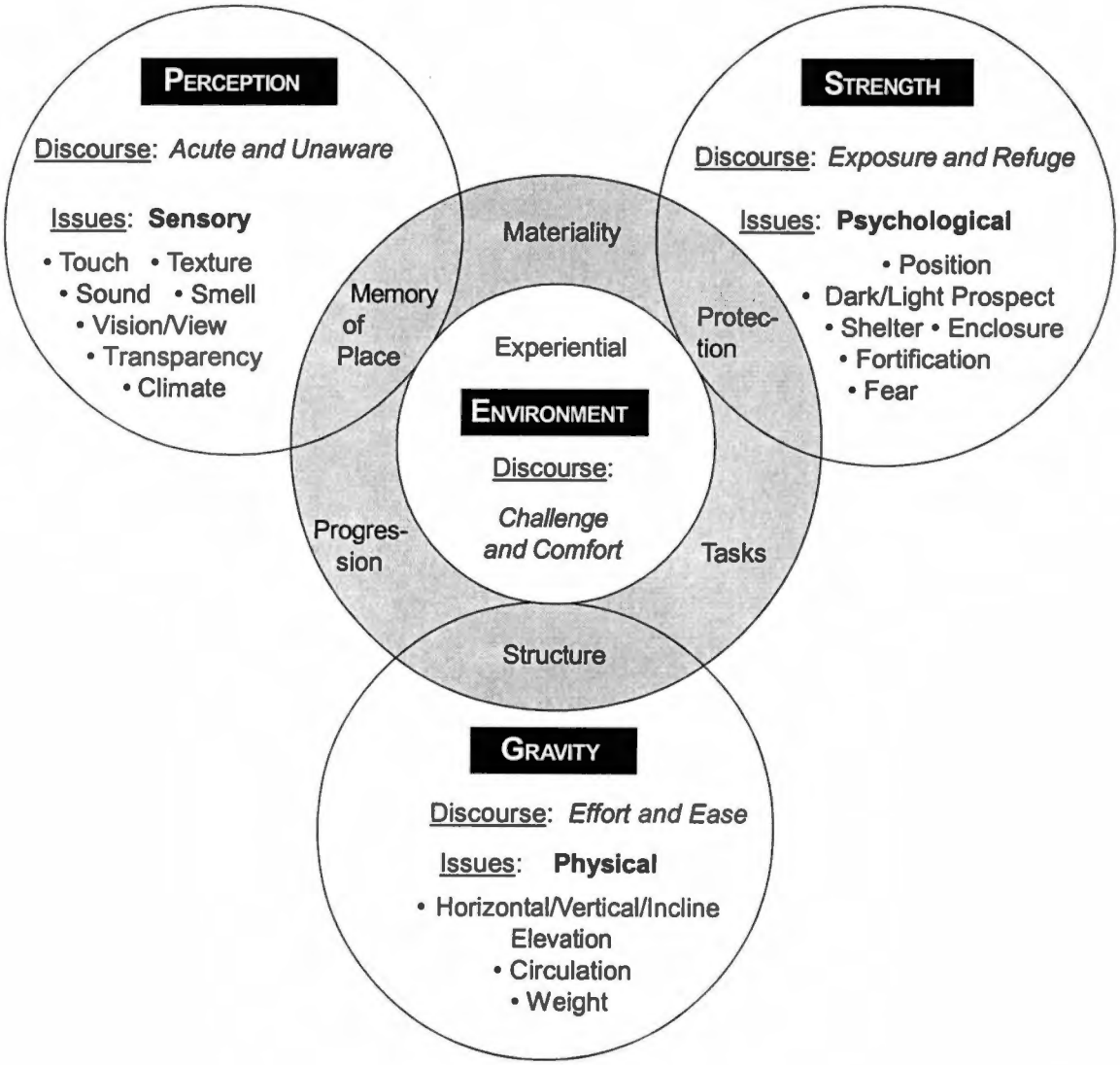


Fig. 1.1: Diagram of Architectural Issues. The architectural issues of this investigation have been organized into four main categories: Perception focuses on sensory engagement; Strength is centered around psychological issues related to exposure and refuge; Gravity focuses on physical experiences; and Environment represents a composite of the three previous categories, focusing the investigation on the experience of environment with the discourse between comfort and challenge at its center.

Acute perception, for instance, can be illustrated by the heightened aural sense that occurs at night when one is alone in a house and hears unusual pops and cracks of the house as it breaths. Harmless as they are, these sounds elicit feelings of anxiousness and fright as one ponders the true source of the sound. Unawareness, on the other hand, is these same noises and sounds that go unnoticed under the veil of daylight and as the mind is preoccupied with the events of the day in progress.

STRENGTH

Yet another dialogue is introduced in the sphere of *Strength* – that of "Exposure and Refuge." This category encompasses the psychological issues of environment that will be referenced by this study. These include position, prospect, shelter, degree of enclosure, fortification, and fear. Questions that will surface in the design investigation related to these issues include: how safe or protected does one feel in a space; to what extent is there a threshold between exposure and enclosure, comfortable and challenging conditions, built and natural, etc.; how are personal phobias engaged or addressed; and so forth. Programmed tasks in given spaces will also be addressed.

GRAVITY

Central to the third category, that of *Gravity*, are the opposing forces of "Effort and Ease." Gravitational pull is a dominant force in the physical environment and human perception. While gravity seems indifferent to the movement of people and things across horizontal surfaces, it challenges movements in the diagonal and vertical directions. There is more effort involved in moving upward than in moving across; the human body burns energy more rapidly when climbing stairs than it does walking on level ground. The dialogue between effort and ease has several implications relevant to this study. These include: horizontal, vertical and inclined elevation, circulation, and weight..

ENVIRONMENT

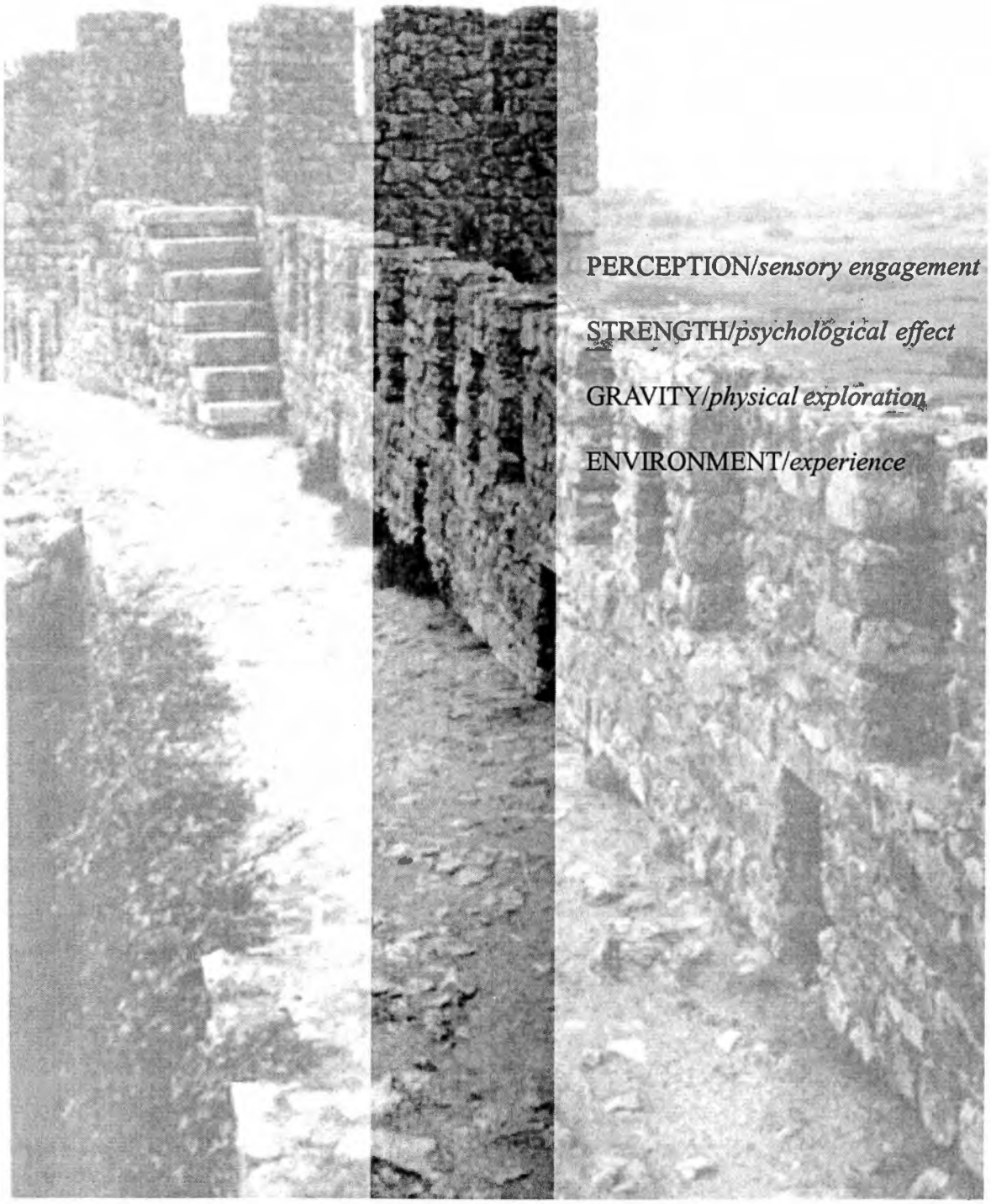
The categories of Perception, Strength, and Gravity have been established in order to focus the architectural issues of this investigation. It would be impossible to definitively separate these categories since the design process is holistic, in that many ideas and issues ultimately contribute to one physical design. There is an inevitable overlapping of issues, some of which can be identified as the primary experiential issues, or the *Environment* of this exploration. This category includes the primary architecture-related issues that will be addressed in the design project. These include: memory of place, materiality, protection, tasks, structure,

and progression. The following section will elaborate on each of the categories introduced above, as well as the specific issues that have been identified.

Architecture is by its very nature largely a visual experience as is the communication of discourse on architectural space and thought. While narrative is an important tool in describing experiential qualities, a number of the architectural issues of this study will be supported by photographic images, diagrams, and drawings in the subsequent chapters.

CHAPTER II:

ISSUES
EXPLORATION



PERCEPTION/*sensory engagement*

STRENGTH/*psychological effect*

GRAVITY/*physical exploration*

ENVIRONMENT/*experience*

PERCEPTION

Human perception is informed by sensory experience. As sensory issues cover a vast range of perceptual conditions, the following discussion will focus on specific qualities that pertain to this thesis exploration. These include the human experiences of texture, touch, temperature, smell, sound, and vision which covers view and transparency.

At the time of birth, humans are equipped with five categories of sensory infrastructure: sight, sound, smell, touch, and taste. A newborn begins to learn how to use sight and touch as initial tools for experiencing the world around him. The tiny fingers become tools for clutching on to anything within reach. It is said that an infant begins to visually focus on objects at a fixed distance of about 8 - 15 inches away since one spends so many hours being cradled in the arms of a parent, whose facial features and expressions they can begin to distinguish just a few inches away. (Eisenberg, 45)

TEXTURE and TOUCH

Sensory organs mature to a level of complexity in which they begin to work in support of each other as the mind begins to identify a set of truths or generalizations about the world. For example, a child might look at an object and determine that it is a rock because of visual data such as color, texture, shape, etc. One doesn't have to touch it to know that it is hard.

Similarly, haptic sense, or touch, both complements and enriches visual sense. "Touch, by clarifying and adding to the shorthand of the eyes, teaches us that we live in a three-dimensional world... By combining eyesight and touch, primates excel at locating objects in space. Although there is no special name for the ability, we can touch something and decide if it is heavy, light, gaseous, soft, hard, liquid, solid." (Ackerman, 94)

Figure 2.1: Desert Masonry. Heavy stone walls at Taliesin West proclaim strength and durability against the harsh Arizona desert.
Source: Smith (99).

The sense of touch offers a rich avenue of exploration in architecture as virtually all materials of construction are embodied by their texture. For instance, masonry, whether brick, stone, or concrete, is perceived as strong, rigid, and durable because of its weight and hard surface. (Fig. 2.1) Alternatively, wood structures are generally lighter, less massive, and softer than masonry. Wood, however, lacks the durability of well-formed masonry and concrete as it can burn suddenly or deteriorate over a relatively short period of time. Yet another framing material is steel, which is strong, durable, tensile, and light. Each material evokes a different feeling of enclosure. Masonry may seem massive and somewhat cold, but safe and secure. Steel, albeit a much stronger and lighter construction, may also seem cold as one experiences its rapid conduction of heat away from the body on a cool day. Wood, on the other hand, may seem warm, rich, and soft in comparison due to it's grain, finish, lightness, and texture. (Fig. 2.2) Wood material also offers a higher resistance to heat loss, so it will typically feel less hot or cold than masonry or steel under similar conditions. (Reynolds, 136-142)

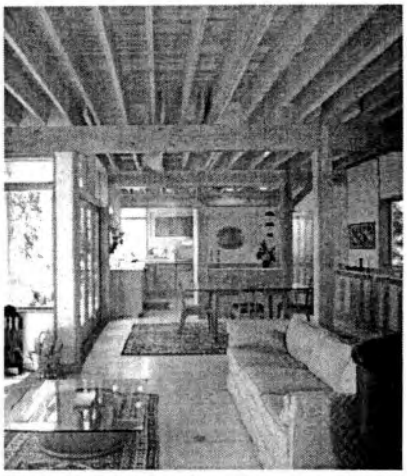


Figure 2.2: Paulk Residence, James Cutler. Richness of wood as both structure and finish.
Source: Morrow (101)

TEMPERATURE

The experience of temperature is related to the haptic sense. As alluded to previously, specific materials may exhibit a variety of temperate conditions to the touch. In actuality, when a person touches an object, he or she conducts heat either to or from it. (Heschong, 18). "As with all our senses, there seems to be a simple pleasure that comes with just using it, letting it provide us with bits of information about the world around, using it to explore and learn, or just to notice... The stone is cool; yes, it feels cool when I touch it: perhaps it has been in the shade for a while." (Heschong, 18)

Built space inevitably responds to thermal conditions. Roof structures, canopies, and tents protect humans from both precipitation and the uncomfortable effects of direct sunlight. Additionally, humans perceive comfort in terms of tem-

perature. Studies of "comfort zone," or zone of thermal neutrality, have shown that the comfort zone in the United States ranges from 68°F to 80°F for lightly clothed, sedentary individuals. (Heschong, 16).

Warmth, in and of itself, has traditionally held an important place in the home. Fireplaces, once the primary source of warmth within buildings, still find their way into contemporary homes. "Fireplaces have a more significant position in the American home than a simple analysis of their function would indicate. People love having a fireplace, even if they rarely use it. The ostensible function of the fireplace, to provide a source of heat for the house, has long been taken over by far more efficient central heating systems. When a fire is lit, it is likely to be a ceremonial event: a way to make the house feel especially homey, a treat when guests come to visit, a way to give an added air of celebration to a holiday... The hearth is as much a symbolic center of the home as it is a place for burning wood." (Heschong, 50) The fireplace images in Figures 2.3 and 2.4 are expressive of the hearth as a center or place for gathering.

American Architect Frank Lloyd Wright utilized the hearth to function as an ordering device in homes. The hearth was often a *heart* for the home - a center around which family and friends would gather for celebrations. (Smith, 38) In Wright's Oak Park, Illinois home, several of the major spaces featured fireplaces, including the drafting room, play room, and the living room. The central feature of the formal space (living room) in which the Wright family would entertain friends and neighbors is the inglenook fireplace (Fig. 2.5), which could be enjoyed at the scale of the room or as a more intimate, withdrawn space. (Smith, 40)

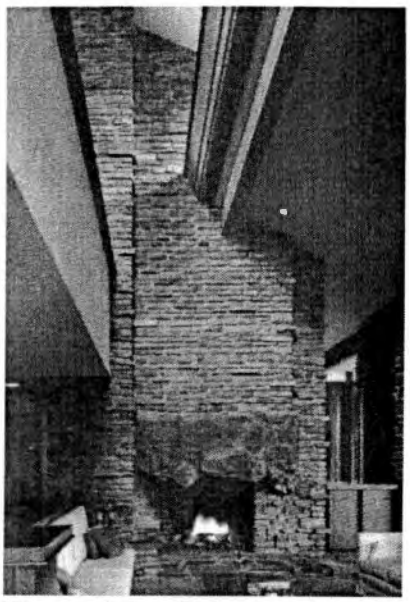


Figure 2.3: Chimney, Watson House. The dominant hearth serves as a centerpiece. Fay Jones, architect. **Source:** Ivy (192)

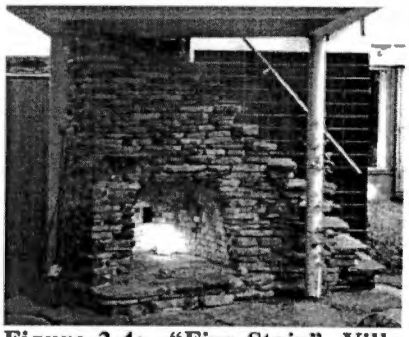


Figure 2.4: "Fire Stair", Villa Mairea. An exterior hearth gives warmth to an outdoor gathering space. Alvar Aalto, architect.
Source: Nagel (62)

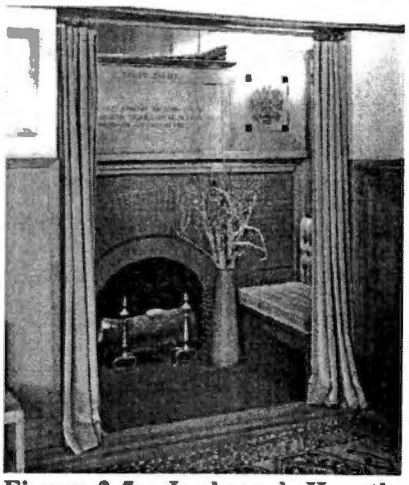


Figure 2.5: Inglenook Hearth. Frank Lloyd Wright Home, Oak Park, Il. **Source:** Smith (40)

SMELL

Other sensory devices provide information about human environment as well. The sense of smell is perhaps one of the most stimulating human experiences. One scent can be unexpected, momentary, and fleeting, yet conjure up a distant memory with richness of detail. (Ackerman, 6) Recall the aroma that fills the air at a cookout, or the fragrance of bonfire on a chilly evening in late autumn. (Fig. 2.6) The scent of pine, moss, and wildflowers while on a hike through the woods adds to the richness of such an experience. (Fig. 2.7)

Olfactory sense can be engaged in architecture as well. For instance, wood as a building material often continues to emit an odor reminiscent of its former life as a tree. Cedar panelling and furniture are usually selected for their scent rather than for looks. The very nature of enclosure provides opportunities for engaging smell. The placement of the kitchen in a house can affect movement and activity as the fragrance of a meal in preparation transforms the kitchen into a magnet. Likewise, the sharp scent of wood burning in a fireplace adds to the attraction of a hearth room. (Heschong, 28)

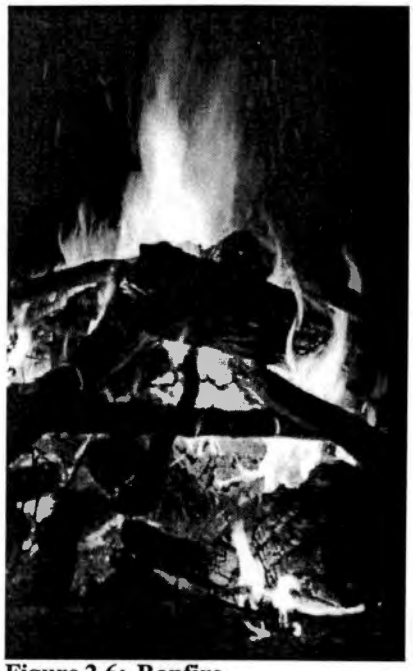


Figure 2.6: Bonfire.
Source: Author

Figure 2.7: Pine Branch.
Source: Author

SOUND

The human sense of hearing can also be explored and understood spatially. Sound can be very soft, very harsh; it can seem very distant or uncomfortably close. For instance, a person need not listen to a weather bulletin or watch a computerized image of the movement of a storm front on television to understand the movement of such a storm. One needs only to hear thunder - growing from a soft, distant rumble to a harsh, crashing explosion as the storm boldly announces its presence in the skies overhead. For the purposes of this investigation, sound will be evaluated as a given condition of site as well as a condition of building enclosure. In the siting of a building, sound from the site and its surrounding community should be considered in terms of the program for the building.

Similar to the olfactory senses, sound can be very memorable. Nowhere is this more evident than in the natural environment. The song of crickets on a summer night is symbolic of the season just as the splattering of rain is heard as it pummels the rooftop of a house in spring. The sound of a trickling creek or a cascading waterfall encountered while on a trek though the woods not only recalls a kind of place, but can serve to orient one to the geography of an unfamiliar landscape. (Fig. 2.8)

Figure 2.8: Cascading Stream.
Source: Author

Noise generated within a building can be mitigated by choosing certain finish materials which are more reductive of sound waves. Hard, smooth surfaces tend to reflect sound waves (causing echoes) while soft, irregular surfaces absorb sound waves, thus reducing echo. Energy-absorbing materials, such as carpet, furnishings, and acoustic ceiling treatments are common methods of noise reduction in a space. (Egan, 218)

VISION: VIEW AND TRANSPARENCY

Eyesight is perhaps the most informative collector of sensory information in humans. "Our eyes are the great monopolists of our senses... the world becomes most densely informative, most luscious, when we take it in through our eyes." (Ackerman, 230) In fact, Seventy percent of the body's sense receptors are concentrated in the eyes. (Ackerman, 230) "It is mainly through seeing the world that we appraise it and understand it." (Ackerman, 229-230)

Vision allows humans to quickly construct spatial relationships. A corridor in an office building may seem long and relatively tight compared to an atrium space in the center of a building which may be perceived as very large and unconstrained. Eyesight informs movement though space as it navigates our movement through doorways and down streets and sidewalks. Objects become increasingly larger as the distance between the object and the observer becomes smaller with movement. As a re-

sult, the human mind can approximate distance, and thus, spatial relationships.

This can also be perceived at the scale of a natural landscape. For instance, the view from the top of a mountain looking back along the ridge line allows one to visually connect the singular mountain to the fabric of the mountainous terrain. (Fig. 2.9) The ridge line seems to dissolve into the horizon as distance from the viewpoint increases.

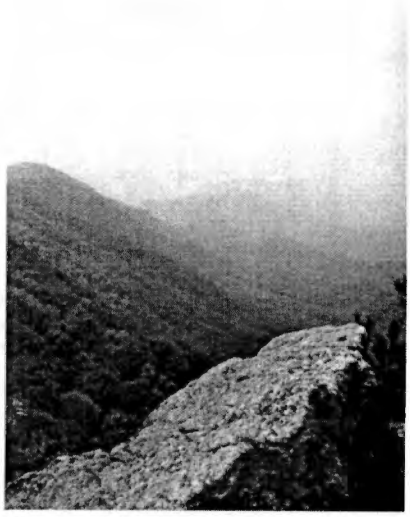


Figure 2.9: Mountain-top View. English Mountain.
Source: Author

In terms of architecture, view can be very sight specific. A quick survey of a suburban middle class neighborhood would likely inform the observer that certain views are more desirable than others. For instance, if the lots are narrow and the homes are close together, few if any openings occur on the sides between the houses, while multiple windows and glazed openings occur on the front and especially the rear elevations. The issue here is obviously privacy. However, sometimes openings occur in orientation to a specific view. For instance, a beach-side resort hotel will often have a long axis parallel to the shoreline with single-loaded floors, giving all rooms a view of the ocean.

Frank Lloyd Wright used views as an orienting device in the design of Taliesin West. Framed views were utilized throughout Taliesin West to engage the surrounding landscape. For example, from Sunset Terrace, one can experience the mountainous terrain on the opposite side of the complex by looking through a breezeway, which captures the peak of a mountain. (Fig. 2.10) Wright's office windows function to allow air and light into the space while also discretely framing views of the McDowell Mountains to the north and Maricopa Hill to the east. (Smith, 110).

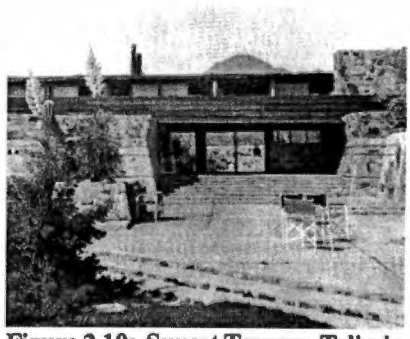


Figure 2.10: Sunset Terrace, Taliesin West. Frank Lloyd Wright, architect.
Source: Levine (285)

Taliesin West is very much a product of its site. Wright once stated that, "Taliesin West had to be absolutely according to the desert." (Putnam, 9) This can be seen in its orientation, materiality, views, and transparency. The transparency of the exterior walls would make it difficult to lose conscious-

ness of the desert setting. Originally, many of the rooms that are now enclosed by glass were open air. However, the contemporary glass walls still optimize the transparency, creating a perceptual overlapping of indoor and outdoor space. (Smith, 110)

Transparency can be thought of in terms of blending within a given context. Nowhere is this more powerful than in the setting of the natural environment. Much of the work of American Architect Fay Jones demonstrates this notion of transparency. Jones, a student of Wright, is known for his woodland houses and pavilions. In addition to the glazed or open sides, Jones' woodland pavilions engage the surrounding forest as the slenderness and arrangement of columns inside the buildings intend to reflect the scale and density of the surrounding trees. (Ivy, 83) Pinecote Pavilion (Fig. 2.11-2.12) and Thorncrown Chapel, (Fig. 2.13) demonstrate this transparency.

Figure 2.11: Pineconte Pavilion. Fay Jones, architect.
Source: Ivy (82)

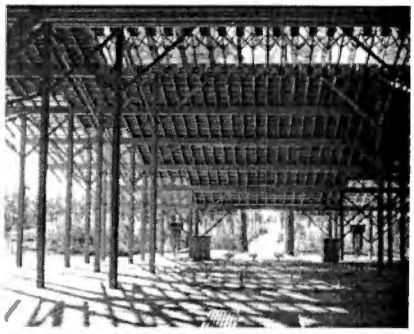


Figure 2.12: Pineconte Pavilion Interior. Fay Jones, architect.
Source: Ivy (86)

Figure 2.13: Thorncrown Chapel. Fay Jones, architect.
Source: Ivy (42)

STRENGTH

Human sensory organs can be thought of as input devices for the brain, which collects and synthesizes all of the information, eliciting a response of some kind. This response may be passive and subconscious, or it may very active, creating a convicted awareness about an impending event. The human physiological response termed 'fight or flight' demonstrates active response. (Luciano, 226) Sensory information yields a psychological response which may subsequently result in a physical action.

The psychological issues of shelter, fortification, position, and degree of enclosure appropriate themselves as architectural issues for this investigation as they are closely tied to the sensory aspects previously discussed.

POSITION

Position offers a point of departure from which issues related to strength can be understood. Taking a position of prospect or exposure is quite different from that of refuge or enclosure.

Positioning in a landscape can be a function of elevation, such as being on the summit of a mountain or in the depths of a valley. Likewise, the exposure of being in a wide-open field is quite different from the condition of being in the thick of the forest.

Position can also be distinguished within the built environment. The sequence of photographs in Figure 2.14 shows position of a hillside chapel relative to the approaching visitor from (a) far off; to (b) near by; to (c) the point of arrival.

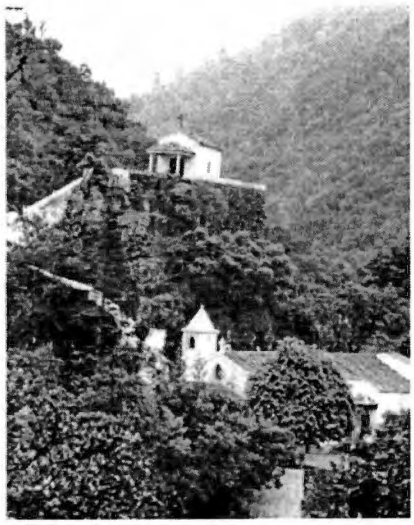


Figure 2.14a: Distant View. Portuguese monastery. **Source:** Author

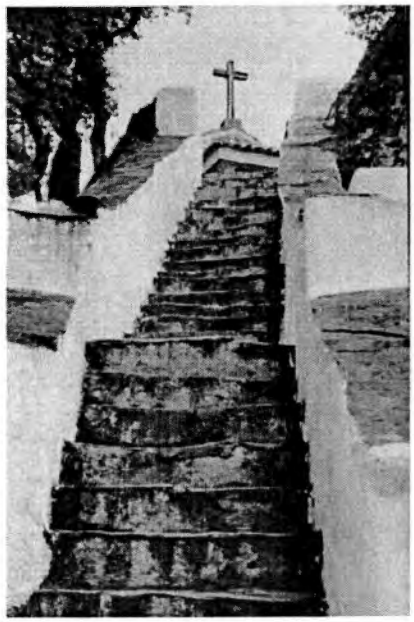


Figure 2.14b: Final Ascent to Chapel. Source: Author

Figure 2.14c: Point of Arrival. Source: Author

Fig. 2.15: Garden Room, Taliesin West. The high ceiling in shown in the foreground. The lower space with the large table in the corner can be seen beyond the clerestory on the garden side of the room.
Source: Smith (116)

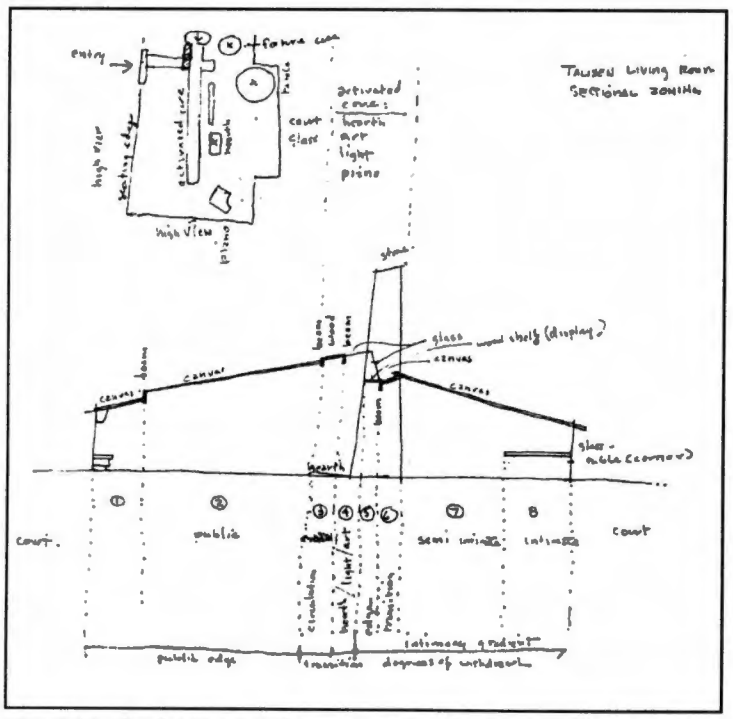


Fig. 2.16: Social Zoning Diagram. The Garden Room is zoned into public, semi-intimate, and intimate space. The diagram also shows the activated zone through the center of the space in which light and hearth are introduced. Elements of circulation, transition, and edge effect zoning changes.
Source: Moir-McClean

Furthermore, position can vary at the scale of an individual room. The Garden Room (Fig. 2.15) at Taliesin West, although a continuous and rather transparent space, can be analyzed in terms of social zoning and positions of social exposure and intimate refuge. (Fig. 2.16) The Garden Room has a low-slope roof clad in translucent material, giving the room a very light and open quality.

A clerestory is introduced along the higher end of the roof, dropping the ceiling to a lower level along the open side of the room. This effectively creates another room inside the garden room. The space of the room under the high ceiling is experienced in a completely different way than the lower roof under the clerestory.

This space is further subdivided with the introduction of a large table under the lower roof, extending into the room from the glass exterior wall at one end. This creates an even more intimate space within the more withdrawn space from the main room. (Moir-McClean) Thus, taking different positions even within the same room can

sometimes evoke a very different feeling in terms of exposure and refuge.

PROTECTION

The human need for protection is central to the dialogue between exposure and refuge. The idea of the primitive hut (Fig. 2.17) has been referred to previously as the earliest expression of the built environment. (Harries, 112) Originally, man built shelter as a way to provide protection from extreme or uncomfortable temperatures in a given climate as well as the weather characteristics of a region. (Fig. 2.18) (Moholy-Nagy, 52)

Figure 2.17: Frontispiece.
Source: Harries (113)

Marc-Antoine Laugier's *Essay on Architecture* explores the origin of architecture as it may have begun with the need for shelter. Laugier takes the example of a "savage" in need of a place of rest:

> "By a murmuring brook, he stretches out in the soft grass, but soon the burning sun compels him to look for a cooling shade. He finds what he needs in a delightful forest, but a downpour soaks him... He resolves to make himself a dwelling that protects but does not bury him (as a cave)... Some fallen branches in the forest are the right material for his purpose. He chooses four of the strongest, raises them upright and arranges them in a square; across their top he lays four other branches; on these he hoists from two sides yet another row of branches which, inclining towards each other, meet at their highest point. He then covers this kind of roof with leaves so closely packed that neither sun nor rain can penetrate. Thus, man is housed."
> (Harries, 112)

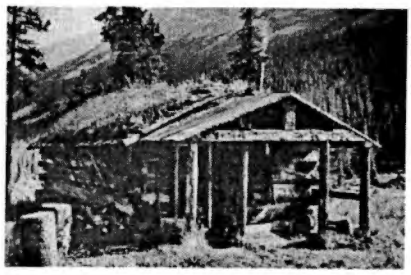


Figure 2.18: Lumberman's Cabin.
Source: Moholy-Nagy (85)

Readily available raw materials such as rocks, clay, trees, grass, and animal skins were sufficient for enclosure.

FORTIFICATION

Protection, however, is more than just a response to climate; it is a defensive measure. Throughout human history until industrial revolution and subsequent weapons technology of the twentieth century, building materials played a very important role in the defense of cities and agrarian communities alike. Over 2000 years ago, the early Romans employed concrete and masonry technology to build defensive walls around cities (Fig. 2.19) as well as roads, large-scale buildings, and water delivery systems. (Feininger, 3)

Hundreds of years after the Roman Empire, masonry construction continued as a major defensive strategy in the Middle Ages. During this age, the European landscape was riddled with fortresses and castles of dense masonry construction which could be sealed off and fortified during an attack. (Figs. 220-221) The fact that there are so many "ruins" from the both the Roman Empire and the Medieval age of Feudalism testifies to the strength and durability of masonry as a building material. (Feininger, 3)

Fortification is as much an expression of site as it is of construction methodology. Most fortifications are built with specific site characteristics in mind. Prospect into the surrounding landscape was a major determinant of siting. For in-

Figure 2.19: Roman City Wall. Ruins at Conimbriga, Portugal.
Source: Author

Figure 2.20: Medieval Fortress. Portugal.
Source: Author

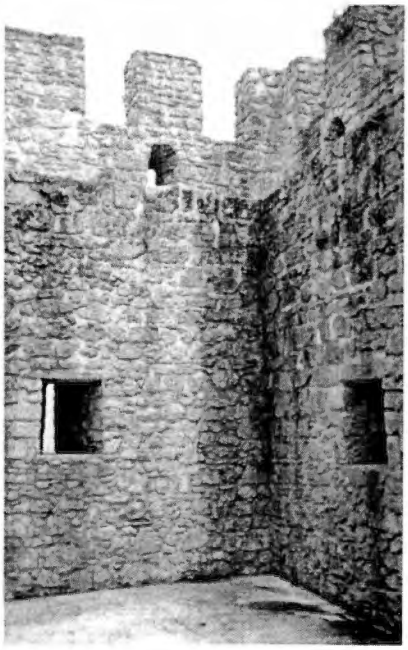


Figure 2.21: Defensive Wall. Portugal.
Source: Author

stance, remnants of American Civil War forts are often located on hills in the countryside or on bluffs over river valleys, where prospect is optimal. (Fig. 2.22)

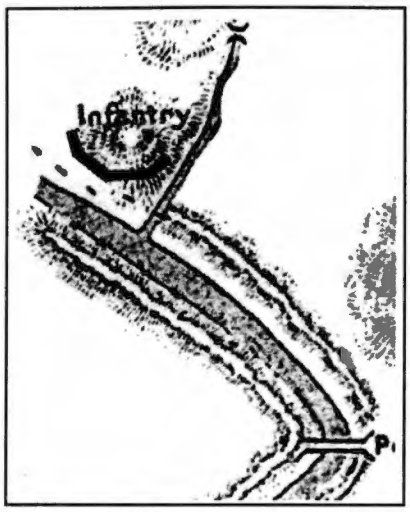


Figure 2.22: Civil War Infantry Fortification. Point of prospect over river.
Source: Davis (Plate LXXI)

PROSPECT

Prospect can be thought of as a form of exposure – exposure to the surrounding environment. This may be in the form of a vista or panoramic view. It may just be in perceiving or knowing what lies ahead. For instance, hearing streaming water increase in volume as you advance on a trek through the woods provides you with prospect or assurance of a water source, orienting device, etc. Likewise, when exploring a cave, dim, filtered light becomes brighter, and still brighter as you make your way to the mouth of the cave even at some distance away.

Conversely, prospect can also be perceived from a position of fortification. For instance, the prospect across the Big South Fork River gorge (site for design investigation) allows one to resolve the spatial relationship of the gorge to the broad landscape through which it passes. This understanding may affect a feeling of strength of position, or fortification. (Fig. 2.23) Strength of position is further exemplified by a tower in the landscape, such as the East Rim Watchtower at the Grand Canyon National Park in which prospect gives strength to position. (Fig. 2.24)

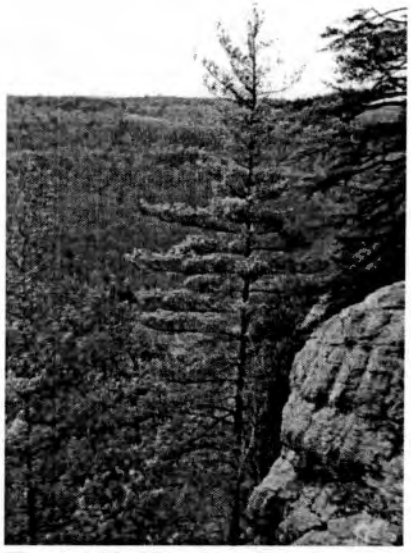


Figure 2.23: View from East Rim. Big South Fork River Valley.
Source: Author

The siting of the design investigation has special implications regarding prospect which will be developed in the site discussion.

Figure 2.24: Grand Canyon Watchtower. Mary Jane Cotler, architect.
Source: Grattan (79)

GRAVITY

The sphere of gravity in the *Architectural Issues Diagram* (Chapter I) is summarized by the dialogue between effort and ease. It is embodied by physical movement from one location to another. However, the third dimension, that of elevation, is an important component. For the purposes of this investigation, elevation can be thought of as progression from one relatively flat grade to another. The progression may be vertical, but often has a diagonal slope. In a multilevel building, both can often be found: an elevator or lift for 90-degree vertical movement; and the stair well or escalator for diagonal movement in the vertical direction. The path of ease and comfort is, of course, the elevator or escalator in which a machine does the work required instead of the human body.

In nature, elevation can be much less predictable in a progression and certainly not as level as elevation in the built environment. Walking up or down a hillside or ramp is physically a much different experience than climbing stairs. After moving upward on a slope for a short distance, one may begin to notice that certain leg muscles that are not typically engaged, simply by walking up a flight or two of steps, are doing work. Likewise, walking down a slope engages still another combination of muscles and tendons.

In contrast, the built environment strives to maintain horizontal or, at most, low slope pedestrian surfaces to optimize ease and accessibility. (Fig.2.25) Hills in an urban space tend to become terraces of steps or switch back ramps to provide ease of movement. Elevators and escalators overcome the discomfort of exposure to excessive stair-climbing. In the suburban sprawl of cities, the first sign that a parcel of natural landscape has been claimed for the built environment is the grading of the land from its natural slope to a flat surface, thus making it occupiable or suitable for building.

Fig.2.25: Stairs in the Forest. Luso, Portugal. A sloping hillside in the forest has been tamed by a cascade of terraced steps.
Source: Author

The act of climbing elicits an even greater awareness of body movement than the incline of a hill or rolling landscape. A broad spectrum of elevational changes can be found in the natural landscape, ranging from the shallow or unnoticeable to that which exhibits seemingly insurmountable verticality. Whether one is climbing through the rock debris of a cave or ascending a vertical rock face (Fig. 2.26), the strength resources of the upper body are fully engaged. One is no longer lifting his or her weight using only lower body movement, rather the arms, hands, shoulders, back and chest work together, allowing one to clutch onto holds and pull his or her weight against the direction of gravity. The lower body is still involved in movement, acting more as a support or anchor.

Fig. 2.26: Shear Rock Face. Big South Fork.
Source: Author

Gravity is of special interest in the design investigation, both in terms of site characteristics and program components. The elevational changes specific to the site, ranging from flat clearings to verticle rock faces, will be engaged by a progression of circulation paths that connect program areas throughout the site (Chapter V). The sequence of program activities will also engage the elevational conditions of the site through a variety ropes course elements and climbing activities. Chapter III examines these types of activities.

ENVIRONMENT

The category of environment is the culmination of the primary issues of this investigation, focusing around the discourse between comfort and challenge. This "short list" of issues in the category of *Environment* establishes a commonality between the categories of perception, strength, and gravity, each of which contribute to the total experience of environment. These issues include: memory of place, materiality, protection, structure, tasks, and progression.

MEMORY OF PLACE

The memory of place is a combination of sensory and psychological stimuli which contribute to a unique and memorable experience of a space, often empowered by a physical effort or experience. The relevance of this issue is derived from the first and second assumptions of the thesis.

MATERIALITY

Materiality will serve as a tool for sensory issues. Texture, smell, sound, and image may be engaged by materiality as discussed previously. The geology and vegetation of the region in which the site is located holds certain implications for the material expression of the design project as does the program information. The abundance of forests and limestone in the region and the use of steel tension cables in some of the program activities (Chapter III) suggest stone masonry, timber, and steel components as potential materials of construction.

Masonry has been previously discussed in terms of its use as a means of fortification and protection. However, while masonry offers strength and durability, it lacks the warmth and richness of wood. In order to qualify this statement, it is useful to look at the use and treatment of wood as a building material.

Wood has always had a strong presence in the built environment due to its abundance as a renewable resource and because of the relative ease with which it can be modified as both structural and finish material. Wood can be chopped, cut, trimmed, carved and laminated for a variety of applications ranging from decorative trim and furnishings to load-bearing beams and columns. (Fig. 2.27)

In addition to the wide range of types available, wood can be finished to different levels of refinement. It can be left with a course texture, still exhibiting the roundness of a tree as in a log cabin or utility pole. On the other hand wood can be finished to have a flat, smooth surface for use in mouldings, cabinetry, and furnishings.

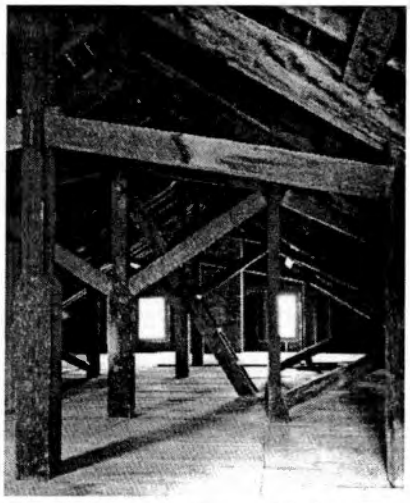


Fig. 2.27: Attic Room, Shaker Village at Pleasant Hill, Ky. Heavy wooden timbers were hewn into load-carrying columns and supports.
Source: John Stines

The grain of wood offers a visual texture unlike any other material. (Fig 2.28) "Wood is probably the best loved of all the materials we use for building. It delights the eye with its endlessly varied colors and grain patterns. It invites the hand to feel its subtle warmth and varied textures... its fragrance enchants. We treasure its natural, organic qualities and take pleasure in its genuineness." (Allen, 58)

When applied as a finish material, wood is often treated with varnish or stain which is intended to enrich the grain texture. (Allen, 215) Attention to the quality of wood grain is usually thought of as attention to detail and craftsmanship.

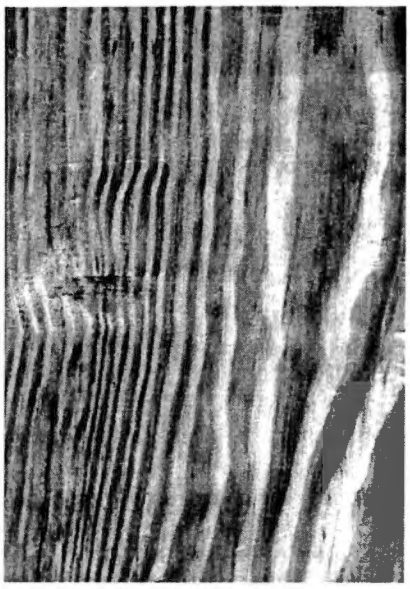


Figure 2.28: Wood Grain. Transverse section of southern pine.
Source: Author

To the touch, wood is generally temperate in comparison to concrete and masonry. For example, walking on a concrete floor on a cold night in bare feet usually encourages brisk movement across the surface until a warmer surface is encountered. Under the same conditions, a wooden floor, while it may feel cool, would be much more tolerable to the touch of bare feet. This is because wood materials generally have a higher resistance to heat flow than masonry, concrete, and metals; thus, they both loose and gain heat very slowly. (Reynolds, 138-139)

Other properties of wood that encourage its use as a building material include its abundance of supply, lightness, and its tensile properties. However, for all of its good qualities, wood is not as strong and durable as masonry. Wood can deteriorate, rot, warp, burn, and splinter under environmental conditions in which masonry stands firm. (Allen, 69) Under the threat of impending danger, such as severe weather, one would intuitively seek shelter behind concrete or masonry walls rather than inside a wood frame building; the durability of the former offers more protection than the latter.

Fig. 2.29: Kansai International Airport, Terminal. Example of steel used as structure, bracing, and cladding. Renzo Piano, architect.
Source: Buchanan (144)

Yet another primary building material with relevance to strength is steel, which is by far the strongest of the structural materials. Steel exhibits extremely high com-

pressive and tensile strengths in comparison to wood, masonry, and concrete. (Allen, 69)

In addition to its raw strength, steel is an advantageous building material in a number of ways. Steel can be molded for use in a variety of applications as columns, long-span trusses, suspension cables, and cladding among other forms. (Fig. 2.29) Furthermore, while steel is a very dense material, its high tolerance allows steel pieces to be light and slender in appearance.

The most important advantage of steel is its tensile strength, a strength which is lacking in both masonry and concrete and minimal in wood. High tensile strength means that steel can be used to span greater distances, thus minimizing the number of columns in a building. A good example of this type of application is the PA Technology laboratory by Richard Rogers. (Fig. 2.30) The roof of this building is cantilevered from a central corridor, with cables used to reduce the load. The large space below the suspended roof is more continuous and flexible than it would have been with a typical column grid. The diagram in figure 2.31 illustrates how loads

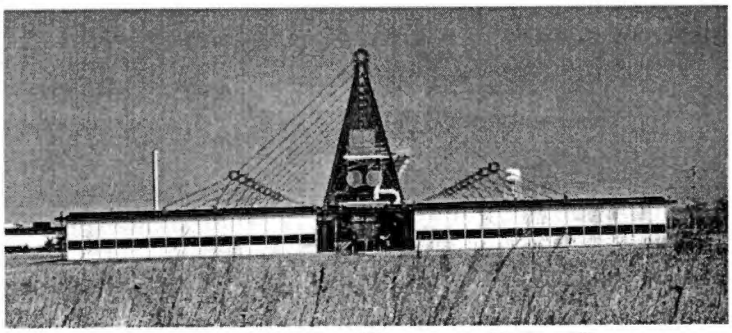


Fig. 2.30. Patcenter Cable Roof Structure. Richard Rogers, architect.
Source: Sudjic (88)

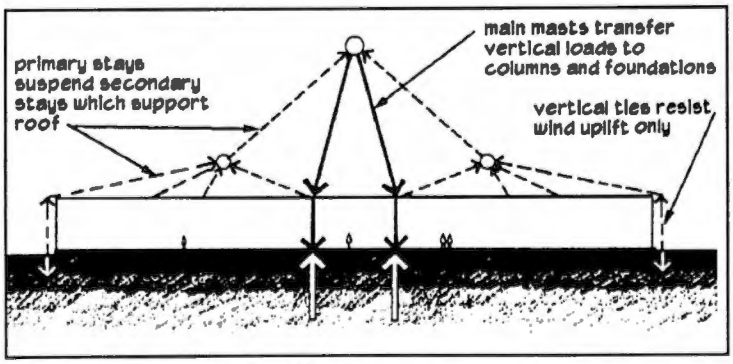


Fig. #2.31. Patcenter Load Path Diagram
Source: Moore (33)

are transfered through the roof structure into the earth. (Sudjic, 88-89)

Many of the advancements in building technologies have resulted from the tensile advantage of steel. For instance, rebar, or steel reinforcement rods, give concrete strength and capacity far beyond non-reinforced concrete. This technology has allowed large buildings, high capacity roadways and bridge decks to be built of reinforced concrete.

PROTECTION

Strength in materials certainly have the ability to affect feelings of protection, shelter, and refuge. However, the feeling of enclosure is not as simple as being within the confines of a building. Glazing techniques can make buildings transparent, feeling very open and exposed. Windows can be located anywhere on the exterior of a building, allowing light to penetrate enclosures directly, indirectly, modestly, generously, etc. Additionally, windows are often used for views, providing a framed scene of the world outside or advantageous prospect.

Protection, or a feeling of safety and security, is primarily a function of the issues related to strength. As previously discussed, materials of construction can be effective in eliciting a sense of strength and fortification such as in the case of the medieval fortress. Likewise, shelter implies protection from the elements. Position is implicit in the understanding of protection as well. Positions of exposure, prospect, and refuge can offer very different experiences of protection. Exposure implies vulnerability; prospect departs from exposure in that it suggests a position of control, watchfulness, and readiness. It is the ability to see what lies ahead in one's path from afar, or to perceive one's surroundings from a privileged position. Refuge, then, is left to physical enclosure, as in being behind closed doors, protected by strength of materiality. However, refuge can also be a sensory function, as a wild animal that is able to camouflage itself in the forest when it senses the presence of a predator nearby.

STRUCTURE

Structure is deeply rooted in the collective issues of environment as well. Gravity is a starting point from which the structure of a building is understood and rationalized. The simplistic interpretation of structure follows the physics of carrying loads across horizontal spans to points at which the loads can then be transferred vertically into the earth (the direction of gravitational pull). However, protection, transparency, indigenous natural resources, and program tasks inform articulation of structure among other issues. For instance, protection may imply the use of heavy masonry at the lower perimeter of a building. Transparency implies an openness or fluidness within a building or between interior and exterior spaces. Furthermore, readily available materials on site such as limestone and timber may inform structural expression.

TASKS

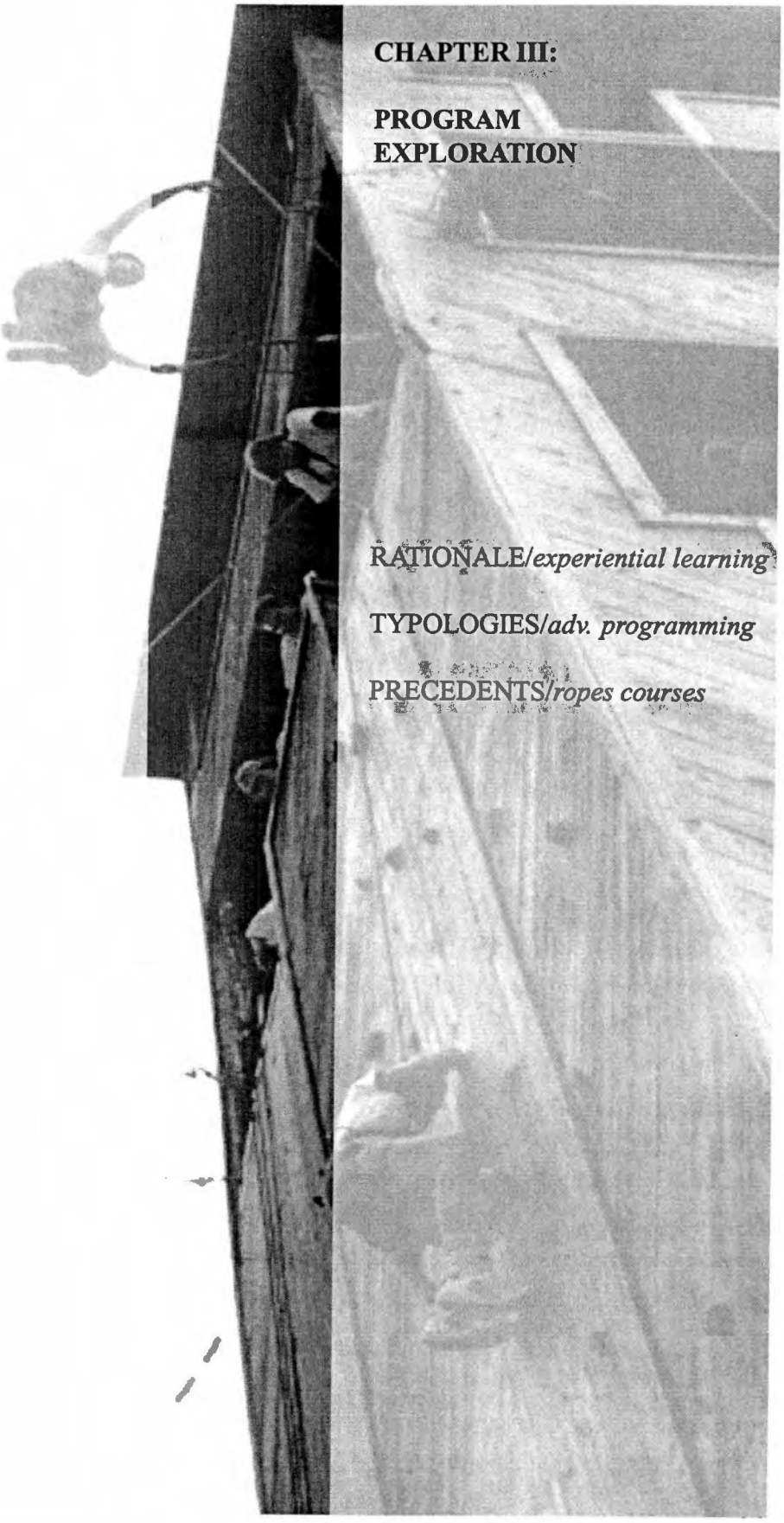
Tasks are informed by the program of the building. A calendar of programmatic activities or a schedule of events hold implications for orientation (day-lighting), artificial lighting, square footage, overlapping, opening, closing in addition to structure. User interaction with the building becomes an issue when efficiency of space is considered. A more generic or universal space may be divided, expanded, closed, opened, darkened, brightened and transformed to fit many different functions.

PROGRESSION

Progression is also a tool for connecting the main thesis issues. Scale, transparency, framed views, spatial hierarchy, surface changes, and openings contribute to progression through space. Frank Lloyd Wright's Taliesin West employed a number of these strategies, including transparency; changes in scale, overlapping spaces, orientation, and framing to guide movement through the complex. (Smith, 110)

Progression implies movement or circulation through space, be it through a natural landscape with no man-made infrastructure, along a rural highway, or within the confines of a building. The building itself can be a stimulus for movement. "All architecture functions as a potential stimulus for movement, real or imagined. A building is an incitement to action, a stage for movement and interaction. It is one partner in a dialogue with the body." (Bloomer, 59)

The aforementioned architectural issues related to perception, strength, and gravity establish the scope of this thesis investigation. The collective issues of environment are the primary elements that connect the broader categories into a single network of ideas. While early program and site rationalizations initially contributed to the development of the issues list, the primary purpose of this list henceforth has been to guide the site analysis, program development and design investigation of the thesis exploration.



CHAPTER III:

PROGRAM EXPLORATION

RATIONALE/*experiential learning*

TYPOLOGIES/*adv. programming*

PRECEDENTS/*ropes courses*

RATIONALE

In order to fully understand the program selected as a viable demonstration of this thesis, it is useful to return to the main discourse of the argument, the dialogue between environmental comfort and challenge. Comfort can be thought of as a normative factor of the built environment, a condition which can numb human awareness of the naturally occurring environment. "Comfort is confused with the absence of sensation. The norm has become rooms maintained at a constant temperature without any verticality or outlook or sunshine or breeze or discernible source of heat or center or, alas, meaning. These homogenous environments require little of us, and they give little in return besides the shelter of a cubical cocoon." (Bloomer, 105)

If comfort can be described in these terms, then discomfort can be thought of as a defiance or challenge (Webster 1913 ed.) to numbness of sensation. In terms of this thesis, challenge can be described as the presence of sensation which empowers experiential processes. The magnitude to which this empowerment occurs is largely dependent on programming.

The project type that has been developed as a demonstration of this thesis is a retreat center and ropes course facility. This is an appropriate design project since such facilities are typically sited in woodland surroundings. The act of retreat lends itself to a place of isolation and withdrawal from day-to-day events and surroundings, which is typically the built environment and surrounding culture of an urban setting. This withdrawal tends to engage the individual in unfamiliar surroundings in which he finds himself. Furthermore, a woodland retreat generally has a more rustic emphasis, often departing from the more comfortable surroundings of the built environment in exchange for a more primal existence.

"*Challenge* means going beyond the old pushing into new territory, new ways of doing things, dealing with fear and accepting help and support. Challenge is also looking at that part of ourselves that isn't sure what it is able to do, or to be. Challenge has the potential of stripping us bare, of getting down to the essentials, the nub of things." (Schoel, 32)

The program of a retreat center is somewhat open, yet certain ideas are common to the various programs that could be accommodated by such a facility. A contemporary retreat center generally offers the following programmed spaces:

- Meeting space
- Small group space
- Multiuse space (presentations, indoor activities)
- Multiuse space (open to outdoors)
- Outdoor event space
- Kitchen & dining space
- Housing, men and women
- Rest rooms/Bathing Facilities
- Ropes course elements

These spaces can be developed in different ways. Large spaces are often generic in the sense that they can be used for a variety of activities. For example, dining, meeting space, and indoor group activities can be accommodated within the same space simply by clearing furniture and adjusting moveable partitions. The massing of program space can also be arranged in different ways. A retreat center may house most or all of the program under one roof, or a series of structures may be built, providing more of a physical separation between the programmatic elements. For example, a main activity center may be constructed for more public functions, while the private functions (bathing & sleeping) are withdrawn as out-buildings and cabins.

The activities that occur at retreat centers and camps largely depend on the user groups. For example, corporate groups may need more space for seminars presentations and meetings, while church groups would need space for devotionals, small group discussions, and recreation.

ADVENTURE PROGRAMMING

A contemporary program technique that is commonly used at camps and retreat centers is adventure based counseling. In adventure-based counseling, facilitators lead groups through activities that focus on team building and personal growth. These 'initiatives', as they are often called, involve physical activities that both stimulate and challenge the mind, more so than the physical body.

The idea behind these activities is to build trust among groups and to build individual self esteem. For example, office retreats might involve a regiment of trust-related activities in which the group is given a task with a set of parameters in which they must work to succeed. These initiatives are always designed so that the goal can only be accomplished collectively and not by any one person in the group. The activity is followed by a period of 'processing', in which the group discusses personal issues that occurred during the activity (i.e.: was each person's suggestions on accomplishing the task given full value by the group?; was everyone treated fairly?; did anyone feel uncomfortable?; etc.)

Ropes course elements were mentioned previously in the list of program space. A ropes course is a collection of physical apparatuses which are used by facilitators to effect personal growth and challenge, a major component of adventure based counseling. Ropes course elements include climbing walls, rappelling walls, zip lines, and tight rope walks among many others.

There is great deal of value in the accomplishment of ropes course tasks and group initiative activities. As mentioned, such activities develop trust and self esteem (Johnson, 18). A woodland setting for such activities is appropriate because it provides the next level, a more open-ended challenge experience. The ropes course activities prime groups and individuals to be more prepared for the uncertainty of subsequent wilderness experiences such as hiking, backpacking, rock-climbing, and so forth. (Johnson, 21).

• Experiential learning occurs when carefully chosen experiences are supported by reflection, critical analysis, and synthesis.
• Experiences are structured to require the learner to take initiative, make decisions, and be accountable for the results.
• The learner becomes actively engaged in posing questions, investigating, experimenting, assuming responsibility, solving problems, etc.
• Learners are engaged intellectually, emotionally, socially, soulfully, and/or physically. This involvement gives authenticity to the learning task.
• Relationships are developed and nurtured: learner to self, learner to others, and learner to the world at large.

Figure 3.1: Summary of Experiential Education Principles.
Source: Luckmann, 1996

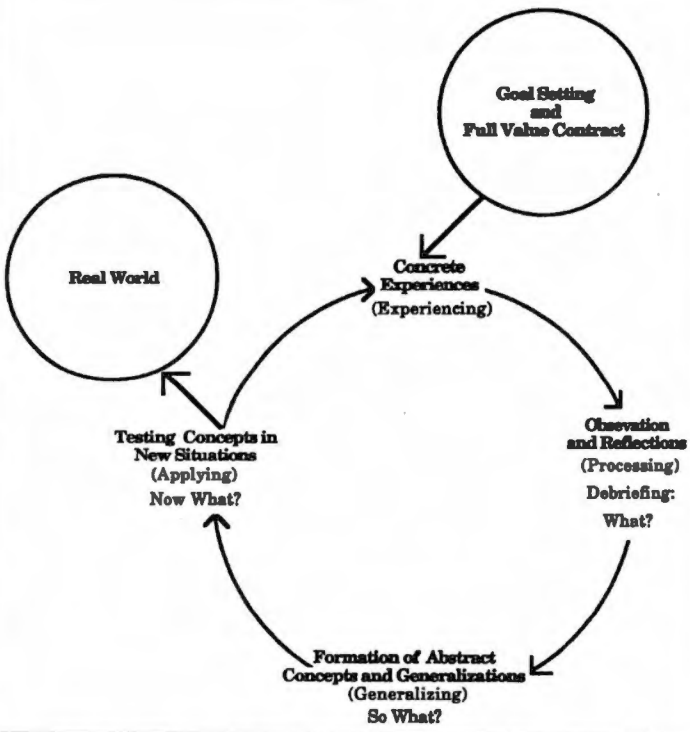


Figure 3.2: Diagram of the Experiential Learning Cycle.
Source: Adventure Programming Workshop Manual (18)

These experiential initiative and ropes course activities are closely tied to the architectural issues of this investigation. In order to provide a sufficient explanation of experiential learning and adventure based counseling, the next few pages are intended to provide an overview of processes and vocabulary relevant to experiential learning and challenge activities such as ropes courses.

Experiential education is a process through which a learner constructs knowledge, skill, and value from direct experiences. (Luckmann, 1996) Some of the primary principles of experiential education practice as described by the Association for Experiential Education are listed in Figure 3.1.

Experiential learning can be diagrammed as a cyclical process. (Fig. 3.2) The process begins with an activity or concrete experience. Upon completion of the activity, the group takes time to reflect on the experience. The reflective can be subdivided into three phases. The first phase involves processing the observations and reflections of the participants. The issues raised in processing are then generalized and interpreted as abstract concepts in the second phase.

These generalizations are then remembered and applied to subsequent situations. (Furlong, 14-15)

The experiential learning cycle can be applied to the facilitation of adventure, or challenge, activities via the *adventure wave* (Fig. 3.3). In the beginning of the wave, the facilitator briefs the group on the task at hand, including the rules, consequences of breaking the rules, and safety information. The facilitator may employ a narrative or metaphor in the framing of the task to make the activity more memorable or meaningful. The participants are then given the chance to ask questions. (Furlong, 17)

The peak of the wave is the time when the group is engaged in the activity. During this phase, the facilitator acts as an observer, intervening only when necessary. (Furlong, 17)

The descent of the wave is the debriefing phase in which the group reflects on the activity. The facilitator serves as the catalyst for discussion of the facts of what happened, the feelings behind the actions of individuals during the activity, and what the group can take from the experience. (i.e.: how does it relate to my normal world?) It is then time for a new wave to begin. (Furlong, 17)

Establishing a list of personal goals for the program is an essential program component at the level of the individual. In the course of the retreat program, time for individual reflection on goals may be included. Participants may be given a journal or log book in which they would record initial goals, thoughts, and observations while tracking their accomplishments throughout the program. Collective goals may be established at the group level which would be tracked and referred back to throughout the program. (Gillis, 2)

Yet another form of accountability that is typically used is called the Full Value Contract. This is a tool that was initially developed by Project Adventure, an authority in the field of adventure learning, and is now commonplace in many adventure-based programs. The Full Value

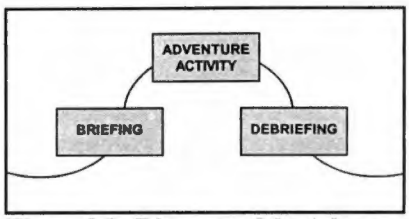


Figure 3.3: Diagram of the Adventure Wave.
Source: Furlong (17)

Four Expectations of the Full Value Contract

1. An agreement among group members to **work together** to achieve both the individual goals and the group goals that have been developed and shared during the group experience.

2. An agreement to **adhere to certain safety and group behavior guidelines.** These guidelines must be discussed and agreed upon by the group or they will be meaningless. This is an important part of the process for groups to engage in, for no longer are the "rules" coming from only the leaders in charge, but from one's own peers.

3. An agreement to **give and receive honest feedback.** Group members agree to be confronted when their behaviors do not match identified goals. Similarly, each person agrees to confront others when a behavior does not match what they identified as goals. Inherent in this feedback process is the belief that every group member has value, and by virtue of having value, every member has both a right and a responsibility to give and receive open and honest feedback.

4. An agreement to increase one's own **awareness of when we are devaluing or discounting ourselves or others** and to make a direct and conscious effort to confront and work toward changing this behavior. (Gillis, 2-3)

Figure 3.4: Full Value Contract
Source: Gillis (2)

Contract is essentially a statement made by each group member concerning what he or she is willing to do during the group experience. (Gillis, 2) "Using the Full Value Contract is a way of stimulating each group member to think about the group and about his/her own role and behavior in it. Figure 3.4 describes the four key parts of the Full Value Contract. (Gillis, 2)

The experiential learning cycle can further be examined by taking the examples of specific initiative activities. A sequence of adventure activities typically begins with warm-up, getting-to-know-you kinds of games, often at a high level of energy in contrast to the problem-oriented activities.

The "Human Knot" is a good starter initiative which is simplistic, yet challenging. Unlike many initiatives, the Human Knot requires no props, just people. The facilitator would simply ask the group to stand in a tight circle (shoulder-to-shoulder) facing one another. They would then be instructed to hold out their right hand and grasp the right hand of someone else as if they were shaking hands. Each person would then extend their left hand and grab the hand of someone else, so that each person is holding two different hands. The group is then challenged with the task of unwinding themselves from their tangled bodies (Fig. 3.5) without losing contact with each other's hands, ultimately forming a circle. (Rohnke, 117SB)

Another simple initiative, but this time with props, is the "Trolley". In this activity, the group must transverse a certain distance from a designated starting point without any individual touching the ground. This can easily be accomplished as the group is given two four by four "trolleys" or wooden boards upon which to move. The difficulty lies in moving as a unified body. The set up involves the group lining up, standing on the trolleys, all the left feet on one and the right feet on the other. (Fig. 3.6 a & b) The trolley boards have ropes attached every twelve inches which can be used as handles with which the group can lift the boards. The task is of moving the trol-

"Initiative exercises offer a series of clearly and often fancifully defined problems. Each task is designed so that a group must employ cooperations and some physical effort to gain a solution. Some problems are more cerebral than physical and vice-versa. This problem-oriented approach to learning can be useful in developing each individual's awareness of decision-making, leadership, and the obligations and strengths of each member within a group. Participants engage the problem in groups to take advantage of the combined physical and mental strengths of a team.

Figure 3.5: ***Human Knot.*** Participants must maintain hand-to-hand contact while untangling.
Source: Author

Figure 3.6a: ***Trolley*** **(Part 1).** Participants must learn to move as a team in order to succeed.
Source: Author

leys is easily accomplished once the individuals find the rhythm with which the boards can be raised, moved, and lowered. It is a simple task, yet it causes individuals to think as a unified body. (Rohnke, 118SB)

Narrative can be a very effective visual tool in the explanation of initiative tasks that may otherwise be difficult to convey to a group. A good example of this is an activity known as "Marshmallows." (Fig. 3.7) In this challenge, the group is given a bag of giant "marshmallows" (wood blocks) which they must use as stepping stones to cross the river of hot chocolate in Willie Wonka's Chocolate Factory. However, there is one less marshmallow than there are people, and once a member of the group has stepped out onto a marshmallow in the river, he or she must be in physical contact with someone else in the group, either someone already on a marshmallow or someone on the bank of the river. If he or she looses contact or touches the hot chocolate (ground), they will fall into the river and get eaten by a chocolate crocodile (or 'chocodile'). Furthermore, once a marshmallow is placed in the river, it must always be in contact with a person or it will instantly be consumed by a chocodile.

Once the entire group is out on the river, marshmallows can be passed from one end to the other to be used as stepping stones to complete the journey. (Fig. 3.8) (Alexander) Using narratives such as this can effectively make an initiative activity more memorable, and thus recallable when the group moves on to other challenges.

The initial phase of initiative tasks is used to set the stage for a more serious stage of group activities – the "trust sequence." This is a series of activities in which the individual begins to rely on the group for their own personal safety. It may begin with paring up individuals in a group and having them catch each other as one leans backward into the other's arms. (Fig. 3.9) This is not a dead

Figure 3.6b: *Trolley* (Part II). Initiative activities are often more difficult to achieve than they would seem.
Source: Author

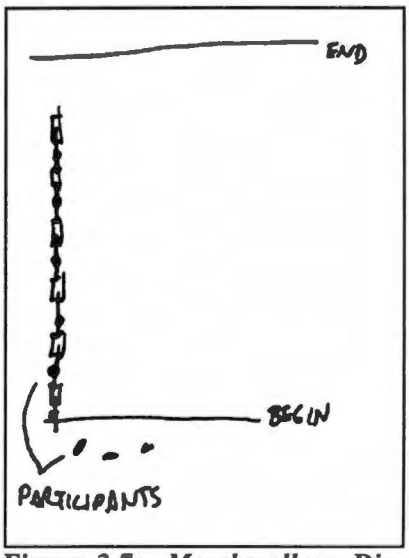


Figure 3.7: *Marshmallows* Diagrammed. The group moves in a linear progression while maintaining contact with the marshmallow blocks as well as each other.
Source: Author

Figure 3.8: *Marshmallows* Performed. Source: Author

fall backwards; its simply a lean or tipping backwards with legs locked and arms crossed over the chest. The Individual receiving them faces the back of the one leaning with both hands out in front (about 18 inches off the shoulder blades) and feet planted to absorb the catch. The other then uses their body weight to tip backwards into the waiting hands of his or her partner.

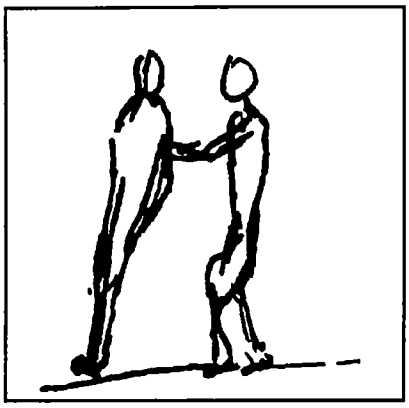


Figure 3.9: ***Trust Lean.***
Source: Author

A facilitator may use this exercise to lead into "Willow-in-the-Wind" which engages the whole group. In this activity, one member of the group is the participant and the others form the element. The group is asked to form a tight circle (almost shoulder-to-shoulder) around the participant, facing inward. (Fig. 3.10) Each person takes a stance similar to the two-person lean. Everyone in the circle puts their hands up , palms facing toward the participant, at about chest level. Everyone should be in a planted position with one foot forward and one behind for stability. The participant then locks knees, folds arms over the chest, and closes his eyes as he gently falls backward, then gets gently pivoted around the circle for a few seconds, trusting that they will be kept from falling with each pass. (Rohnke, 52CCII)

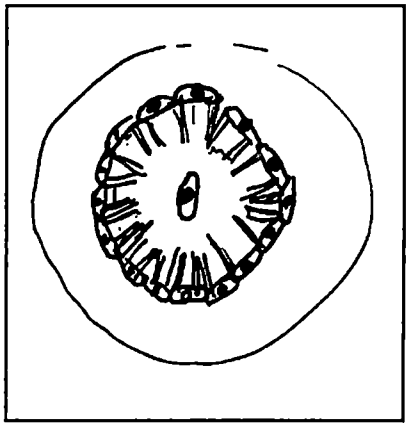


Figure 3.10: ***Willow-in-the-Wind.***
Source: Author

The Trust Fall is often the last of the trust sequence activities, culminating with each person in the group taking a turn falling backwards off of a platform into the arms of their fellow group members below. (Fig. 3.11) This is probably the most feared of the trust activities. Just the shear act of willfully free-falling backwards is enough to make some think twice about trying it, let alone expecting to be safely caught in the arms of your inexperienced teammates from a dead fall of several feet above the ground.

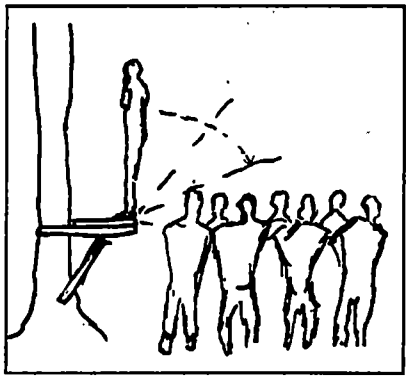


Figure 3.11: ***Trust Fall.***
Source: Author

The trust fall setup is simply a small platform, usually about four feet above the ground, attached to the side of a large tree trunk. The group forms two lines extending out from the platform facing inward towards one another. Arms are then extended outward at about stomach level, with hands

open and palms up. Arms are held close together without touching and staggered so that each person has one arm between his own two. The participant mounts the platform facing the tree and slowly steps back so their heals are barely hanging off the platform. With arms interlocked across the chest and legs straight, the participant falls backward into the arms of the group below. Aside from it being a real rush, it establishes that the group has evolved to a point where safety is taken seriously and trust is common ground. (Wall, 141)

The "Spider's Web" is an activity which often follows the trust sequence, also providing a transition form initiative tasks to the low ropes course. The object of this event is to move the entire group through a nylon fabricated web without touching the web material. (Figs. 3.12 & 3.13.) Symbolically, if the web is touched, the spider will sense the presence of an intruder, and will thus go after it. The result is that either the group will have to start over. Another condition is that increase the level of challenge is that a body can pass through a web opening only once. After an opening has been penetrated by any part of a person, it will close after the person is no longer breaching it. (Rohnke, 114SB)

This activity can be rather difficult since individuals must be elevated and passed though some of the higher openings without any contact between any group member and the web. This tends to encourage the group to focus on succeeding as a group since the entire group is responsible for the outcome. (Rohnke, 114SB)

Another low element which emphasizes teamwork and trust is the Mohawk Walk. The set up for this element is a series of three-to-five taut cables between support trees (Fig. 3.14); some long, some short. The group objective is to move all participants from one end of the element to the other while on the cables. There are no support cables to clutch onto; just the tree trunks to which the cables are attached, and each other. (Fig. 3.15a-b)

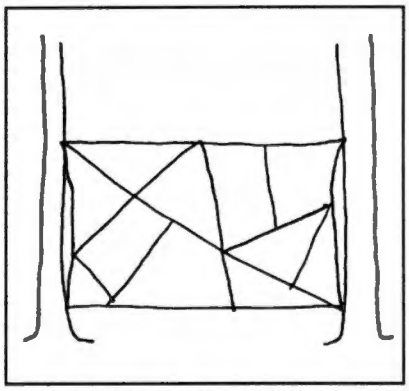


Figure 3.12: ***Spider's Web.***
Source: Author

Figure 3.13: ***Spider's Web*** **Performed.**
Source: Author

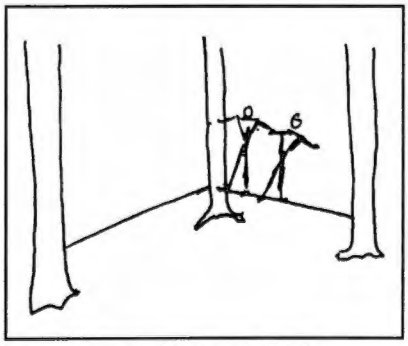


Figure 3.14: ***Mohawk Walk.***
Source: Author

In this type of activity, strengths and weaknesses reveal themselves as issues that the group as a whole must deal with. For instance, one or two individuals might have tremendous balance while someone else, such as the big, strong guy that was a major contributor to success during the Spider's Web, might have wobbly knees and need to rely on the strength of those with balance. Each individual has strengths and weaknesses, and it becomes a responsibility of the group to deal with those issues. (Wall, 138)

The high ropes course elements are the literal high point in the adventure sequence. These activities engage previous experience in the adventure sequence such as issues of trust and safety. A prime example of this is the act of belay.

On most high elements ropes courses, the individual performing the task climbs a tree or tower while two-to three individuals operate a belay system at ground level (in lieu of a mechanical belay device) which will serve to catch the climber if he or she should slip. The rigging is designed to support the individual whether they are climbing to the element or are in the process of performing the task. (Webster, 63)

An example of this is the Two-Line Bridge, in which the climber traverses a steel cable tightly strung between two poles or trees (like a tight rope). Within arm's reach, above the first cable, is a second cable for the climber to hold onto. As the participant anxiously scoots along the element, a rope is tied in at their harness which is then rigged through a moving pulley above the climber suspended from a third cable above the first two. (Fig. 3.16) The rope is then fed down to ground level where the belay person or team controls its tension. (Fig. 3.17) The person serving as the primary belay simply loops the rope through a carabiner on the lower side of his or her harness, then wraps the rope below the gluteus region and around the thigh on the side opposite the carabiner. To brake the rope in order to suspend movement, the rope is simply pulled inward (towards

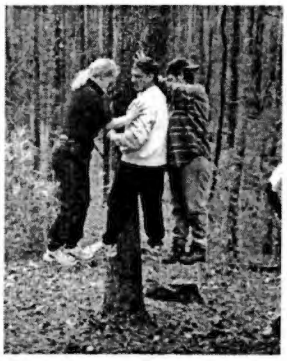


Figure 3.15a-b: *Mohawk Walk* Performed.
Source: Author

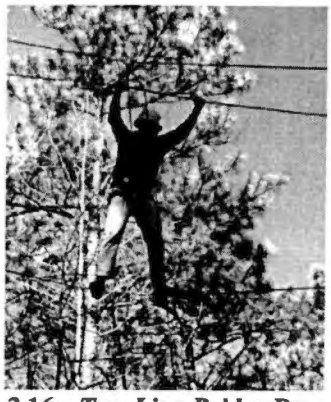


Figure 3.16: *Two Line Bridge* Performed. Source: Author

Figure 3.17: Belay Team. Primary belayer (right); anchor (middle); backup belayer (left)
Source: Author

the inner thigh.) Back up belayers are often used, however, one person can do the job when properly trained. Weight variance in participants is negligible (i.e.: a very light person can belay a very heavy person). (Wester, 63)

Another example of a high element is known as the Pamper Pole. This element entails climbing a utility pole (while on belay) and getting on top of it so that the participant is standing upright with both feet on the top of the pole. (Fig. 3.18) The next step is to lunge off the pole trying to catch a trapeze dangling in front of you. If you succeed (which most people do not) you must hold on for a few seconds before letting go and being lowered to the ground by the belay team.

Figure 3.18: Pamper Pole. Participant climbs to a standing position on top of a pole before jumping off. **Source:** Author.

The zip line is among the most popular of the high elements. In this element, the participant climbs up a tree (or tower) to a launch platform, then hooks the zip line device into his or her harness, and essentially pushing themselves off the edge. For some this moment is the threshold of fear. However, once that threshold is crossed and the zip line is in motion, the fear is transformed into an adrenaline rush similar to a roller coaster ride. (Fig. 3.19) (Alexander).

Figure 3.19: *Zip Line* Performed. **Source:** Author.

Another primary component of the high ropes course is the climbing/rappelling element. The gravity of climbing up a shear rock face or climbing wall can make the task of climbing a grueling physical endeavor. The climbing element is often considered one of the most physically challenging of the high elements. Since both climbing and rapelling utilize the vertical plane, a wall structure is usually built if natural rock faces are not available.

PRECEDENTS

A high elements ropes course generally takes one of two forms or a combination of the two. The high elements tower is designed with an emphasis on efficiency. Often serving as the node for a variety of high elements.

Efficiency may be important in terms of scheduling. For instance, a tower can be climbed using stairs or ladders, where as climbing a tree generally takes longer. Likewise, setting up a high elements tower is quicker, since setting up the belay system (safety device) for an element also requires climbing it. In the case of a younger user group, such as middle school age children, who might be more hesitant or more fearful of climbing a tall tree, the tower is preferable.

A good example of a high elements ropes course tower is located at Davey Crockett Boy Scout Camp, near Morristown, Tennessee. (Figs. 3.20 - 3.22) Cope Tower, as it is called, can be climbed on the inside of the structure via ladder-like steps with landings at multiple levels from which the various high elements begin. This particular tower is advantageous in that it offers a progression of heights for climbing and rapelling. Looking at the tower level-by-level. The first level contains an entry which all participants use to access the upper levels except those who ascend the tower via one of the climbing walls. This level also serves as a storage facility for the ropes course equipment such as ropes, harnesses, belay devices, and other equipment. This is convenient since all ropes courses need enclosed space for on-site storage and protection of equipment.

The second level is the beginner's climb and rappel, usually used for young children. The third level is the starting point for the intermediate climb and rappel. The two-line and burma bridges extend from the fourth level into the edge of the tree line. Also located at the this level is the advanced climb and rappel. The fifth level is the uppermost venue for the high element tower. The fourth and highest rappel launches at this level as does the zip line, often the 'grand finale' of the high elements. The zip line penetrates well into the surrounding forest.

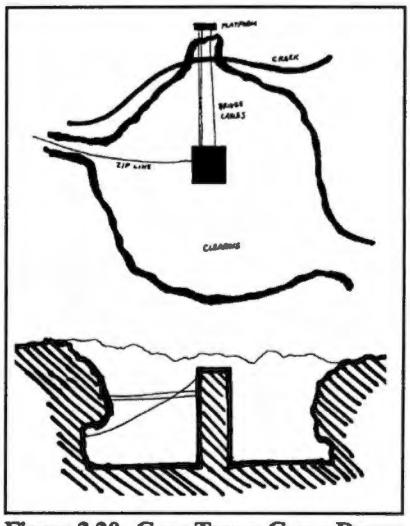


Figure 3.20: Cope Tower, Camp Davey Crockett. Diagrammatic Plan and Section. **Source:** Author

Figure 3.21: Cope Tower, Camp Davey Crockett. Source: Author

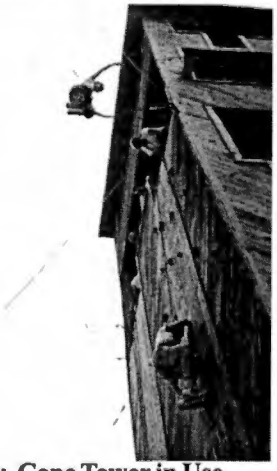


Figure 3.22: Cope Tower in Use. Source: Author

High elements ropes courses can also be developed in the tree tops of a mature forest. One benefit to this type of course is that less materials will be required in the construction phase. This will likely mean a lower construction cost since there is no actual building structure involved. The trees supply virtually all of the structure and support needed. Figures 3.23-3.26 give examples of elements in a tree-top ropes course. One benefit to the treetop ropes course is the experience of climbing the tree to get to the element, which offers a challenge in an of itself. From a sensory perspective, this type of course tends to camouflage itself among the forest until you are right upon it. This would tend to engage the woodland setting more so than a tower structure. Also, these elements can be spread out whereas with a tower, each element begins and ends in close proximity to one another. However, if the topography does not supply natural climbing and repelling sites, a minimal tower would still be necessary to accommodate these activities. For the purpose of the design investigation to follow, areas will be designated in the site scheme for a treetop high elements course. However, the building program may engage some of the elements typically found in a tower.

The adventure experience through initiative activities and ropes course elements clearly engages the issues of this thesis. Perception of conditions within a group in a physical setting is engaged by climate, vision, texture, and memory process. The haptic senses play an important role as activities involve physical contact between group members. The breaching of "personal space" can be a major issue for some participants placing them in a high state of awareness when this boundary is crossed.

Strength is engaged as issue of safety and protection become paramount on the ropes course. One may begin to ponder the strength of the nylon rope and harness that is securing him as he climbs a tree or wooden pole that sways in response to their movement on it. Likewise, transversing a steel cable makes one aware of the strength

Figure 3.23: Tree--top Ropes Course Elements. Covington, Georgia.
Source: Author (p)

Figure 3.24: *Vertical Playpen*, Project Adventure, Covington, Georgia.
Source: Author

Figure 3.25: *Cat Walk*, Project Adventure, Covington, Georgia.
Source: Author

of not only the steel cable, but the connections that hold the cable to the tree or post; the rope and harness that will serve as a safety net if one slips; and strength and belaying skill of the person below you which effectively holds your life in their hands. It can be thought of as fear-driven awareness - a kind of bare exposure.

Gravity, of course, is more of an issue in the high elements. However, during trust activities, in which stopping a person from falling is often the main objective, gravity becomes part of the consciousness of the group.

In terms of environment, progression has a special connection to adventure activities as well. This relates back to the experiential learning cycle in which individuals carry experience from one event or activity into the next and build on it. This is embodied by the sequencing progression from initiatives to ropes courses.

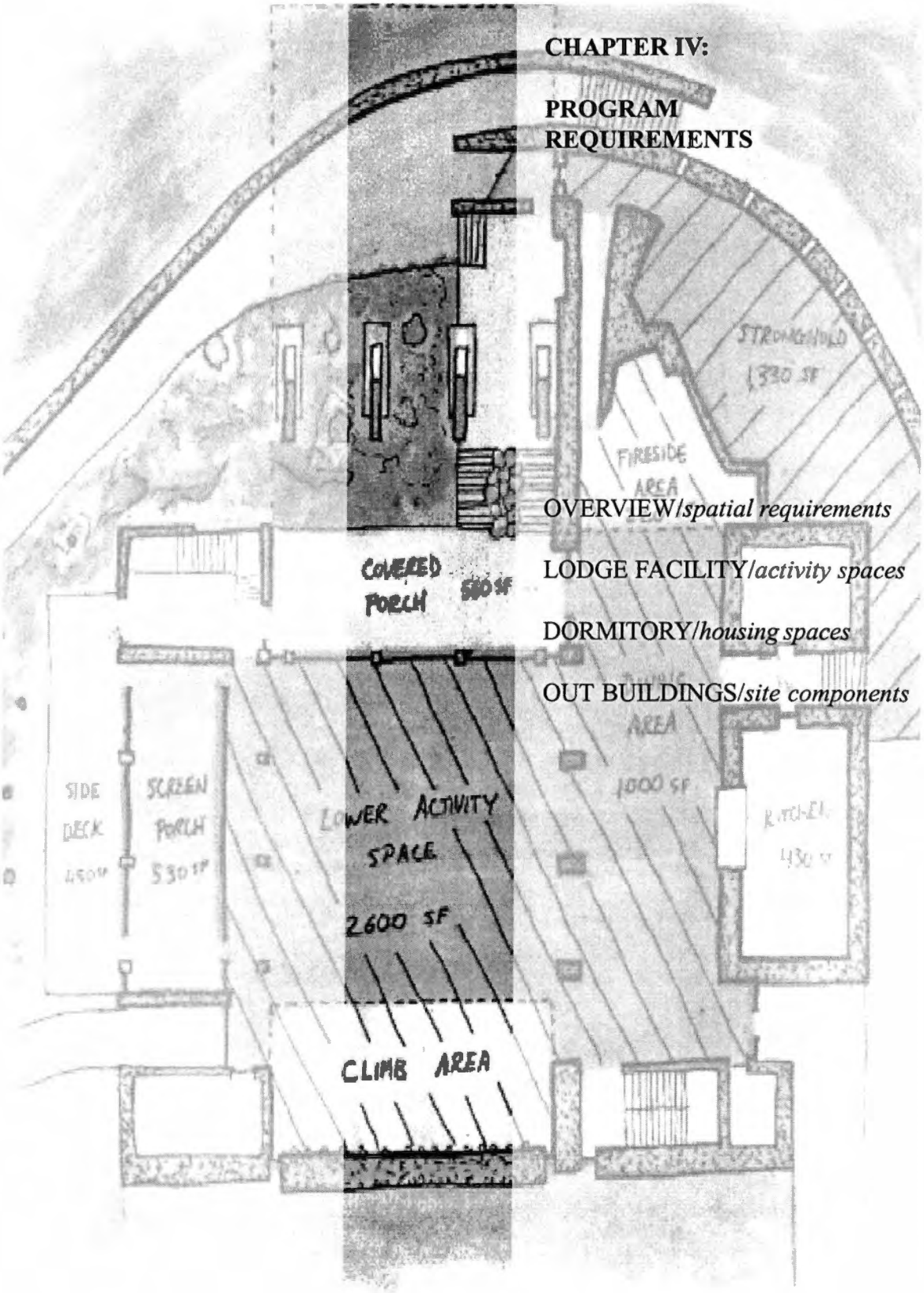
Studies have been done which show that ropes courses and adventure therapy have high success rates in improving group behavior and self esteem. (Johnson, 17) Groups such as Outward Bound and Project Adventure train facilitators and operate camps which include ropes course structures.

Figure 3.26: ***Climbing/Rappelling Tower*****, Project Adventure,** Covington, Georgia. A climbing and rapelling wall is often built to complement the sequence of tree-top elements.
Source: Author

SEQUENCING

Sequence is a very important part of the process. "Sequencing is part feeling, part intuition, part analysis and part experience." (Rohnke, 43QS) "It is a key skill because the flow of the adventure experience greatly impacts its success for the participants. Move too slowly and people lose interest due to boredom; move too unexpectedly or too quickly and people become anxious and withdraw. Sequencing allows you to maintain the group in the flow state – balanced between the level of challenge presented and the participants' own abilities to meet that challenge." (Rohnke, 43QS)

Each group has its own chemistry, set of strengths and weaknesses, and momentum. Thus, there is no prescribed collection of activities that will always be followed during a program. It is the facilitator's responsibility to read the group and customize the set of initiatives and tasks with which it would be appropriate to challenge the specific group. (Gillis, 13ABC) Different groups progress at different rates, so the set of activities will likely vary from one retreat to another even if the overall program sequence remains the same.



CHAPTER IV:

PROGRAM REQUIREMENTS

OVERVIEW/*spatial requirements*

LODGE FACILITY/*activity spaces*

DORMITORY/*housing spaces*

OUT BUILDINGS/*site components*

OVERVIEW

The program phase of this investigation involved developing a series of charts which ultimately derive program space from all of the various forces which contributed to the program development. The *Program Issues* grid in the appendix summarizes the major program spaces in terms of specifications, program goals, enclosure, primary thesis issues, and site characteristics.

The main program spaces include: a lodge facility, which would serve a node for a variety of programmatic activities including, dining, gathering, and group activities; boarding facilities, ranging from a dormitory to camp sites; ropes course areas, divided into low elements and high elements; outdoor activity spaces for initiative activities and recreation, and trails for walking, hiking, and climbing. Other program elements include separate housing for employees, administrative space, storage, parking area, and restricted vehicular access to the main lodge area. The built spaces range in size from 31,000 square feet to 100 square feet in accordance with list of program areas (Fig. 4.1)

The capacity of this facility has been determined based on field research of typical group sizes. The ideal group size is 12 to 15 participants per group, with each group being led by a minimum of one trained facilitator. Large retreat groups (20 or more) are usually split into two groups for initiative tasks. This is necessary for two reasons. The first reason is that large groups generally take longer to accomplish an initiative task. This can effectively defeat the purpose of the activity as frustration and fatigue set in. The other reason is safety. If a group is too large, it becomes more difficult for both the facilitator and the group to monitor safety during the activities that involve, climbing, falling, jumping, and so forth. (Alexander)

PROGRAM AREA REQUIREMENTS

Lodge Facility			**17000 sf**
Main Level		6100 sf	
Activity Space*:	2600 sf		
Dining Area*:	1000 sf		
Fireside Area*:	220 sf		
Climb Area*	720 sf**		
Covered Porch:	560 sf		
Screened Porch:	530 sf		
Side Deck:	450 sf		
Kitchen:	430 sf		
Restrooms (2):	180 sf (ea)		
Upper Level		4390 sf	
Activity Space:	3100 sf		
Large Meeting Room:	220 sf		
Small Group Rooms (2):	100 sf		
Administration:	350 sf		
Service Alcove:	160 sf		
Restrooms (2):	180 sf (ea)		
Split Levels		5460 sf	
Stronghold:	1330 sf		
Terrace:	1330 sf		
Suspension Platform:	2800 sf		
Support Spaces		1000 sf	
Storage:	700 sf		
Mechanical:	100 sf		
Circulation:	700 sf		
Dormitory			**8540 sf**
Cottages		4140 sf	
Main Level (8):	280 sf (ea.)		
Loft Level (8):	240 sf (ea.)		
Bathrooms (8):	50 sf (ea.)		
Barracks		2580 sf	
Bunk Rooms (2):	950 sf (ea.)		
Shower Rooms (2):	340 sf (ea.)		
Commons		1820 sf	
Terrace:	1340 sf		
Balcony:	150 sf		
Gathering Room:	330 sf		
Out Buildings			**9430 sf**
Cabins (6):	190 sf (ea.)		
Bath House:	750 sf/2		
Lean-to (2):	120 sf (ea.)		
Challenge Platform (2):	900 sf (ea.)		
Activity Pavilion:	800 sf		
Storage Shed (2):	100 sf (ea.)		
Staff Cabins (3):	1500 sf (ea.)		

*Denotes adjacent, continuous spaces
**Included in activity space

Fig. 4.1: Square Footage Calculations for Program Spaces. The lodge and dormatory buildings account for the majority of built space.

At any given time, the retreat center should be able to accommodate up to 120 persons. The dormitory alone could house nearly this amount. However, 120 constitutes between six to ten groups, each of which need access to some of the same activity spaces. Crowding the retreat center would only serve to undermine the experiential aspects of program, site, and building. In other words, there will likely always be empty cabins, cottages, or bunk rooms, even during the peak season. While this may at first seem wasteful, providing different types of accommodation is necessary for different types of retreats, and also for offering variety in experience for repeat visitors.

This type of retreat facility is unique in that few precedents exist from which to draw spatial requirements. Furthermore, many precedents were actually designed for other uses then altered to accommodate adventure programming activities. Subsequently, the spatial requirements were estimated by the author, some of which were based on personal experience as a participant in adventure based activities, others of which were determined based on dimensions of furnishings (such as beds and showers) and capacities.

For instance, activity spaces need to be large enough so that a group of about ten-to-twenty participants could comfortably spread out for certain types of games. They should also be large enough so that more than one group could perform a game or initiative in the activity space simultaneously in times of inclement weather. A space ranging in size from a half to a full basketball court would be sufficient. In fact, many indoor adventure programs typically occur in school gymnasiums. The area of a collegiate basketball court with three-foot perimeter is 5,600 square feet. (Callender, 1194) A half court size of 2,800 square feet would be optimal for a variety of indoor activities.

LODGE FACILITY

Activity space gives the lodge facility its primary function. Since the initiative and challenge activities follow a sequence or progression which purposefully challenges participants to reach beyond their comfort zone to a higher level of achievement, progression (in terms of programmatic function) became a requirement of the program space. The program space engages progression in a number of ways. An example of this is the inclusion of different types of activity space.

The group activities can generally be performed in a variety of settings and a number of different spaces will be provided for these throughout the site. The reason for this is twofold. The first reason is that this facility will have the capacity to accommodate several groups at one time. This implies that a number of generic program spaces should be planned and designed since the group initiatives and events are the central focus of the retreats and workshops that will occur at the retreat center.

The second reason, as alluded to previously, is the progression related to activity sequence. The architecture can actually respond to this type of program sequence by acknowledging this sequence through the quality, variety and experience of space. The design project will begin to define different activity spaces, both indoor and outdoor, with the central dialogue being comfort and challenge. In other words, some spaces my be very comfortable, offering artificial enclosure, light and climate while others may be more exposed, ranging from built platforms to clearings in the forest. This dialogue is further discussed in the design investigation. The idea of an activity platform is a synthesis of thesis issues as well as program elements such as ropes course structure that can actually begin to merge with architecture, engaging materials, structure, and protection into program tasks. The design project will focus on the relationships between program spaces and the collective architectural issues.

PRIMARY ACTIVITY SPACES

The lodge will contain large fluid spaces on both the upper and lower levels for multiple types of activities. The space on the upper level will be approximately 3,100 square feet (Fig. 4.2) while at the lower level it will be sized at about 2,600 square feet. (Fig. 4.3) The lower level space will be continuous with the dining area which adds an additional 1,000 square feet that can be used for games and activities. The plan diagrams that appear in the right hand column are excerpts from the design project intended to illustrate the relationship of various program spaces, both in terms of size and proximity to each other.

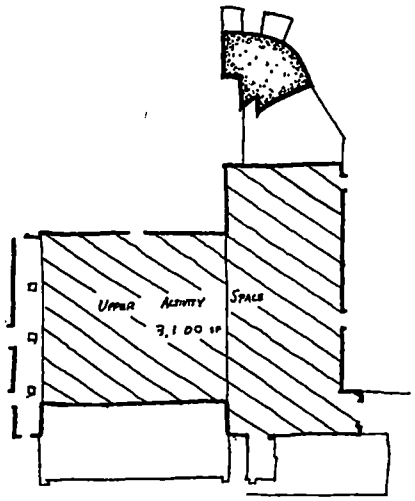


Figure 4.2: Upper Activity Space.
Source: Author

FIRESIDE AREA

The notion of hearth has been introduced in Chapter II and will become a central figure in the lodge facility. The chimney stack will likely have multiple hearths as it passes through the different levels. The ground floor fire side area, enclosing about 220 square feet, will be articulated as an inglenook of the dining area.

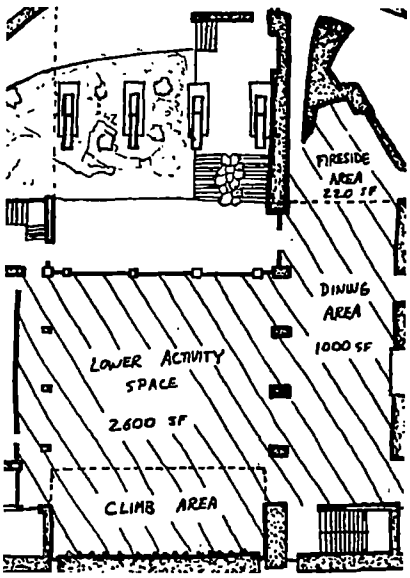


Figure 4.3: Lower Activity Space.
Source: Author

CLIMBING AREA

A double-height space will be introduced to one side of the primary activity space, connecting the upper and lower levels via a climbing practice wall. This begins a progression in which the climber is in a seemingly more controlled setting as he/she learns climbing techniques before attempting to scale the natural rock faces on the site.

PORTICOS

A covered porch will be included on the side of the lodge opposite the main entry. This will be in an open-air space below the upper level. A screen porch will enclose one end of the lower level activity space. This large enclosure (approx. 560 square feet) will have the potential to be partitioned for use by more than one group. (Fig. 4.4) These

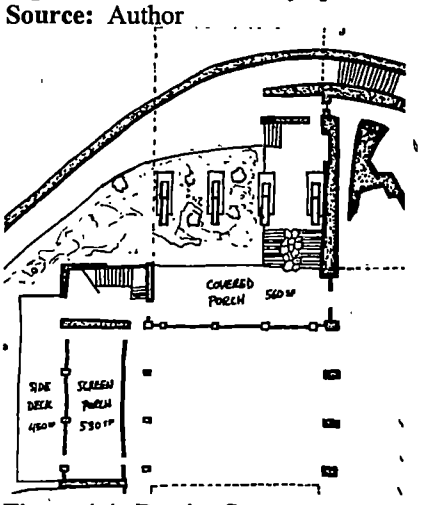


Figure 4.4: Portico Spaces.
Source: Author

types of spaces offer a means of transition between the relative comfort of interior space and the surrounding site.

MEETING ROOMS

The upper level will accommodate meeting rooms which will be used for group discussions, perhaps to discuss the day's events or to hold planning sessions, as in the case of an office retreat. One large meeting room will be arranged as a board room, with a long table as its central feature. This 220 square-foot room will be complemented with two small group rooms, 100 square feet each. (Fig. 4.5)

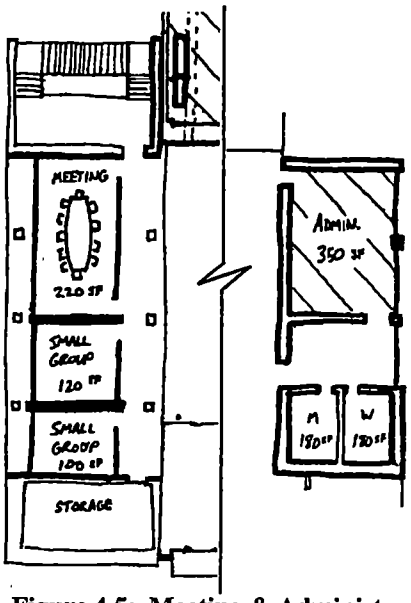


Figure 4.5: Meeting & Administration Spaces. Source: Author

ADMINISTRATION

Also on the upper level, an office will be provided for administrative tasks. Locating an administrative area in the lodge building for handling reservations, accounting, and scheduling lends itself to efficiency of operations since the lodge is the central staging area for retreat center activities. This room is approximately 350 square feet. (Fig. 4.5)

SUBLEVEL

A split-level enclosure of approximately 1330 square feet will be one-half flight lower than the ground level and will be used for group gatherings. This space is called the "stronghold" because it will be have few openings and will be bounded of masonry walls. The central feature of this room will be a hearth. (Fig. 4.6)

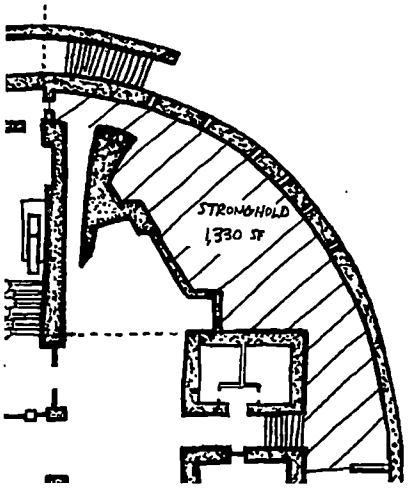


Figure 4.6: Stronghold Level. Source: Author

TERRACE LEVEL

The main terrace, one-half flight above the ground floor, will be the roof of the stronghold, covering about 1330 square feet. The terrace will be a major source of prospect into the landscape as well as a place for gathering. A third hearth will be introduced at this level. (Fig. 4.7) A position on the terrace has more prospect but also more exposure than the stronghold space below.

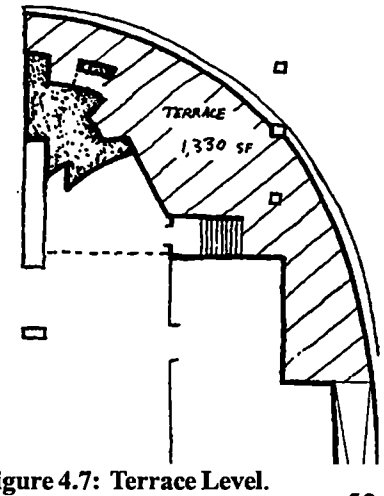


Figure 4.7: Terrace Level. Source: Author

SUSPENSION PLATFORM

The suspension, or "challenge" platform is the most exposed space of the building. This large space is one-half level above the upper activity space, and has a deck of 2,800 square feet. (Fig. 4.8) This level is open-air and will be used for initiative and trust activities.

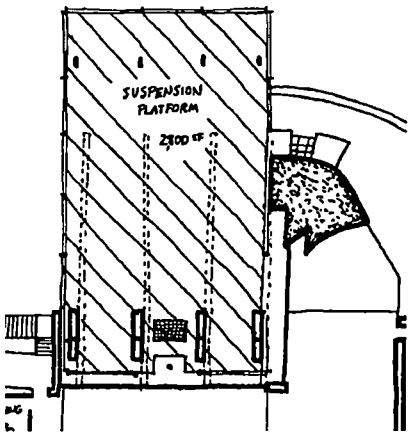


Figure 4.8: Suspension Platform.
Source: Author

SUPPORT SPACES

The programmatic activities of the lodge will be supported by: a commercial kitchen, 430 square feet; rest rooms on the two full levels; four at 180 square feet each; storage rooms for tables, chairs, and equipment, two at 350 square feet each; mechanical room, two at 100 square feet each; and approximately 700 feet for circulation.

Another opportunity for progression is the sleeping spaces. The sleeping spaces will follow the progression of activity spaces. Some will be more comfortable as in the cottage rooms, while others will be much more rustic and exposed, as in the shelters.

DORMITORY

The dormitory building will house the most comfortable guest lodging on the site. Two types of rooms will be included in the dormitory: a main level with cottage rooms; and a sublevel similar to a barracks or bunk house.

COTTAGES

The cottage-style rooms will include a series of eight cabin-like rooms, or cottages, at the main level which could accommodate up to six individuals. These rooms would be furnished with twin-size beds, half of which would be on the loft level. (Fig. 4.9) The lower level will have a small bathroom and sitting area. The cottage rooms will have heating and air conditioning as well as storage space for personal

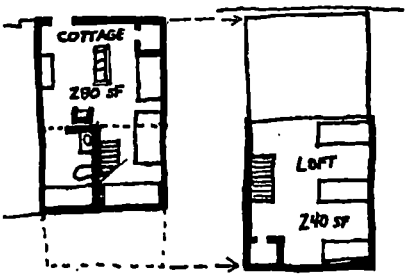


Figure 4.9: Cottage Rooms. Left: Main level; Right: Loft level.
Source: Author

belongings. The loft level space will be 240 square feet, and the lower level will be 280 square feet with an additional 50 square foot bathroom.

BARRACKS

The sublevel of the dormitory building would be occupied by two bunk-rooms, each of which would have a large open room for about twenty bunk beds, and a large shower room with multiple sinks, toilets, and showers. (Fig. 4.10) These spaces would also have storage cabinets and artificial heating and air-conditioning. Thus, even within the comfort of the lodge facility there is a progression relating to exposure and intimacy.

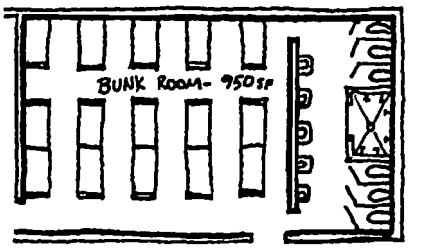


Figure 4.10: Bunk Room and Bath.
Source: Author

OUT-BUILDINGS

CABINS AND SHELTERS

The next level of housing, which begins to depart from comfort is the open-air cabin. A cluster of six-to-eight cabins will be included in the site proposal, each of which would hold up to six beds or cots. All four sides of the cabin would have screened openings. (Fig. 4.11) Exterior shutters or overhanging roofs would be employed to offer protection from rain. A community bath house (divided into male and female facilities) would be located among or in close proximity to these cabins. (Fig. 4.11) The cabins would not be used during the winter season.

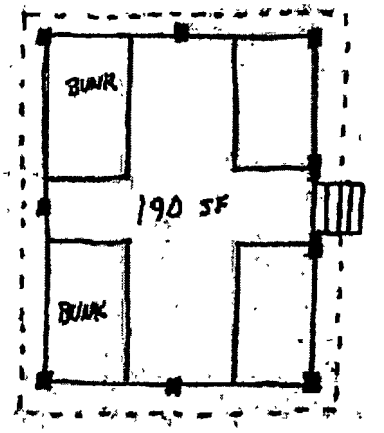


Figure 4.11: Open Air Cabin Plan.
Source: Author

Continuing in progression away from lodging comfort, "lean-to" shelters will be provided for camping. One or two of these Adirondack-style shelters would be positioned in a deep-woods area, probably on the perimeter of the site. Lean-to's can accommodate several people in sleeping bags. These shelters can be formed out of tree-limbs and branches serving as columns, beams, and coverings. Their name is derived from the characteristic roof-like structure leaning onto the support columns on one-end, and resting on

the ground at the other. The sides are typically enclosed, and the roof creates a three-sided enclosure as it meets the ground. The open side is usually protected by a campfire, which is usually built in close proximity to the open side of the shelter. Although the fire and the three walls provide a degree of refuge, the lean-to is probably the most unprotected lodging condition as it's occupants would be open to climate and possibly wildlife, with only modest protection from precipitation.

Both the cabin and shelter users will have access to a bath house. This building will be similar to the bathing facilities of the barracks, except it will not be air-conditioned and will be separated into two halves, one for men and one for women. The building will cover 750 square feet.

CHALLENGE PLATFORM

Two "challenge platforms" will be built at designated locations on the site scheme. These suspension platforms will be similar in materiality and function to the suspension platform in the lodge facility, but at a small scale. Each platform will essentially be an elevated deck with a surface area of 900 square feet, situated near circulation paths on the site plan. (Fig. 4.12) The program function will be group initiative tasks and trust activities.

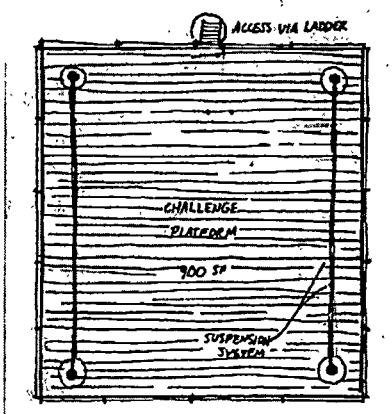


Figure 4.12: Challenge Platform.
Source: Author

ACTIVITY PAVILION

The activity pavilion will be located off the side of one of the large clearings at a remote location from the lodge (see site plan). The pavilion will be open on all sides and covered with a roof structure to offer shade and shelter from rain. This 800 square-foot rectangular building will align itself along the tree line on one side, and along the clearing on the other.

SHED STORAGE

The ropes course areas will inevitably need storage space in which equipment such as ropes and harnesses

can be locked up and kept dry. The bulkiness of climbing equipment and various props used for low elements and initiatives warrant the need for on-site storage. Two 100 square-foot storage sheds will be provided, one on the high ropes course and one on the low ropes course. Other aspects of the ropes course will be discussed in the site exploration.

STAFF CABINS

Staff members will likely be employed on a seasonal basis. At full capacity, the retreat center may employ up to 20 staff members, including facilitators, interns, and cooks. The remote location necessitates the provision of staff lodging on site. A cluster of three staff cabins will be provided, each of which will contain four, double-occupancy bedrooms, two bath rooms, a common living room, kitchen, and porch or deck. These cabins will be designed as comfortable places to which staff members can retreat for their extended stay (three-to-four months) at the retreat center.

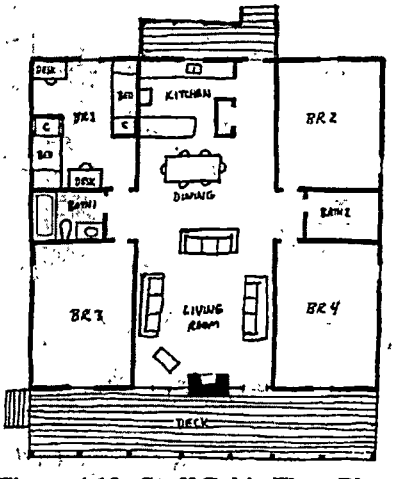


Figure 4.13: Staff Cabin Floor Plan.
Source: Author

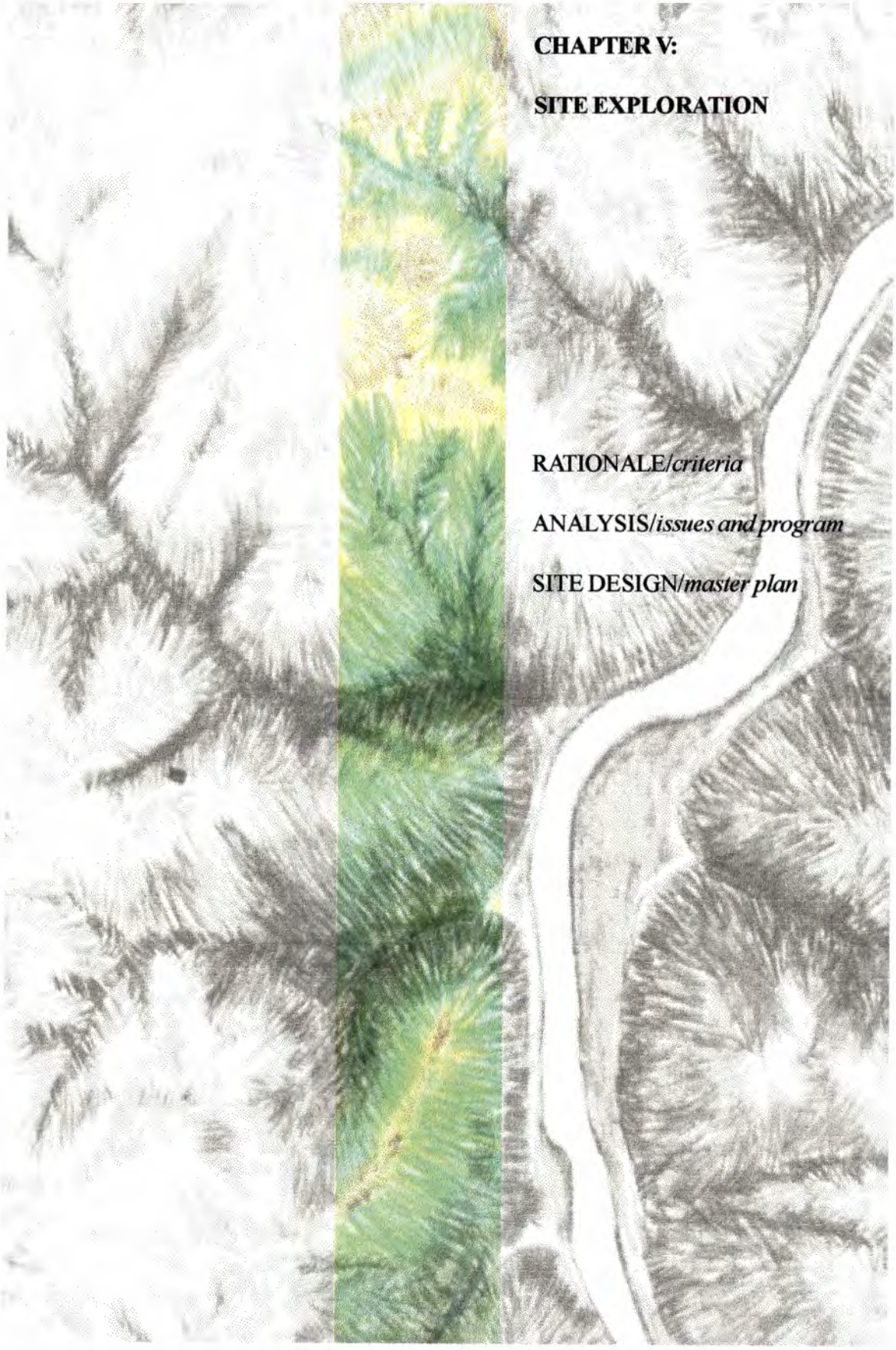
CAMP SITES

A campsite for tents will also be programmed. Similar to the lean-to's, this area will also be sited in the woods, probably at the perimeter of the site. The only infrastructure needed for this element is flat ground and a designated fire pit. Tents themselves vary in enclosure and size, but they generally offer more protection from rain, temperature, animals, and insects than lean-to shelters. Tents often have screens and openings which can be zipped up to maintain a warmer temperature inside as well as provide protection from rain.

PROGRAM SCHEDULES

As a part of program exploration, sample program schedules were developed as a reference for the design of program spaces and areas (see Appendix). The *Weekend Program* describes a typical chronology of a weekend retreat at the facility, starting on Friday evening and running through Sunday afternoon. The *Three Day Program* offers an alternative to the weekend retreat in a longer time frame. This schedule basically gives more time to each sequence of activities, allowing the group to participate in more initiatives and elements, particularily the climbing and high elements. Each program schedule establishes a progression through adventure-based activities, starting out with warm-up games and initiatives; then taking the group through trust activities; and finally low and high ropes course activities.

These schedules provide a framework which is actually quite flexible in terms of the kinds of activities that might be selected by the facilitators. As a general rule, the facilitator decides which activities are appropriate for a specific group. As the facilitator monitors the group's success at accomplishing tasks, he or she makes decisions as to what activity would be the appropriate next step.



CHAPTER V:

SITE EXPLORATION

RATIONALE/*criteria*

ANALYSIS/*issues and program*

SITE DESIGN/*master plan*

Figure 5.1: Topographic Map.
Source: Department of Interior (map)

Figure 5.2: Topographic Rendering. Dark tones represent valleys with light tones indicating plateau areas. **Source:** Author

RATIONALE

The site chosen for the design phase of this investigation is a natural setting in the area known as Big South Fork National River and Recreation Area. This 123,000-acre national park is located on the Cumberland Plateau in north-central Tennessee and south-central Kentucky (Manning, 1). The region derives its name from the Big South Fork River, a branch that feeds into the Cumberland River. The park orients itself along the north-south progression of the Big South Fork River Gorge. The topography of the area is illustrated in Figures 5.1 and 5.2.

This location appropriates itself as a good site based on the checklist of criteria which was used to evaluate each location that was considered. The criteria are as follows:

- land in a woodland setting, having both forests and clearings.
- land with both challenging terrain and flat/low slope areas.
- nearby body of water (creek, lake, or river).

Figure 5.3: Wedge Failure. The valley portion of the site was likely created by this type of catastrophic event.
Source: H. Moore (54)

- near a state/national park or forest (access to hiking trails, camp sites).
- memorable views of mountains, valleys etc.
- reasonable access to highway.

This list was developed in order to address the architectural issues (Chapter II) that have been identified as the fabric of this investigation. The sensory, psychological, physical aspects of the human environment can be fully engaged by this kind of site. The project type of retreat center and ropes course also informed the site criteria.

The aforementioned criteria are important for a number of reasons. For one, the exploration of position in terms of exposure and refuge could be more fully examined in a setting with both clearings and forests as well as elevational changes. A serene and minimally disturbed site with broad vistas into the surrounding landscape would lend itself to the exploration of sensory issues, memory, and other experiential qualities of place.

The geographic character of this site is especially useful in engaging the adventure based activities that are central to the program. The Rock Wedge Failure diagram (Fig. 5.3) illustrates the geographic condition of this site. Over an extended period of time, the condition of the river running its course, gradually digging a deeper and wider gorge, led to catastrophic rock failure, creating sheer rock faces along two sides of a valley. The formation of the valley created a new pattern of runoff resulting in a network of streams and capillaries that cascade down the valley to the main river channel. (H. Moore, 54)

The change in elevation from the plateau to the river bed below is nearly 400 feet. The rock face formations, flat clearings, forest and elevational changes

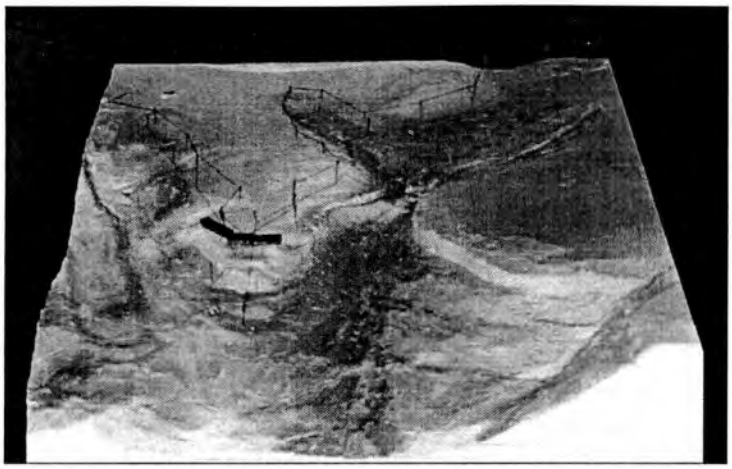


Figure 5.4: Relief Model. The background shows the elevation of the plateau while the foreground shows the valley condition as it opens up to the Big South Fork River gorge. Original scale: 1"=50'. **Source:** Author

offer opportunities for hiking, climbing, rappelling, and other program activities. The relief model (Fig. 5.4) illustrates the topographic conditions of the local site which encompasses the plateau area in the background and the valley in the foreground.

The region of the Big South Fork is known for lumber and limestone. These indigenous building materials will engage the building program as well.

Figure 5.5: Site Features. This sequence of site overlays diagrams existing conditions around the site, both natural and man-made.

a: Runoff. Streams and rivers.

b: Man-Made Infrastructure.
Roads and pathways.

c: Significant Slope. Areas of rapid elevational change including vertical rock faces.

d: Clearings. Low-slope clearings which were probably clear-cut by man for agricultural use.

e: Sun Exposure. The southern edge of the valley (which faces north) receives very little sunlight, while the northern face receives a significant wash of sunlight year round.

SITE ANALYSIS

The analysis of this site began with an experiential documentation of the area, with no particular agenda in mind other than sensing the site and getting to know its character. This documentation took the form of a site *deriv*, or random exploration of the site having a destination in mind without any preconceived route in mind. (Tschumi)

The excursion involved hiking, climbing, crawling, pulling, and pushing onward through the site. This site exploration is documented in the Appendix as a narrative and series of diagrams. The narrative portion is further illustrated by the *Photographic Map* of the site which has been included in the Appendix as well. The photographic map numerically matches each image to the location on the topographic site map from which the photograph was taken.

The next phase of the site analysis encompassed diagramming site features such as water, man-made boundaries, elevational changes, clearings and forests, and sunlight exposure (valley). (Fig. 5.5)

Figure 5.6: Viewpoint A. Visibility within the valley. The light tones represent light prospect while the darker tones represent dark, shaded prospect. **Source:** Author

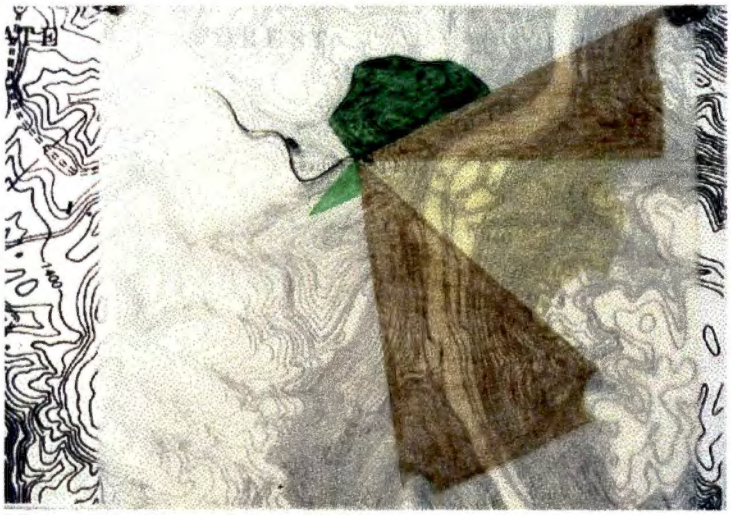


Figure 5.7: Viewpoint B. Visibility on the ridge line between two valleys. **Source:** Author

Figure 5.8: Viewpoint C. Visibility on the plateau peninsula between the two valleys. **Source:** Author

Viewpoints, or vistas, were also studied, ranging from bright views with maximum visibility to dark views with minimal prospect. Figures 5.6 through 5.8 map these qualities from three different points on the site. Point A is located within the valley; point B is on the ridge line ascending the plateau; and point C is on the plateau at the end of a peninsula-like outcropping.

LIGHT/DARK PROSPECT

Prospect emerged as an important characteristic of the site. Exploration of view points led to an understanding of two types of prospect: dark prospect and light prospect. (Fig. 5.9) The light prospect is embodied by the panoramic view looking east across the river gorge from the plateau. 'Light' refers to the bright wash of sunlight that could canvasses the east rim during daylight hours.

Dark prospect describes the view from the plateau looking towards the valley to the north. Just past the crest of the ridge line, the trees and rock faces create a canopy of shade that filters out most of the direct sunlight on the southern rim of the valley. As observed in the *Site Deriv*, (Appen-

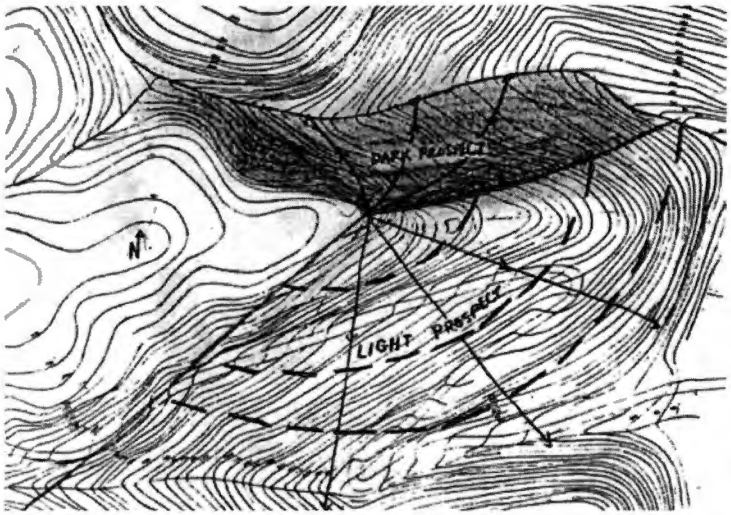


Figure 5.9: Dark and Light Prospect. Dark prospect is the open view into the shaded valley, while light prospect is manifest by the panoramic view to the opposite side of the river gorge, which receives an abundance of sunlight due to its orientation.
Source: Author

dix) temperatures can vary greatly from the top of the plateau, to the bottom of rock faces where direct sunlight is blocked. On a 50-degree day in winter (the day of the site visit), ice formations were observed throughout the shaded valley. Although the plateau provides prospect into this valley, it is a different quality than the prospect towards the east rim in that it is in shade and rather dark in comparison.

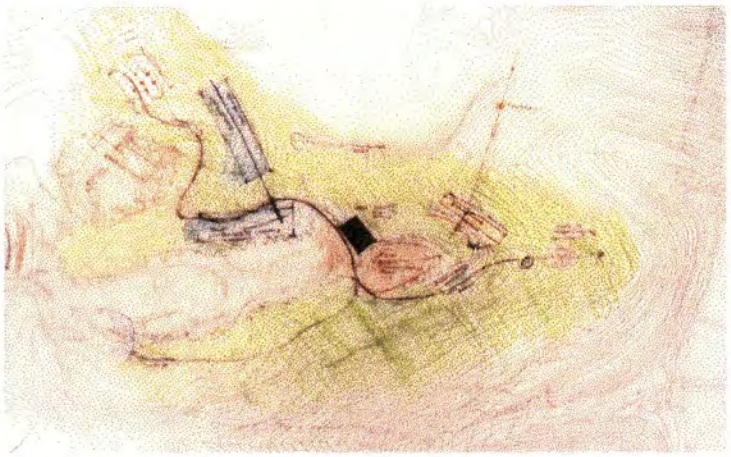


Figure 5.10: Site Scheme 1. Initial orientation of major program components on the site.
Source: Author

Figure 5.11: Site Scheme 2. Revised orientation of major program components on the site.
Source: Author

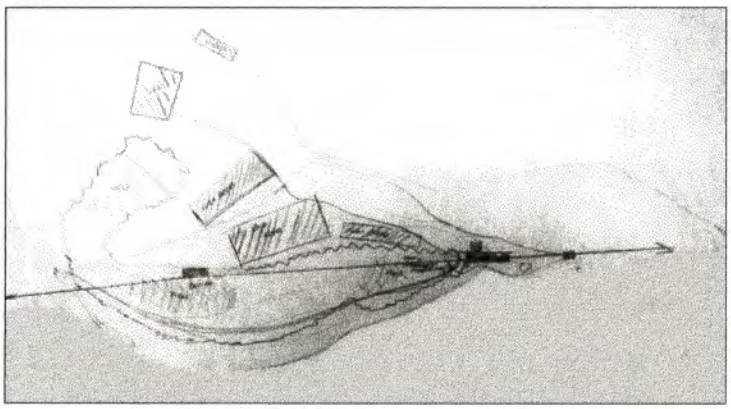


Figure 5.12: Site Scheme Diagram. Sketch of combined ideas from the two previous site schemes.
Source: Author

SITE DESIGN

The site exploration phase was paramount in synthesizing a harmonious relationship between program and site. Documentation of slope changes, forest boundaries, Existing infrastructure such as roads, bridges, trails and park-related elements (such parking areas and boat ramps) also influenced the arrangement of program on the site.

A number of program elements affected the final site layout. Major components were evaluated in terms of site characteristics and architectural issues. Main components include: low ropes course, high ropes course, lodge/ dormitory complex, cabin area, camping area, climbing/rappelling area, and recreational field.

Figures 5.10 and 5.1 illustrate two variations that were conceived after site and program analysis. Figure 5.12 combines the main ideas taken from schemes one and two as the final site plan was developed. The *Site Layout Plan* is included in the Appendix.

The low elements ropes course required a low-slope forested area. Trees provide much of the necessary structure for the

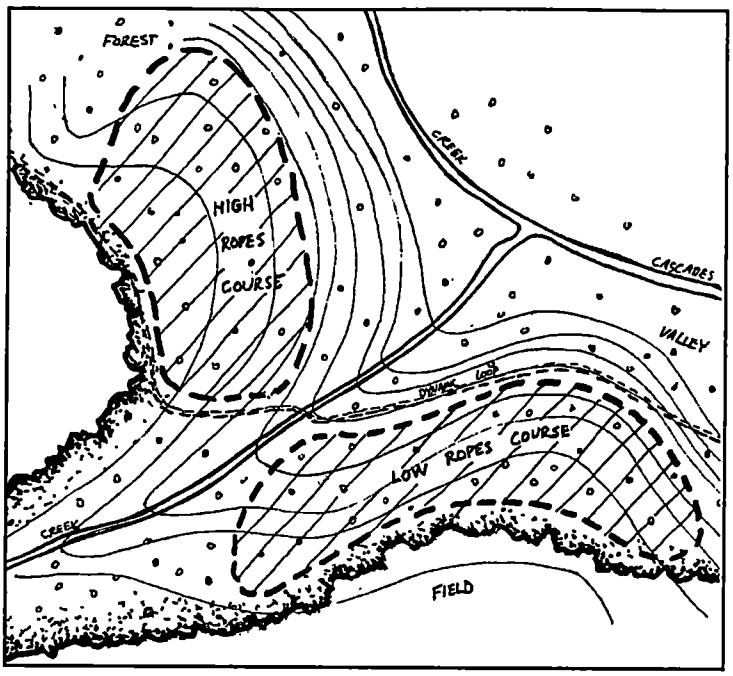


Figure 5.13: Ropes Course Site Plan. These low-slope wooded areas will accommodate the low elements in one zone and the high, tree-mounted elements in the other.
Source: Author

low elements. The tree-mounted platform used in the Trust Fall and the steel cables strung between trees for use in the Mohawk Walk (discussed in Chapter III) demonstrate the use of trees as structure.

The high elements ropes course has siting requirements similar to the low elements. The primary difference is that mature trees are needed. This is due to the fact that cables are strung between the upper portions of the trees. Although element heights can be adjusted to fit the site, recommended heights for several elements, such as the Cat Walk, range from 40 to 50 feet. Thus, mature trees offer more strength and stability at greater heights. Utility poles can be used in combination with trees when mature trees are sparse. In general, the forested area is of uniform height (from site visit), with larger trees occurring in the shaded valley. The trees appeared to be sufficient for accommodating both low and high elements. Figure 5.13 shows the designated ropes course areas as a plan diagram.

Progression was also a factor in the designation of ropes course zones. After establishing potential sites which could accom-

modate either course, the sequence of program activities informed placement. For instance, the low elements generally precede the high elements in a program sequence, so it was determined that the low course should be encountered first or more directly along the main trail as opposed to the high elements, which represent the high point of the adventure activities and should be encountered at some point beyond the low elements, deeper into the unknown landscape.

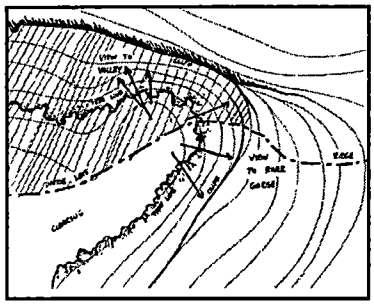


Figure 5.14: Lodge Site Forces.
Source: Author

As described in the program discussion, the lodge facility will serve as the center of activities. During site design, this building was thought of as a 'keystone' of sorts which would give structure and order to the overall site scheme. As such, much care was given to the placement of this building on the site in respect to issues of programmed use, architectural issues, and site characteristics. The diagram in Figure 5.14 summarizes these issues in terms of the selected building site. The main issues include: light and dark prospect; elevation changes; fortification; and relationship to other program elements on the site via pathways.

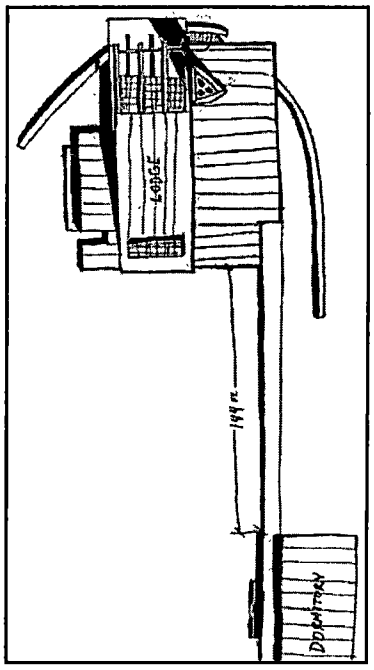


Figure 5.15: Relationship Between Activity Lodge and Dormitory.
Source: Author

Through program synthesis, it was decided that housing accommodations should be placed in a separate dormitory building, but in close proximity to the lodge building. This is rationalized by the dialogue between comfort and challenge, in which the lodge and dormitory represent the comfort end of the progression. Thus, the most comfortable residential units should be in close proximity to the dining and informal gathering spaces, yet removed from the noise and energy of the activity spaces. (Fig. 5.15) Issues of prospect, elevation, relationship, and edge were also considered in this placement. Both the lodge building and the dormitory need easy access to the field areas well as the paths that link the various activity areas throughout the site.

In contrast to the dormitory, the open-air cabins required a more rustic site, further removed from the programmed comfort. The cabins are intended to elicit feelings of exposure and awareness. On the final site plan, a cluster of cabins have been positioned in the forest area on the northern perimeter of the site.

The only technical requirement is that the land be of a low enough slope to accommodate the foundation piers of the cabins. Placing the cabins in the wooded area instead of along the clearing, coupled with the open-air construction, will potentially strengthen feelings of exposure to, and awareness of, the unknown surroundings of the forest. A bath house will be located adjacent to the cabin site. (Figs. 5.16 - 5.17)

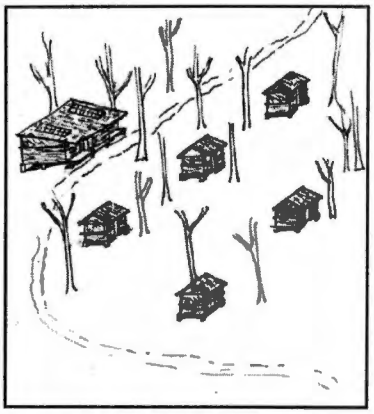


Figure 5.16: Cabin Area.
Bird's eye view.
Source: Author

The camping area will be sited even deeper into the unknown landscape. Beyond the cabin area, a creek enters the site along the northern edge. This area flattens out near the creek bed, providing a level area for camping. Two lean-two shelters have been programmed for this site. These permanent structures are very rustic and very exposed. The ground serves as the floor of the shelter, while limbs and branches are sufficient for the structure and cladding. One side of each shelter will be left open to a fire pit. (Fig. 5.18) Participants may elect to bring tents which could also be set up in this area. The water source and flat ground make this area ideal for camping. However, this is the fringe of the site on the forested side, making it the most remote and exposed area of the programmed site.

Figure 5.17: Open-Air Cabin.
Source: Author

The remaining primary components were given conditions of the site. The recreational field could be accommodated in the existing clear-cut fields, which exhibit both flat and low-slope terrain. The climbing and rappelling area will be programmed for the rock faces on the southern rim of the valley. Little infrastructure is needed for this program component. At most, a storage shed for ropes and equipment; permanent tie-off posts (trees are often used, but along this edge the trees may have shallow roots); and a safety cable (mounted on trees or posts) to which facilitators and participants can tether while assisting or preparing for a climb or rappel would be required. No infrastructure will be needed at the base of the rock face.

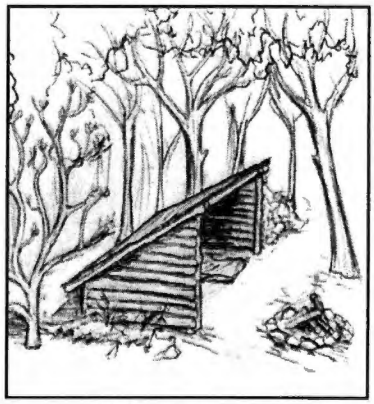


Figure 5.18: Adirondack-Style Lean-to Shelter.
Source: Author

Secondary program components were considered both in terms of site conditions and relationship to the primary program components. These include an access road, parking area, staff housing, campfire ring, activities pavilion, challenge platforms, and trails.

The site can be accessed via The Bandy Creek access road, a road which connects the main highway to a large campground and visitor's center. The field portion of the site has frontage along this road which provides a good location for a vehicular entrance to the retreat center. (Fig. 5.19) The access point is at the western boundary of the site, opposite the lodge and dormitory on the eastern edge of the plateau. The program of the lodge requires an access road to connect the Bandy Creek access road for delivery of food and supplies. This would also provide a way for groups to deposit luggage at the dormitory rather than carrying it from the remote parking area. The access road would follow the southern edge of the clearing and would be surfaced with river gravel. Cut and fill to form the road bed would be minimal at this location.

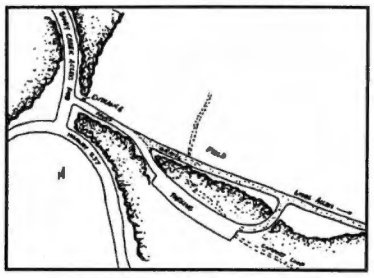


Figure 5.19: Access to Site. Diagram of vehicular access to service road and parking area at the southwest corner of the site.
Source: Author

The parking area will be located in the southwest corner of the site near the vehicular entrance. (Fig. 5.19) The parking surface would likely be paved with field stone or gravel (abundantly available in this area) to prevent erosion. The parking area will be linked to the lodge complex via trails.

The three staff cabins will be built on the hill side below the parking area. The reason for this is twofold. First, this gives staff an area that is removed from the activity centers of the site. This gives staff members a degree of privacy from the campers after the activity sessions have ended for the day. This location also gives staff members easy access to their vehicles when they need to drive to town or to another venue in the Big South Fork. As mentioned in the program, these cabins are comfortably furnished to meet the needs of the staff members who are there for an extended stay.

An area for night activities away from the main lodge will be the campfire ring. (Fig. 5.20) This will be located on the ridge line extending from the plateau to the river gorge. The campfire will be somewhat remote similar to the camping area. However, its position, in an area where the ridge line flattens out, will give it a prospective quality unlike the camping area. Trails will connect the campfire ring to various nodes on the site.

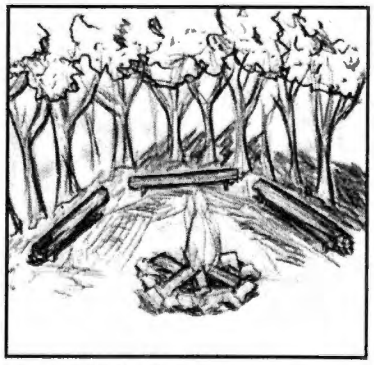


Figure 5.20: Campfire Ring.
Source: Author

Another activity space away from the lodge is the open-air pavilion, which will be positioned along the northern edge of the recreational field along the tree line. The placement of this building offers groups a shaded area to which they can retreat when field activities become to hot in the summertime. This building will be wired for lighting so it can be used for night activities away from the lodge, perhaps functioning as the staging area for evening events of groups staying in the open-air cabins. It will likely be furnished with moveable tables and chairs so it can be arranged for a variety of uses ranging from religious services to initiative games. The pavilion will be accessed via the trail system.

A hybrid structure developed in response to the thesis issues is the "challenge platform". (Fig. 5.21) This facility is a built structure that will be developed in two separate locations on the site plan.

The idea behind the platform is to use structure to elicit feelings of challenge in the landscape, similar to the suspension platform of the lodge building. These platforms will serve as alternate locations for trust activities and group initiatives. The construction will play off of the ropes course, using steel cables to suspend the platform from a pier tower and/or mature trees.

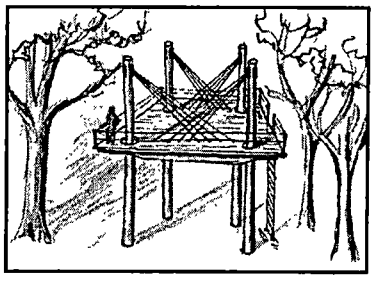


Figure 5.21: Challenge Platform.
Source: Author

The trail system designed to connect the various nodes on the site embodies the dialogue between comfort and challenge. The various trials are marked with dashed lines on the site plan in the appendix. Two different types of trails form a network in which connections are made across the site. Loop trails intersect multiple venues, eventually returning to their point of origin. Return trails connect one point on the site to another, with at least one end returning to a loop trail.

Three classes of trails were conceived as a means of progression through the site. These include the comfort path, challenge path, and the dynamic path. The comfort loop essentially leads visitors in an elliptical progression from the parking area, around the field area, first intersecting the dormitory then the lodge building at its midpoint. The loop then turns back toward the field and passes by the activities pavilion as it makes its way

back to the parking area. (Fig. 5.22) The southern half of the loop follows just inside the tree line, emerging into the clearing just before it encounters the dormitory. In general, the comfort path will be surfaced with fine gravel or mulch.

The challenge path (Fig. 5.23) generally follows tougher terrain, with moderate to vertical climbs along its progression. This loop begins and ends at the lodge building, which is the only point at which it enters the clearing. On the east end of the lodge, this path descends the plateau, with rocks placed as steps in the steeper descents. The path progresses along the ridge line, past a large boulder (identified on the site plan) to the campfire ring, where the dynamic path splits to the north descending into the valley. The challenge path continues down the ridge then turns north near the bottom, nearly intersecting an existing hiking trail along the river, before turning northwest in a progression towards the stream bed of the valley. The path then merges with the stream bed as participants are challenged to hike the cascades for several hundred feet westward. The path then peals away from the stream bed southward, approaching the rock faces which must be scaled (at this point they can be climbed without safety devices) as the loop returns to the higher elevation. Once on top, the challenge loop merges with the dynamic loop ultimately arriving at the lodge building.

The dynamic loop is referred to as such because it embodies qualities of both the comfort path and the challenge path, experienced differently depending on where one is located along the progression. (Fig. 5.24) This path originates at the eastern end of the lodge building, progressing in a northwestern direction down a moderate slope. It follows along the top edge of the rock faces where climbing and rappelling activities are located, then passes along the northern edge of the low elements ropes course. Beyond the ropes course, the dynamic loop crosses a tributary stream after which it passes along the western edge of the high elements ropes course. It then continues on to the cabin area before making a turn back towards the valley. The dynamic loop briefly follows along the southern bank main creek (that

Figure 5.22: Comfort Loop.
Source: Author

Figure 5.23: Challenge Loop. Fall out area along rim of valley.
Source: Author

Figure 5.24: Dynamic Loop.
Source: Author

runs through the valley to the Big South Fork River). It then follows the base of the rock faces and eventually opens up on the ridge line, merging with the challenge loop. This, in turn, connects the dynamic loop back to its origin at the main lodge. Both the challenge loop and dynamic loop will be dirt paths. However, rock debris may be used in some places to form steps in areas of steeper incline.

The return trails are intended to provide an alternate route, in each case connecting the challenge or dynamic loop to the comfort loop. For instance, the challenge loop has a steep climb as it nears the lodge on the ridge line, so an alternate return follows a less difficult grade up to the comfort loop on the plateau. However, a greater distance must be traversed to maintain the low slope return.

The main intersections of the different trails are diagrammed in Figures 5.25 through 5.30. Figure 5.25 describes the interaction of the different trails as they intersect the lodge and dormitory on the plateau peninsula. Figure 5.26 illustrates trail intersections at the eastern extent of programmed space along the ridge line. Figure 5.27 shows the interaction of the challenge loop with the existing hiking trail near the main

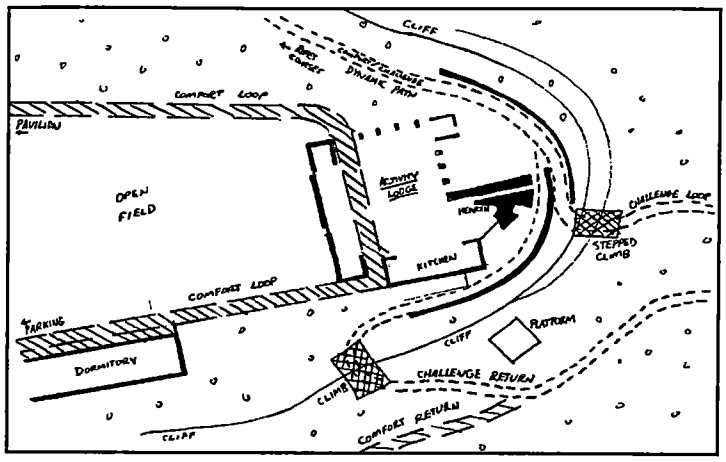


Fig. 5.25: Lodge Site, Plateau Peninsula. Path intersections at activity lodge.
Source: Author.

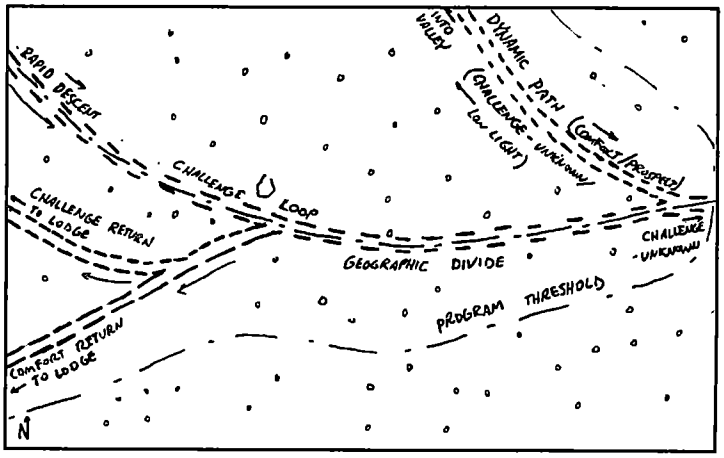


Fig. 5.26: Eastern Extent of Program. Path intersections along divide line.
Source: Author.

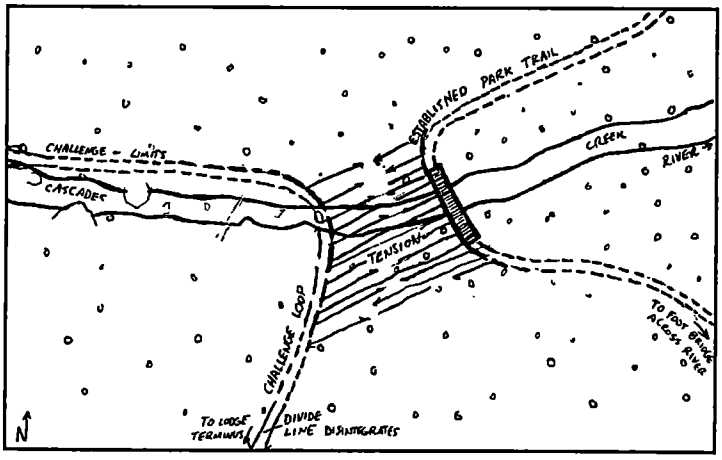


Fig. 5.27: Eastern Edge of Site. Interaction of Challenge Loop with existing trail near confluence of the creak with the river.
Source: Author.

river channel. Figure 5.28 illustrates the western extent of the dynamic loop in the area of the lean-to shelters. Figure 5.29 describes the challenge path as it makes its way from the cascades to the rim of the valley, eventually converging with the dynamic path at the upper elevation near the challenge platform. Figure 5.30 shows the proximity of the comfort loop the dynamic loop as it passes near the edge of the valley.

The site design phase of this investigation set the stage for the development of a focus area which would explore the thesis issues in greater detail in terms of a building project. The lodge facility was developed as the central focus in the design project phase. The activity nodes and progressions established by the site design heavily influenced the lodge design as will be described in the next section.

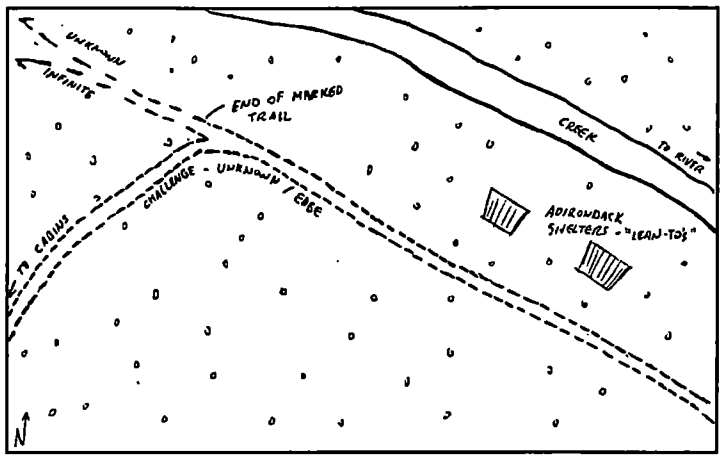


Fig. 5.28: Western Edge of Site. Dynamic loop at the plateau elevation reaches northwestern extreme of site as the forest becomes more dense. **Source:** Author

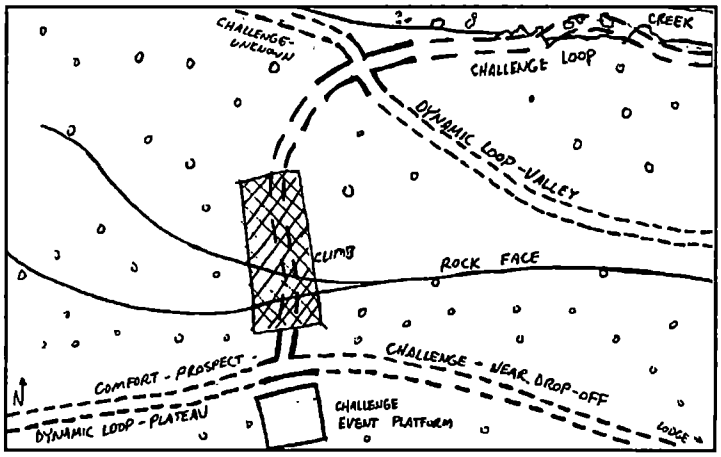


Fig. 5.29: Interrelation of Dynamic and Challenge Loops. As the challenge loop emerges from the creek, it crosses the dynamic loop at the valley elevation, then climbs the rock face (free climb area) and merges into the dynamic path at the plateau elevation.
Source: Author

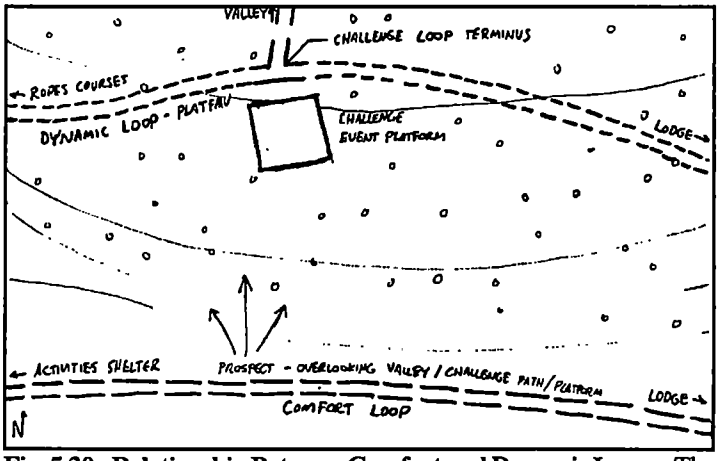
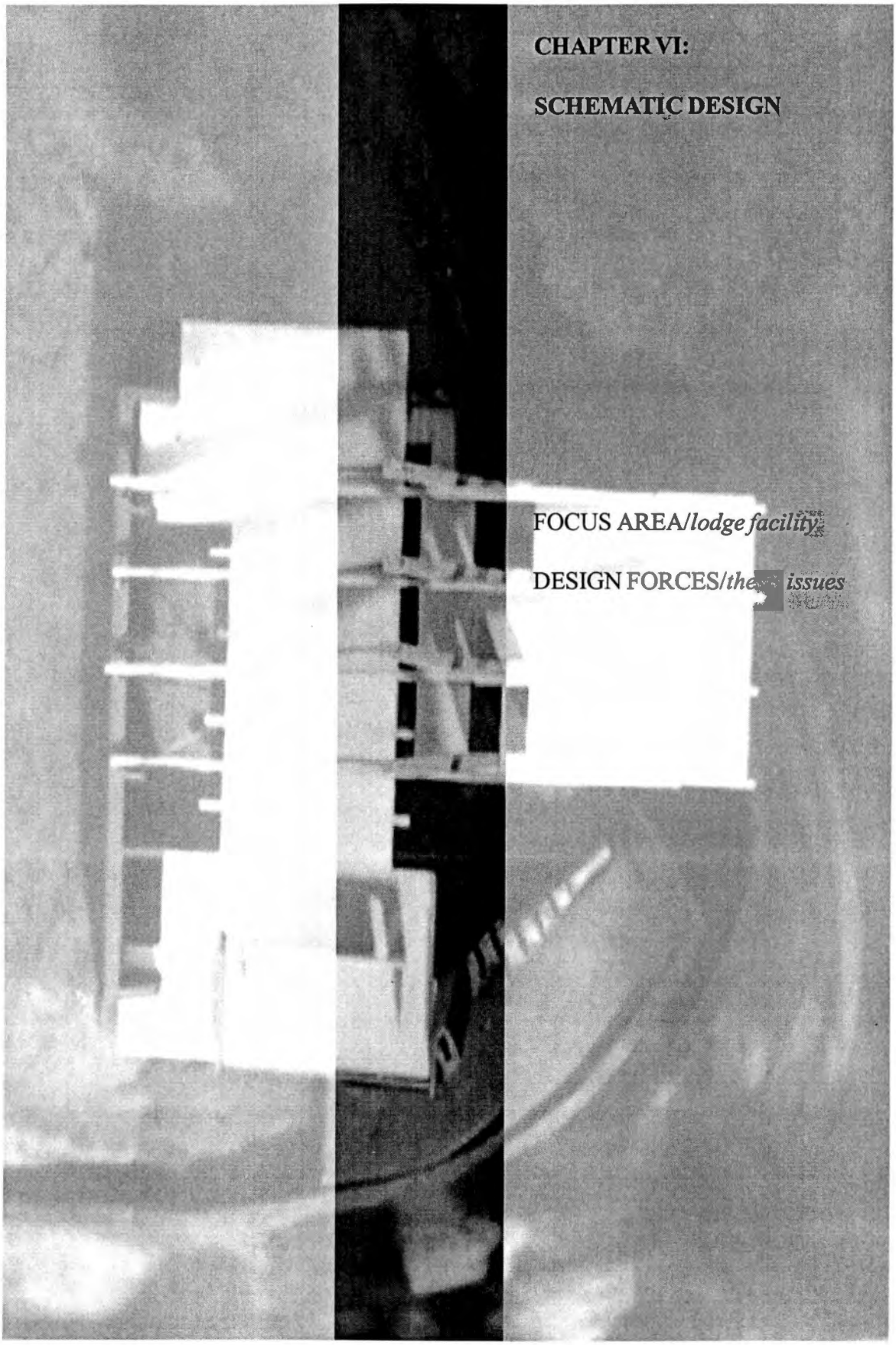


Fig. 5.30: Relationship Between Comfort and Dynamic Loops. The comfort loop glides along the edge of the field while the dynamic loop approaches the edge of the cliffs under the veil of the forest canopy. **Source:** Author



CHAPTER VI:

SCHEMATIC DESIGN

FOCUS AREA/*lodge facility*

DESIGN FORCES/*the issues*

FOCUS AREA

The lodge facility is the focus of the building design project associated with this thesis investigation. The program for this facility prescribes a number of types of spaces geared towards the programmatic activities. This project will serve as a demonstration of both the architectural issues described in Chapter II and the programmatic elements discussed in Chapters III and IV. The siting of the lodge also had a significant impact on the schematic design.

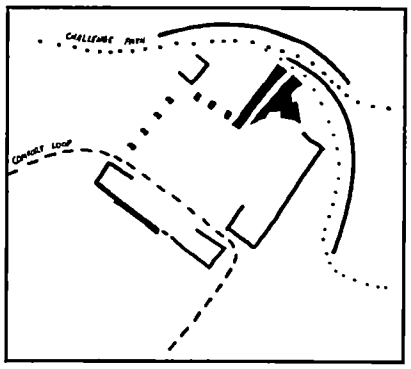


Figure 6.1: Lodge Diagram. Text.
Source: Author

This chapter will initially discuss the primary design issues as they were addressed throughout the composition of the lodge design. Subsequently, a walk-through encounter of the building will be explored, describing the various spaces as they might actually be experienced by retreat participants

As established in Chapter V, the lodge facility is perched on a peninsular outcropping of the Cumberland Plateau along the west rim of the Big South Fork River gorge. The west elevation is along a low slope field which flattens out to the west. The remaining three sides of the building are constrained by the geographic conditions of the site, bounded by a cliff that radiates clockwise from north the south (Fig. 6.1).

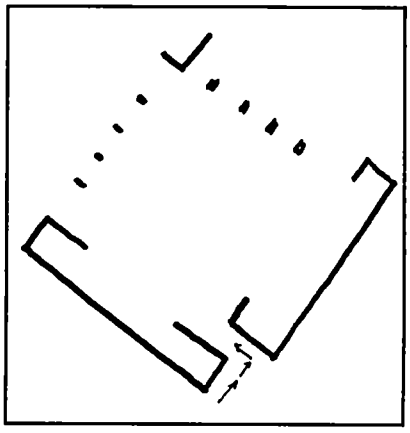


Figure 6.2: Parti Diagram. Enclosure gives way to transparency.
Source: Author

The general idea, or *parti*, of the building is illustrated in the plan diagram in Figure 6.2. Masonry walls enclose program spaces at the south end of the building as well as enveloping the entire west elevation. The building essentially opens up in the directions of dark and light prospect as diagrammed in Chapter V (north and east, respectively).

DESIGN FORCES

The *Architectural Issues Diagram* in Chapter I summarizes the categories of *Perception, Strength, and Gravity* in the collective category of *Environment*. Although the design project discussion will primarily focus on this category of

issues, other more specific issues will be examined when appropriate. The issues of environment include: memory of place, materiality, protection, tasks, structure and progression.

MEMORY OF PLACE

The memorable experiences which are the intended result of the collective program activities are strengthened by the experiential qualities of the human environment. This point, first posited in the introduction, served as an underlying strategy in the design of the lodge building as sensory issues were engaged. Prevalent issues in this area include: transparency, views, sound, smell and texture.

Transparency through the building and out across the landscape was one method used to engage place. As previously described, the building begins to unfold in the directions that were diagrammed as areas of prospect. One can look across the large activity spaces through multiple layers and still connect to the landscape that lies beyond. (Fig. 6.3) Furthermore, certain parts of the building were intended to offer optimum views, such as the side deck, terrace, and platform, while others are intentionally suggestive of enclosure or retention, such as the stronghold, kitchen, and the terraced porch under the platform. The variety and contrast of spatial experiences is intended to elicit awareness of surroundings. As one passes through a progression of the different spaces, it is likely that he or she will notice more about the space (i.e.: is the space light, dark, broad, tight, comforting, unnerving, etc.) When the mind is stimulated to process thoughts about an unusual or special space, it will likely strengthen the memories associated with that particular place.

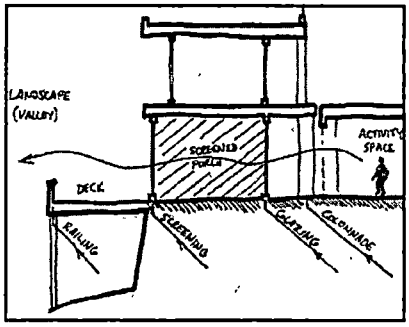


Figure 6.3: Transparency Through Spaces. The diagram shows an example of transparency from the viewpoint of the activity space at the group floor, looking through the screened porch. **Source:** Author

Sensory issues of sound and smell also contribute to remembrance of place as described in Chapter II. Within the configuration of the lodge building it is likely that sounds will carry throughout most of the enclosed space. For instance, when one is in the lower activity room, he may hear a distant conversation softly resonating from the stronghold, or the loud

clamor of a warm-up game in progress above head on the main activity level. Similarly, taking position on the terrace or screened porch may expose one to a symphony of sounds of nature such as: wind as it rustles the tree tops; cascading or rushing water emanating from the stream in the valley or the river gorge; the song of crickets and other insects; and the call of indigenous wildlife.

The olfactory sense will inevitably be engaged as one encounters the fragrance of wood burning in a fireplace, or perhaps the more dilute scent of wood and brush burning at the nearby campfire ring located down the ridge line from the terrace. Furthermore, the fluidness of the space would allow the aroma of a meal in preparation to infiltrate the different rooms of the lodge building.

Texture has been described as both a visual and physical encounter with materials (Chapter II) with each sense supplying a different set of information that, in combination, describes the composite qualities of an object. This is true in terms of the design of this building, which combines smooth textures of glass walls, steel cables, and finished wood with the coarseness of masonry and concrete. For example, the steel cables may exhibit a visual texture of smoothness, sheen, and slenderness. However, if one were to run their fingers or hands along a tension cable, he or she may begin to acknowledge its rigidity and tautness or its richness of surface as the compositional threadlike strands tightly weave together yielding a smooth, lacy texture.

MATERIALITY

Materiality is deeply rooted in the issues of this thesis investigation. In the schematic design of the lodge, stone masonry, wood construction, and steel suspension cables engage issues such as texture, fortification, elevation, and weight. The masonry walls used in the design especially engage issues of protection and fortification. For instance, the massive masonry wall of the west facade evokes memory of

fortification as it confronts the wide open landscape. The curvilinear masonry walls along the east and south edges of the building at ground level also suggest fortification in the form of material strength. A feeling of retention is elicited as these walls enclose and protect space at the lower levels of the building that would otherwise be in a position of exposure.

In contrast to the rather static nature of the masonry elements, wood structure begins to activate and extend the program spaces of the lodge beyond the threshold of the stone masonry. Wood is used in a variety of applications, ranging from load-bearing columns, floor-framing, decking, trim, and furniture.

PROTECTION

Protection evolved as a primary issue of the design investigation as it encompassed many of the conditions related to strength, including: prospect, fortification, fear, and position. Prospect has been previously described in terms of dark and light, the dark referring literally to the prospective view into the valley which is always in shade; the light referring to the wide expanse of the river gorge which receives abundant direct sunlight as viewed from this site.

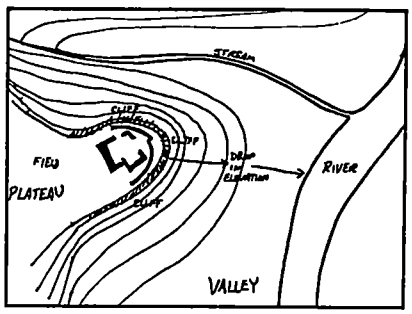


Figure 6.4: Fortification of Building Site. Diagram suggesting how the outcropping might be fortified. **Source:** Author

The prospect from this outcropping is reminiscent of that which might be typical of a medieval fortress or civil war fortification. (Fig. 6.4) The notion of a protective or defensive wall as an expression of the discourse between exposure and refuge developed out of this quality of prospect. The dense stone masonry walls on the west and south elevations as well as the curvilinear walls represent the fortification of the ground level which contains the areas that are more expressive of comfort and refuge. (Fig. 6.5)

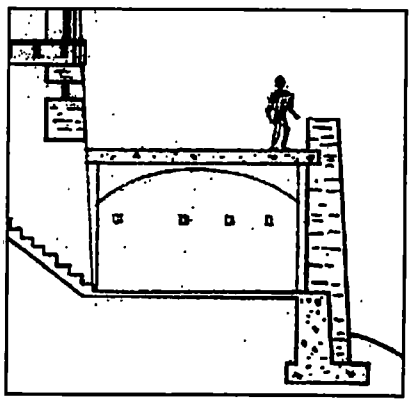


Figure 6.5: Prospect and Refuge. Section through terrace and stronghold. **Source:** Author

Addressing the issue of fear is an informal agenda of many of the programmatic activities associated with adventure based activities. These activities typically challenge personal phobias, such as fear of trusting others, fear of heights,

fear of rejection, fear of failure, fear of the unknown, and so forth. The trust-related activities and high ropes course elements described in Chapter III exemplify this.

Since fear often presents itself as an issue that must be confronted among groups during retreats, it was thought that the lodge building could engage this issue in subtle ways by introducing different levels of exposure. For instance, the climbing wall area is intended for practice climbs and belays. Since climbing can be both physically and emotionally challenging (fear of failure) learning technical skills in the controlled environment of the lodge may mitigate fear and increase confidence when one is tasked with climbing the rock faces. Similarly, belay techniques can be introduced in the more controlled setting of the lodge, fostering both trust (of someone on belay) and confidence (of the belayer) before taking on the high ropes course.

One of the intentions of the suspension platform is to make one feel more exposed, and thus more dependent on the team for strength and comfort. (Fig. 6.6) Fear of heights will likely be an issue when a group has an activity on the platform, once again providing an opportunity for a group to address an issue before attempting the high elements ropes course.

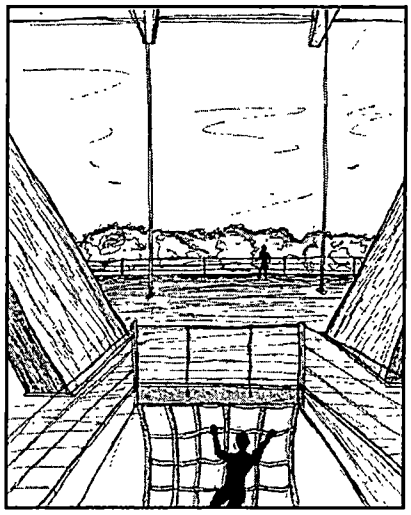


Figure 6.6: Exposure of Suspension Platform.
Source: Author

Position is central to the dialogue between exposure and refuge and the overall notion of protection. Taking position in the stronghold room is quite different than the experience of being in the screened porch, although both offer refuge. Similarly, standing on the firm construction of the terrace deck would feel quite different from taking position on the suspension platform, although they each offer similar views.

Each hearth area would offer a different quality of position from the other as well. The stronghold hearth gives warmth the strong, but cold, character of the room, while the terrace hearth directly above gives warmth and life to a space that may otherwise be uncomfortably cool at night depending on the season. Similarly, the hearth on the side portico may en-

liven the outdoor terraced space at night, but in a completely different way than the terrace hearth. The surfaces of the platform above and the curving wall would reflect the radiant light and perhaps allow the space to retain more warmth than the terrace. The main hearth in the living room space is intended to elicit feelings of warmth and comfort regardless of time of day or season. It is the only hearth that encounters the main activity spaces, and its proximity to the kitchen and dining areas will likely identify it as a central gathering point.

TASKS

The performance of tasks is central to the programmatic activities of the retreat center. Tasks range from team-building initiative activities to individual chores, such as cleaning up after mealtime. The spaces of the lodge building were formulated to accommodate the wide range of tasks which will take place during retreats and workshops.

This is accomplished in a number of ways. For instance, tables and chairs for dining and other uses will be portable, capable of being efficiently folded and rolled or carried off into the storage rooms on either level. This allows program spaces to be quickly re-configured by a group working together to accommodate a different activity.

The massive stone wall that encloses the west side of the building will accommodate the task of climbing simply by using rocks of irregular surfaces or by turning stones so that they protrude beyond the wall surface to serve as holds. The task of teaching and learning belay is accommodated in the double height space of the climbing wall as well. (Fig. 6.7)

The specification of tempered glass around the activity spaces accommodates high energy games which may involve tossing of balls or other projectiles while maximizing transparency through the building. At the upper level, tempered glass partitions serve to contain small objects such as rubber balls that would otherwise fall through bar rails or spindles.

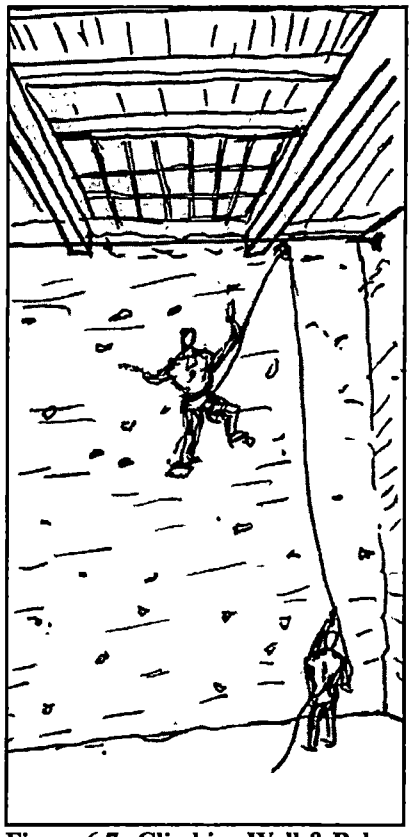


Figure 6.7: Climbing Wall & Belay.
Source: Author

The large activity spaces on both levels are generally free of interruption from structural elements. A row of columns on the lower level is eliminated by hanging the middle deck of the upper activity space from the roof joists using steel cables. Thus one side of the deck is supported by columns on the east side the enclosure, and the west side of the deck is suspended, freeing the ground level space from the base of the climbing wall to the covered portico.

The last example of the connection between the building and tasks is founded in the progression between comfort and challenge. This can be seen in the modes of vertical circulation. While most levels of the building can be accessed by stairs of typical treads, the access to the suspension platform actually becomes a task. The easiest access is via the chimney block, on which one might climb steep treads sandwiched between a glass wall and the structure of the platform. This may feel similar to walking on a ledge or cliff as a railing and a glass wall provide the only barrier from falling to the ground plane 15-20 feet below. The other means of access include a cargo net on which one could climb from the level of the main activity space to the suspension platform through a hole in the deck, and a fire pole which can be used for disembarking the platform.

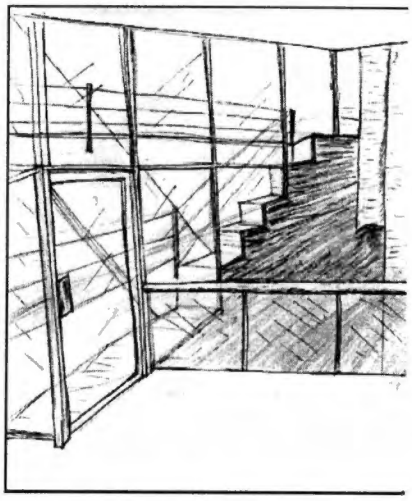


Figure 6.8: Access to Suspension Platform. This sketch illustrates the "chimney climb" up to the platform deck.
Source: Author

STRUCTURE

The primary intent of incorporating the suspension platform into the overall scheme of the building was to provide architectural space which could activate the issues related to challenge. This challenge component represents acuteness, exposure, and effort in discourses listed in the Diagram of Architectural Issues (Chapter I). The platform elicits these conditions in a number of ways. Acute sensory awareness is elicited by the vistas at the platform level, sounds and scents (such as the wind passing through the tree tops or the fragrance of pollen or sap from the surrounding vegetation), and

the materiality of the building at this level as may seem quite different from the lower levels.

While the openness of the platform deck may provide abundant prospect, feelings of exposure and vulnerability would be typical responses as one experiences the deflection of the suspension structure as people or wind move across it, or the elasticity and slenderness of the steel cables that form the safety railing which stretch when leaned upon.

Effort becomes a conscious experience as one engages the inordinate access to the platform, which is accomplished via a cargo net or over-scaled steps. One begins to understand vertical movement as a task rather than as an unconscious progression up a flight of steps.

The structure of the platform is designed to evoke sensory awareness and, perhaps, fear of exposure. One would likely experience noticeable deflection of the cable-stayed platform in response to a group moving around on it during an activity. Also, the lateral force of wind would cause noticeable movement of the platform, particularly since the building is sited on an outcropping of the plateau. Although tension cables will tie the platform down to prevent free movement, noticeable deflection may still be observed. (Figs. 6.9 - 6.10)

The steel tension cables in combination with the massive, laminated wood piers that pierce the deck at an angle are also intended to effect awareness in that the structure of the building has changed significantly from dense, upright masonry to light, angled members held in tension. The safety railings on the platform are also composed of tension cables. Thus, their thin profile and elasticity when leaned upon may cause one the ponder the safety and strength of materials.

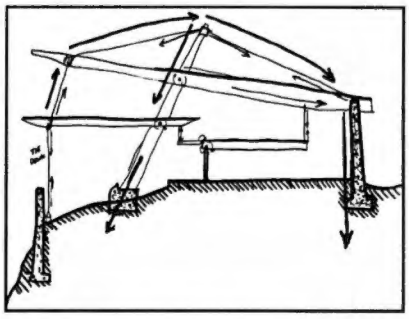


Figure 6.9: Load Diagram. Section through load bearing wall and suspension platform.
Source: Author

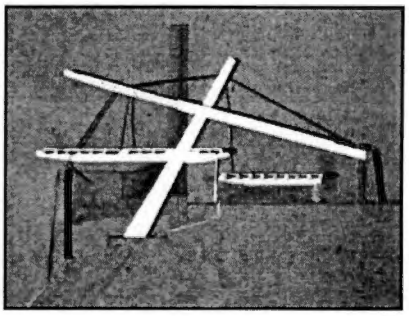


Figure 6.10: Structural Section. Relief section model, taken through load bearing wall and suspension platform.
Source: Author

PROGRESSION

Progression played a significant role in the design investigation as it became the thread of the discourse between: acuteness and unawareness; exposure and refuge; ease and

effort; and comfort and challenge. One eventually gives way to another, as when one relinquishes his comfort zone in exchange for a meaningful, challenging experience. Progression is the means between the two.

The progression from the static, load bearing masonry to the dynamic quality of the wooden piers and suspension structure is complemented by the progression from the dense enclosure of the south and west elevations to the transparency of the north and east facades. This progression can also be visualized in section as the heavy walls seem to extrude from the earthen foundation, creating a cradle for the more comfortable and enclosed spaces of the lower level and serving as an anchor for the more dynamic, open structure above. More subtle moves such as the reveals along the west wall and the joints in the floor deck of the main activity space (that read with the intersection of the main building and the suspension structure) add to the harmony of this progression.

The massive chimney tower (Fig. 6.11) serves the different modes of progression as it penetrates all levels, reaching from the foundation of the stronghold level to an elevation exceeding the structural peers of the suspension platform. It becomes the centerpiece of the composition as it resolves the orthogonal composition of the main activity spaces with the curvilinear conditions of the outcropping. As the chimney absorbs the shift in geometry, it radiates the four fireplaces onto four different levels offering different qualities of hearth as previously described. Figure 6.12 shows the chimney pier as it penetrates the different levels of the building. The full axonometric drawing along with floor plans and sections are included in the Appendix.

The pathways that connect the lodge building to the site at-large are also founded in progression. This can be seen as the comfort loop passes through the monolithic facade, offering refuge within. The path then exits at the north end from the ground level subsequently returning to its progression along the opposite side of the field along the tree line.

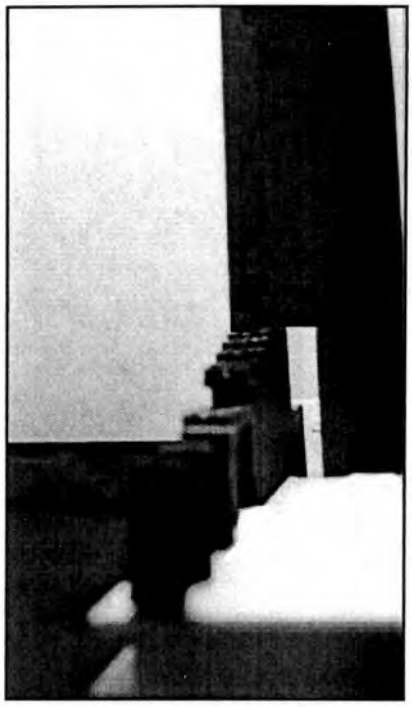


Figure 6.11: Chimney Model. Model illustrating massive scale of chimney in relation to colonnade adjacent to the dining area.
Source: Author

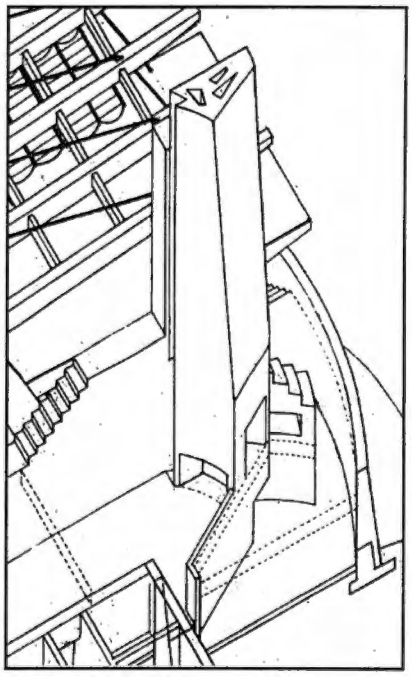
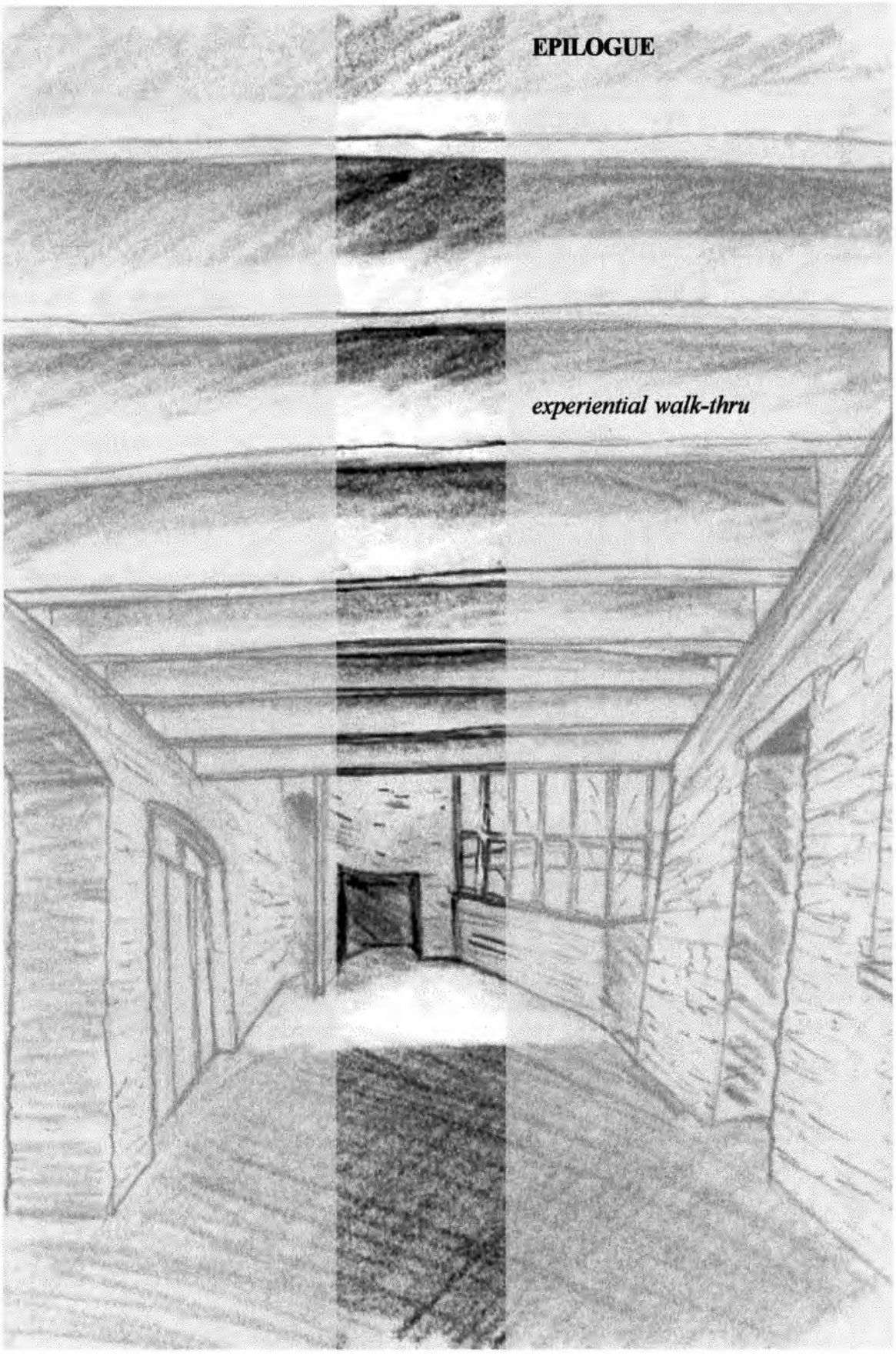


Figure 6.12: Chimney Axonometric Model. Three-dimensional illustration of the chimney and adjacent spaces.
Source: Author

On the east edge of the building, the two curvilinear walls that follow the topography of the outcropping slide past one another, creating a passage that initiates the challenge loop which then progresses eastward down the ridge line. From this same point the dynamic loop emerges, progressing in the opposite direction towards the ropes course areas. As this path slips out from beneath the suspension structure and into the forest, the curved wall dissipates into the earth, symbolically leading one away from the comfort and protection of the lodge building into the unknown landscape.

EPILOGUE

experiential walk-thru



An underlying assumption of this design exploration is the belief that it is possible to learn from the natural landscape, looking at those qualities which make it unusual, memorable, and challenging. Based on these observations, it would be possible to re-interpret the experience of landscape in architectural terms and to explore these issues through the program components of a design investigation.

Initial experiential information for this exploration was collected through a site *deriv* then applied to the programmatic requirements. This synthesis of landscape experience and architectural program resulted in a project that is intended to draw qualities of the natural landscape through a man-made intervention in the landscape as a means of strengthening experiential learning in both programmed events and non-programmed settings. Since this journey began with a personal record of physical, sensual, and psychological experience of landscape around the site, it is appropriate to close with a visual narrative of the final built form as it might actually be encountered.

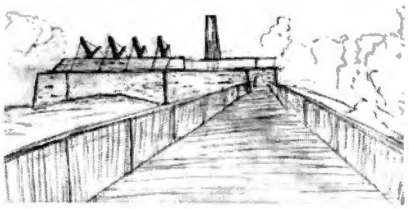


Figure 7.1: Lodge Approach. Rendered view from dormitory building (along Comfort Loop).
Source: Author

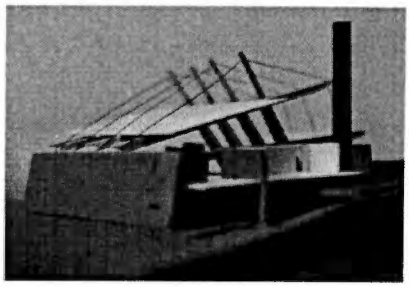


Figure 7.2: Lodge Model. This view shows the massive wall along the west facade of the activities lodge.
Source: Author

WALK-THROUGH EXPERIENCE

The initial approach to the lodge from the dormitory will be along the comfort path. (Fig. 7.1) The southwest corner of the building is the point of arrival from this approach.

A massive masonry wall (Fig. 7.2) forms the west facade of the lodge fronting the field area. One approaches the main entry along the elevated boardwalk that connects to the cottage level of the dormitory. The wall steps back to allow a pinwheel-type entrance through a glazed wall. (Fig. 7.3) Once the masonry wall is penetrated at this (main) entrance, the building takes on a completely different character. The following paragraphs describe the spaces of the lodge as they might be experienced by an observer from this point of entry.

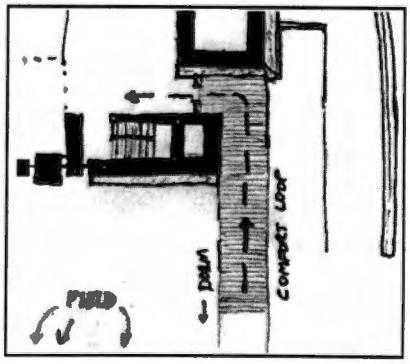


Figure 7.3: Pinwheel Entry. Plan showing main entrance to the lodge from the boardwalk.
Source: Author

Once inside the main entrance, one is immediately aware that a number of other levels exist in the composition of the building as the glazed walls on the eastern side reveal the suspension platform, and openings in the floor deck reveal the activity space below. One is immediately confronted with the discourse between exposure and refuge as the suspension platform may seem precariously placed as it hangs over the edge of the plateau. The lower level, on the other hand, would seem to offer a quality of comfort and refuge as a chimney ascends from below. One would experience this main level as a large, open space which could potentially be used for a number of different activities - not unlike the field outside.

The south end of this room is terminated by a series of enclosed spaces, including an area for administrative activities, a service alcove, and rest rooms. The view from this administrative area is physically bound by partitions of tempered glass which form two small meeting rooms and a larger conference room. The exterior wall of these rooms (on the north facade) is also glazed, so one can begin to perceive the transparent quality of the north end of the building providing (dark) prospect towards the valley from the main activity space.

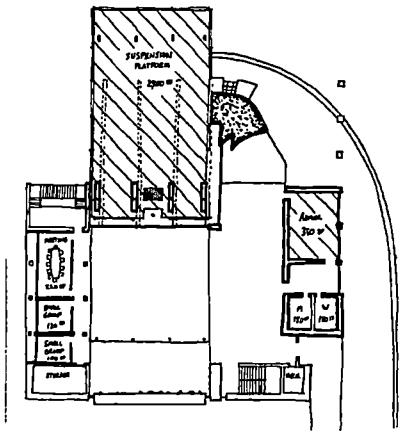


Figure 7.4: Main (Upper) Level Plan.
Source: Author

The west side of the room is bounded by the dense stone wall which conveys a different quality on the inside than when viewed from the exterior. One would notice a number of small windows randomly punched into the wall, allowing sunlight to penetrate thick masonry. The structural joints described previously carry through to the masonry wall in the form of two narrow reveals that run the height of the wall enclosed with glazing. The monolithic quality of the wall is further reduced by the extrusion of a room at each end: an equipment storage room at the north end of the wall, and the main stair well at the south end (near the main entrance). These qualities can be seen in plan in Figure 7.4.

Between the two structural joints, the floor deck pulls away from the masonry wall to accommodate a practice climbing wall in the double-height space. (Fig. 7.5) The other

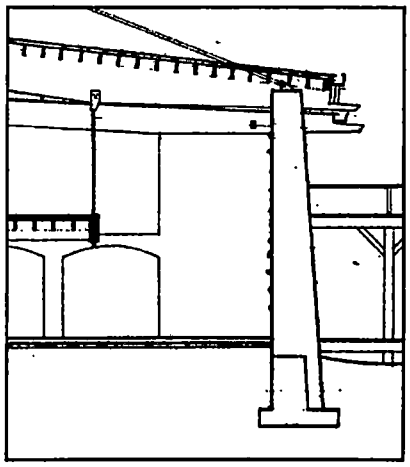


Figure 7.5: Section Through Climb Area.
Source: Author

double-height space occurs at the southeastern edge of the room, providing a vista to the hearth area below. From this level, one can also view the river gorge beyond the glass wall that separates the hearth area from the terrace level.

The remainder of the east edge of the room is bounded by a tempered glass exterior wall which separates the suspension platform from the indoor activity space. From inside the activity space, one can see the tension cables and massive wooden piers that hold the open-air platform in place. The platform is actually ten feet above the main level. A bridge extends from this main level at one side to provide access to the platform. This small bridge hangs from the main level at one end and is suspended from the platform by two steel cables at the other end. One may ponder how the platform is *really* accessed after observing a cargo net ascending from the small bridge through a hole in the platform deck and a fire pole which appears to be the intended means of disembarking the platform. (Fig. 7.6) Upon closer examination, one might discover that the masonry wall extending from the chimney piece a provides an alternate, perhaps less challenging access between the platform level and the main activity space.

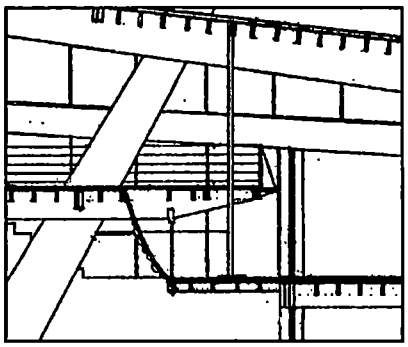


Figure 7.6: Section Through Cargo Net. Participants may climb the cargo net to the suspension platform and descend down a fire pole to return to the main activity space.
Source: Author

As one becomes sufficiently satisfied with his or her visual exploration of the spaces that connect to the main activity level, curiosity may lead them down the main stairs to the lower level. Perhaps a faint aroma coming from the kitchen below, the carried sound of voices in lively conversation resonating through the floor openings, or the promise of a panoramic view from the terrace beckon to new comers to explore the lower levels.

After descending the stairs, one finds himself at a point once again at the southwest corner of a large space, near another entrance to the south, similar to the entry above. However, the quality of space is noticeably different. The gently soaring ceiling of the upper level is exchanged for a flat, lower space. The exposed structure of the floor deck above reveals a more traditional, understandable structure of beams

and columns than observed in the sloping roof above. Sunlight is more subdued, concentrated in the areas of double height spaces where glass walls and skylights admit most of the natural light. (Fig. 7.7)

The main space in which one has arrived is large and fluid as the activity level above, however, it is fragmented by a colonnade which continues from the hearth area to the east end of the room, eventually disappearing into the fabric of the masonry wall and stair enclosure on the west end. This can be seen in plan in Figure 7.8.

Looking south, one observes the masonry wall with punched openings, giving a glimpse of the kitchen through a serving window and the entrance to a corridor further along the wall. One may feel drawn to move towards the massive stone hearth that awaits at the east end of the room in the double height space. This space may appear very light and welcoming, furnished as a living room within which people may be gathered. A glazed wall extending from the hearth area reveals the terrace beyond which is now observed to be on a different level of the building, one-half flight above the ground floor.

Looking through the colonnade to the north end of the long space may also entice one to explore the other end of the room. Beyond the colonnade, the room narrows, exchanging the extended hearth area for a glazed partition on the east wall of the room, beyond which a covered porch area is observed. The source of natural light in the room shifts to the double height space around the climbing wall, which receives a wash of sunlight through a skylight above. The north end of the room provides a filtered view to the trees of the shaded valley through another glass wall which is recessed behind a row of columns. The glass wall has two doorways in it to an open-air space. A closer look reveals that the space beyond is actually a screened porch, past which an exposed deck can be accessed, terminating the progression of spaces in the direction of dark prospect.

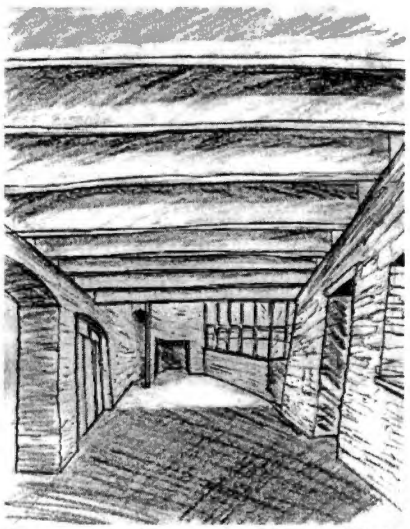


Figure 7.7: Perspective View in Main Activity Space, lower level looking towards hearth.
Source: Author

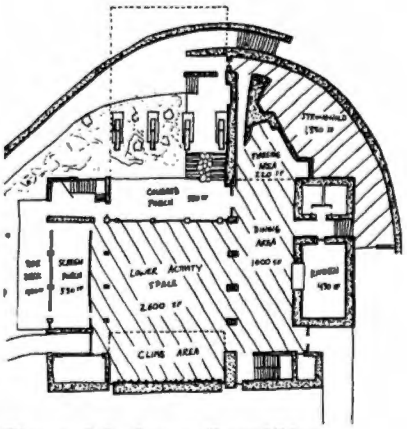


Figure 7.8: Lower Level Plan.
Source: Author

Another pass reveals that there is more to this ground level than originally observed. Perhaps one observes that the covered porch beyond the east wall is sheltered by the higher suspension platform, beneath which the foliage of the forest floor begins to encroach as the porch gives way to terraced earth. (Fig. 7.9) The space is retained by a curvilinear wall at its easternmost extent. Thick wooden piers that support the structure above extend from massive footings buried in the earth.

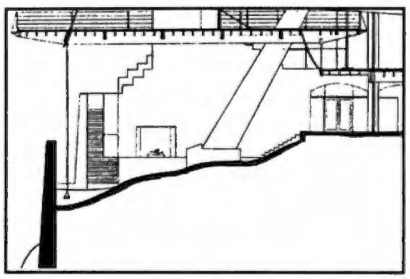


Figure 7.9: Covered Porch. The ground terraces away from the building towards the curved wall while still beneath the suspension platform deck.
Source: Author

The massive hearth piece bounds the south side of the porch area gradually transforming into the colonnade that extends through the interior space. A second hearth is observed along this wall beyond a set of stairs which follows the terraced earth. (Fig. 7.10)

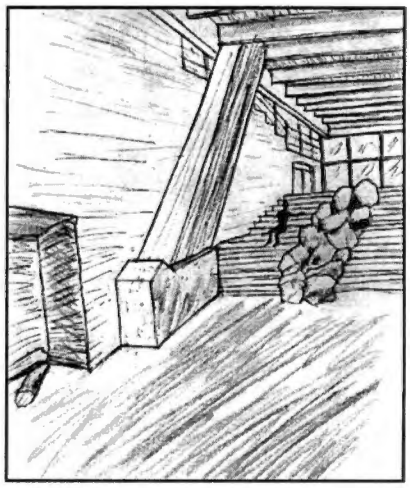


Figure 7.10: Hearth Along Porch. This view shows the massive wall along the west facade of the activities lodge.
Source: Author

Upon returning to the hearth area, a passageway may be observed that perhaps went unnoticed at first glance. This corridor seems to pass through the massive hearth, ramping downward to a dimly lit space beyond. The passageway terminates at another segment of curvilinear masonry wall, opening up to the south into a larger, but darker space.

On first observation, this room, the stronghold, may have a cave-like quality about it, with masonry on all sides and a concrete floor. Small windows punch through the curved wall admitting modest amounts of natural light into the space. (Fig. 7.11) The room is unfurnished, with only tapestry-like rugs and large cushions to provide comfortable repose. Looking back towards the wall from which the corridor ended, one observes a third hearth area, suggesting that this room might be used for an indoor fireside gathering or sorts. In the opposite direction, the room progresses at an angle, becoming more narrow as the radius of the curved wall diminishes.

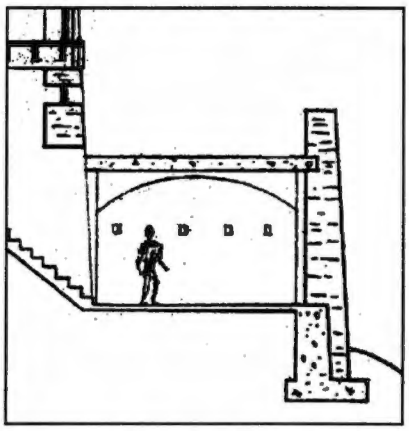


Figure 7.11: Section Through Stronghold. .
Source: Author

The heavy masonry portion of the building that houses the kitchen and service spaces penetrates the stronghold at the south end, creating a corner condition which informally marks the end of the open room. Beyond this point, the space takes on the quality of a corridor which eventually leads to an

outside door to the west. However, one opening appears along the kitchen block through which a half-flight of stairs returns one to the main hearth area.

Upon returning (once again) to the main hearth area, one may notice a half-flight of steps extending to the south, providing passage to the outdoor terrace level. This level offers the panoramic view of the river gorge as speculated upon earlier. The shape of the terrace mimics the cave-like room below terminating at the curvilinear wall which extends to the height of a railing. A fourth hearth is encountered on the back side of the large chimney piece, its monolithic quality which is now understood as it passes through the various spaces accommodating a hearth area in each room it encounters.

One can begin to imagine the variety of activities that can be accommodated in this one building, which offers rooms ranging from intimate enclosure to wide open exposure an prospect to the site surround. Herein lies the potential for the discourse between comfort and challenge.

BIBLIOGRAPHY

BIBLIOGRAPHY

Ackerman, Diane. *A Natural History of the Senses*. New York: Vintage Books, 1990.

Adler, Jeanne Winston. *Early Days in the Adirondacks: The Photographs of Seneca Ray Stoddard*. New York: Harry N. Abrams, Inc., 1997.

Adventure Programming Workshop Manual. Dubuque, Iowa: Kendall/Hunt Publishing Company, 1991.

Alexander, Lawrence K. ChallengePoint, Inc. 1999. Interview by author, 23 January, Knoxville, Tennessee.

Allen, Edward. *Fundamentals of Building Construction.* 2d ed. New York: John Wiley & Sons, Inc., 1990.

Bloomer, Kent C. and Charles W. Moore. *Body, Memory and Architecture.* New Haven: Yale University Press, 1977.

Boud, David, Ruth Cohen, and David Walker. Ed. *Using Experience for Learning.* Bristol, Pennsylvania: Open University Press, 1993.

Buchanan, Peter. *Renzo Piano Building Workshop*. Vol. 3. London: Phaidon Press Limited, 1997.

Butler, Steve, Karl Rohnke. *Quicksilver*. Debuque, Iowa: Kendall/Hunt Publishing Company, 1995.

Callender, John H. and Joseph De Chiara. *Time Saver Standards for Building Types.* 2d ed. New York: McGraw-Hill, 1980.

Davis, Maj. George B., Leslie J. Perry, and Joseph W. Kirkley. *The Official Military Atlas of the Civil War.* New York: The Fairfax Press, 1983.

Egan, M. David. *Architectural Acoustics*. New York: McGraw-Hill, Inc., 1988.

Eisenberg, Arlene, Sandee E. Hathaway, and Heidi E. Murkoff. *What to Expect the First Year*. New York: Workman Publishing Company, Inc., 1996.

Feininger, Andreas. *Man and Stone.* New York: Crown Publishers, Inc., 1961.

Furlong, Lisa, N. Hall, J. Martin, L. Palmer, and E. Roman-Lazen. *Adventures in Architecture.* Needham Heights, Mass: Simon & Schuster Custom Publishing, 1999.

Harries, Karsten. *The Ethical Function of Architecture.* Cambridge: Massachusetts Institute of Technology, 1997.

Gillis, H. L. Ph.D. Ed. *Adventure Based Counseling Workshop Manual.* 2d ed. Dubuque, Iowa: Kendall/Hunt Publishing Company, 1995.

Grattan, Virginia L. *Mary Colter: Builder Upon the Red Earth.* Arizona: Northland Press, 1980.

Gullichsen, Kristian. "Villa Mairea." *Living Architecture* 15 (1997): 48-63.

Heschong, Lisa. *Thermal Delight in Architecture.* Cambridge, Mass.: The MIT Press, 1979.

Holgate, Alan. *The Art in Structural Design.* Oxford: Clarendon Press, 1986.

Honey Creek Quadrangle. Map. Washington, D.C.: United States Department of Interior Geological Survey, 1979.

Ivy, Robert Adams, Jr. *Fay Jones.* Washington, D.C.: The A.I.A. Press, 1992.

Johnson, Jon A. "Adventure Therapy: The Ropes-Wilderness Connection." *Therapeutic Recreation Journal,* Volume XXVI, Number 3 (Third Quarter 1992): 17-25.

Kricher, John C. *A Field Guide to Eastern Forests.* Boston: Houghton Mifflin Company, 1988.

Levine, Neil. *The Architecture of Frank Lloyd Wright.* Princeton: Princeton University Press, 1996.

Luciano, Dorothy S., PhD; James H. Sherman, PhD; and Arthur J. Vander, MD. *Human Physiology.* 6th ed. New York: McGraw-Hill, Inc., 1994.

Luckmann, Charles. "Defining Experiential Education." *The Journal of Experiential Education.* May/June 1996, Vol. 19, No. 1, 6-7.

Lockhart, Susan and Tony Puttman. *Taliesin West.* Scottsdale, Arizona: Land O'Sun Printers, Inc., 1994.

Manning, Russ. *Exploring the Big South Fork.* Norris, TN: Mountain Laurel Place, 1994.

Moholy-Naggy, Sibyl. *Native Genius in Anonymous Architecture.* New York: Horizon Press, Inc., 1957.

Moir-McClean, Tracy Walker. *Taliesin Living Room, Social Zoning.* 1997.

Moore, Fuller. *Understanding Structures.* Boston: McGraw-Hill, 1999.

Moore, Harry L. *A Roadside Guide to the Geology of the Great Smoky Mountains National Park.* Knoxville: The University of Tennessee Press, 1988.

Morrow, Theresa. *James Cutler.* Gloucester, Massachusetts: Rockport Publishers, 1997.

Papanek, Victor J. *The Green Imperative: Ecology and Ethics in Design and Architecture.* New York : Thames and Hudson, 1995.

Reynolds, John and Benjamin Stein. *Mechanical and Electrical Equipment for Buildings,* 8th ed. New York: John Wiley and Sons, Inc.: 1992.

Rohnke, Karl. *Cowstails and Cobras II: A Guide to Games, Initiatives, Ropes Courses, & Adventure Curriculum.* Dubuque, Iowa: Kendall/Hunt Publishing Company, 1989.

Rohnke, Karl. *Silver Bullets: A Guide to Initiative Problems, Adventure Games and Trust Activities.* Dubuque, Iowa: Kendall/Hunt Publishing Company, 1984.

Rohnke, Karl, Catherine Tait, and Jim Wall. *The Complete Ropes Course Manual,* 2d ed. Dubuque, Iowa: Kendall/Hunt Publishing Company, 1997.

Rudofsky, Bernard. *Architecture Without Architects.* New York: Doubleday & Company, Inc., 1965.

Schoel, Jim. "Challenge." In *Adventure Programming Workshop Manual.* 32-24. Dubuque, Iowa: Kendall/Hunt Publishing Company, 1991.

Smith, Kathryn. *Frank Lloyd Wright's Taliesin and Taliesin West.* New York: Harry N. Abrams, Inc., 1997.

Stines, John. *Meeting House Attic, 1820.* Louisville, Ky.: Averso Publishing, 1996.

Sudjic, Deyan. *The Architecture of Richard Rogers.* London: Wordsearch Ltd., 1994.

Thoreau, Henry David. *The Illustrated Walden.* Princeton: Princeton University Press, 1973.

Tschumi, Bernhard. *Cinegramme folie: le Parc de La Villette, Paris Nineteenth Arrondissement.* Seven Oaks: Butterworth Architecture, 1987.

1913 Webster's Revised Unabridged Dictionary, Chicago: University of Chicago, ARTFL Project. Online. 3 March 1999.

Webster, Steven E. *Ropes Course Safety Manual.* Dubuque, Iowa: Kendall/Hunt Publishing Company, 1989.

APPENDIX

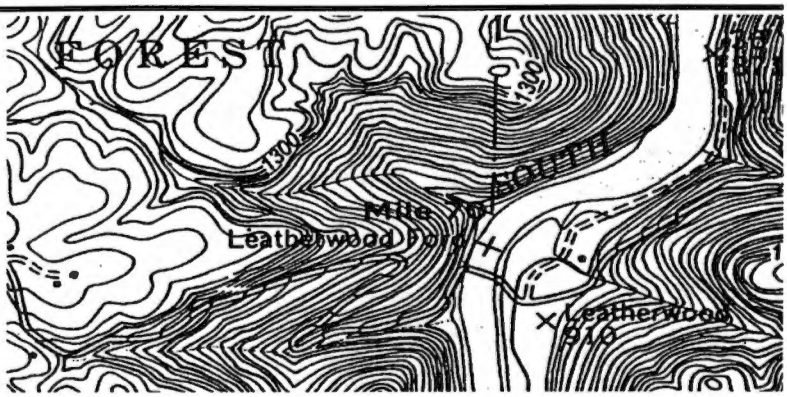
The Site Deriv
Photographic Map
Panoramic Photo

Program Issues Grid
Weekend Program
Three Day Program

Site Plan
Floor Plans
Building Sections
Axonometric Drawing

Thesis Documentation &
Preliminary Site Analysis

16 January 1999

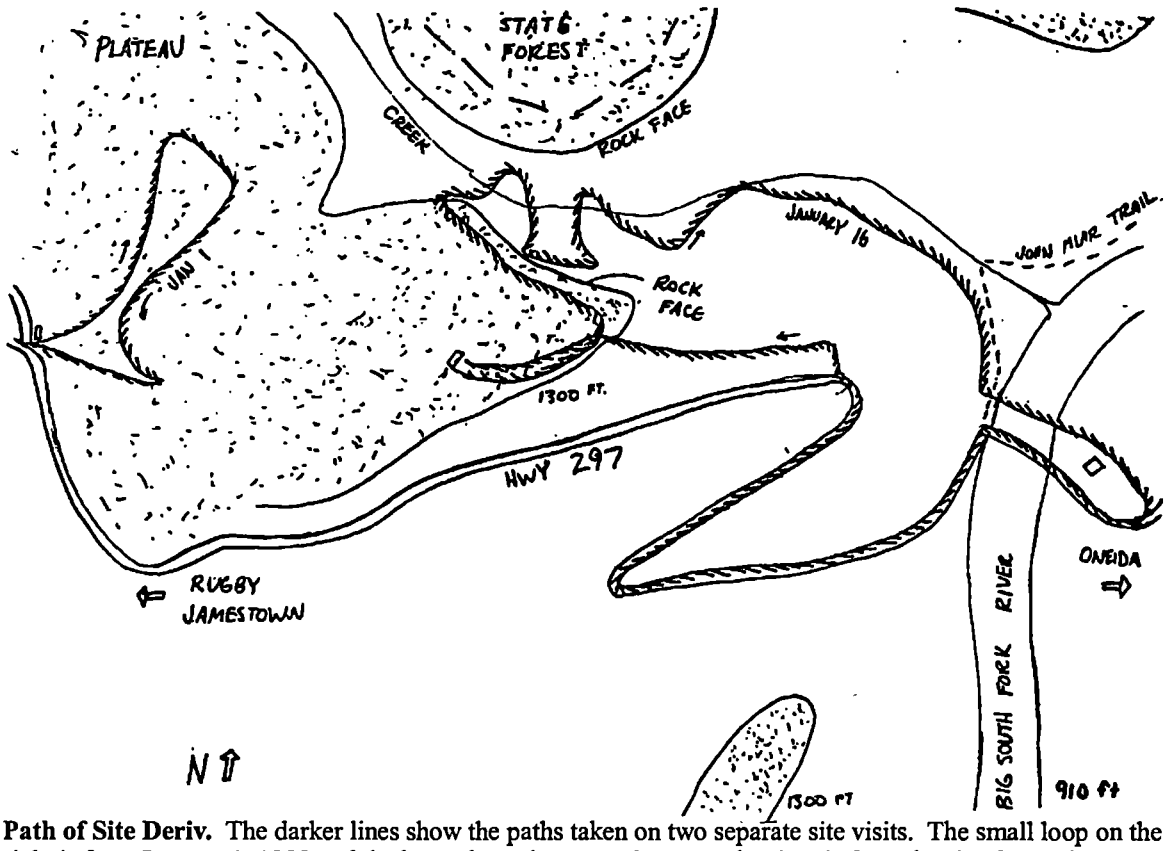


Finding the best site upon which to build my design investigation has been quite an undertaking. A battery of afternoon and weekend trips during the Fall ultimately led me to a site which I suspected would lend itself to the project type which I settled on as a solid demonstration of my thesis ideals. After a number of discussions with committee members, I decided that my design investigation would be best served by finding a site which met a list of criteria which I thought to be appropriate, while at the same time keeping the site generic – that is, the characteristics of my site would not be so specific that it was the *only* site with which I could work.

At first, I didn't think much of the site that I have now settled upon. It wasn't my first choice, yet something about it was inviting. This site, which I first met on a sunny October afternoon, is located inside the boundaries of the Big South Fork National River and Recreation Area. The topography of the region is basically a giant plateau (The Cumberland Plateau) with a deep river gorge cut through the middle of it. The river is called the Big South Fork because it is a rather large tributary of the Cumberland River and its approach is from the south.

I decided another quick visit was in order, just to make sure I could live with my choice. On New Year's Day, I paid another visit to my potential site. I had a strange feeling that on that particular day I was the only soul in the land of the Big South Fork. The air was completely still; there was no sound whatsoever; and I'm quite sure I could have heard a pine needle drop. I spent an hour or so walking around an open field which I considered to be a beginning, end, boundary and edge of my sight. The field lay about a half mile west of the river gorge and about 400 feet above the river. After taking a few notes and photographs, I came to the conclusion that this site could work. It was getting dark, and I knew yet another visit would be necessary to explore the site in depth. This visit would occur two weeks later, and would establish the legitimacy of my site choice.

I set out to explore the site on a Saturday morning with a good friend of mine, Larry Alexander, who has much experience with hiking and orienteering. Our mission was to *experience* the site, noting sensory experiences and conditions of challenge. We would find an abundance of both. We pulled up to the field and drove along its southern edge on a dirt road which led us to another field area, surrounded on three sides by a tree line. We parked our vehicle in the clearing and started making our way towards the tree line on foot. The first condition of challenge I recall was walking through the field of weeds and briers four feet high without getting entangled. The first sensory experience on my list was the pain of the briers sticking into me through my clothing.



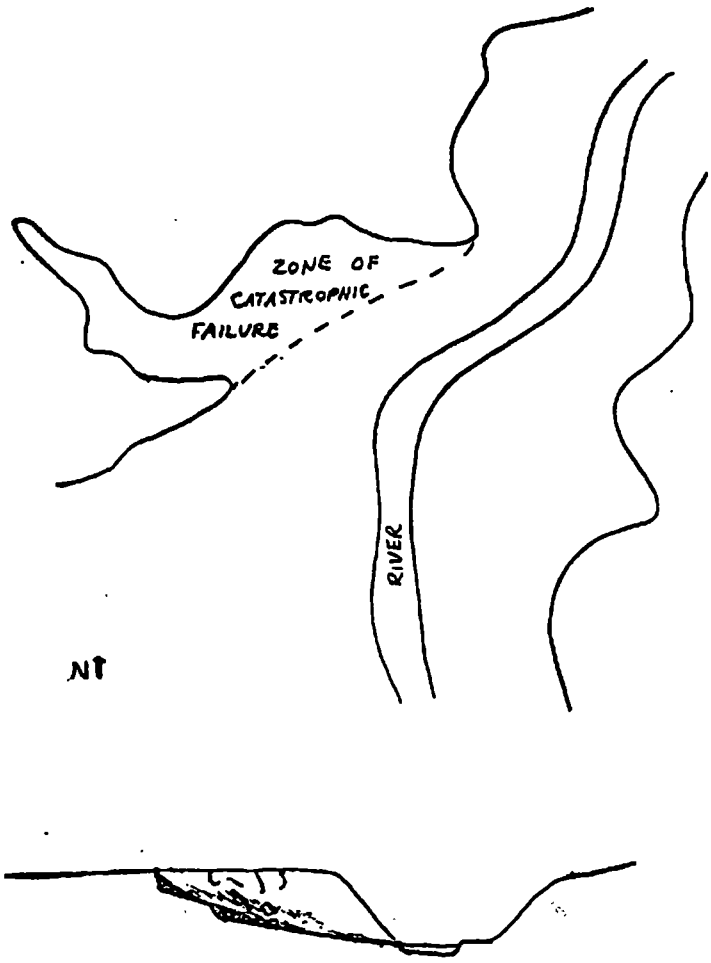
Path of Site Deriv. The darker lines show the paths taken on two separate site visits. The small loop on the right is from January 1, 1999 and the larger loop that extends across the river is from the site *deriv* of January 16, 1999 described in this section. **Source:** Author

Once at the tree line, the vegetation changed completely. We found ourselves in a wild forest of various conifers, including southern pines and hemlocks, as well as oak, beech, mountain laurel, and holly trees. The ground was covered in leaves and moss, and sometimes ferns would occur in clusters on the forest floor. The only evidence of wildlife was deer droppings, the occasional call of birds, and a little animal skull, which my friend found. We were quite amused by the fact that its jaw was still attached and you could move it up and down and make it look like it was talking. Since we found no other bones, we assumed that the skull had been deposited by a predator of some kind – possibly a coyote, bobcat or bear.

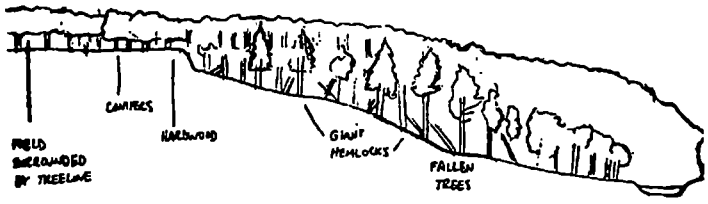
The forest edge marked a change in the slope of the land. It seemed that the clearing in which we started was a small peninsula of the plateau which dropped off on the three sides outlined in trees. The slope seemed fairly steep at first and then it flattened out a bit as we approached the edge of a ravine. As we drew closer to the edge we could see that the ground dropped about 60 feet. We also noticed the sound of falling water that seemed to be very close to us; there was a small waterfall flowing out of the water table right below our feet. We decided that we should descend into the ravine, but it took some searching before we could find a way down. We finally found some fall out on which we were able to climb down. We came down on top of another waterfall, which seemed to be part of a stream that defined the shape of the valley in which we found ourselves. It was now evident that we had left the plateau behind and we were in a V-shaped valley with a creek at its crevasse. The two sides of the valley were 90-degree rock faces, and the valley opened to what we presumed to be the main river gorge.

We hiked down the stream for a while along side the cascading water. The massive boulders in and around the stream bed indicate that a catastrophic event, such as a land slide or cave-in, must have happened at some point. The stream would occasionally submerge below a massive rock, an spill out and around clusters of boulders. The stream bed descended in elevation towards the main river gorge to the east. On this particular day, recent rainfall had produced a large volume of water flow down the stream.

The ground on either side of the creek sloped up towards the rock faces of the V-shaped valley. We decided to move in a zigzag pattern from the creek, to the northern rock face, and then to the southern rock face. The ground was difficult to navigate throughout the valley because of the sometimes steep slopes and the widespread debris of fallen trees. It was apparent that a winter storm in the near past had caused widespread destruction of mature trees. This was evident both in the valley and on the plateau. Many of the fallen trees had begun to rot as they lay along the slopes of the valley. This created a challenging and somewhat tricky climb. On several occasions I found myself grabbing for a tree limb or anything that could assist me in pulling myself up. At first glance, a limb might look perfectly solid; to the touch, it might even feel sturdy; but once I would clutch on and pull, it would give way and snap off in my hand. Needless to say I fell down *a lot*.



Geography of Site. Plan and section diagramming fall-out condition of valley.
Source: Author

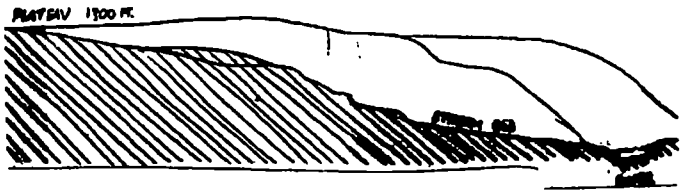


Section Along Ridge Line.
Source: Author

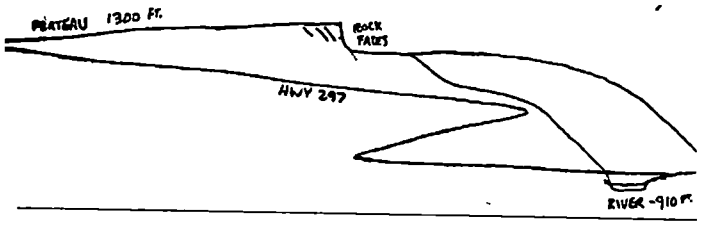
However, there was one type of tree in the forest on which I quickly learned I could depend – the mountain laurel. I had seen it many times before in places where I have hiked, but I had not ever really gotten to know it until that day. This gangly looking plant has very solid arms, no more than about 4-5 inches in diameter. Its limbs would often start out horizontal (along the ground) and then turn upward in a diagonal direction. It was very rigid and it didn't give much when you pulled on it. The laurel became a friend to me during the climb. However, when I was on low-slope ground, I found the laurel to be somewhat of a nuisance. Normally, when walking through the forest, most small or low-lying plants will give way as you push through them, but not the mountain laurel. You can push, but it will shove right back and try to trip you up with its low branches if your not careful. It was a love-hate relationship, but the laurel had earned my respect for its consistent strength.

Our hike continued in an eastward direction toward the light of the river gorge. Through the trees of the valley, we never lost sight of the east rim of the main river gorge, with its dense foliage bathed in bright sunlight which was coming from the western sky. It became a means of orienting ourselves, and it also marked our primary destination – the Big South Fork.

For the most part, our course followed the stream, but we would occasionally climb to the



Section Through Shaded Valley. North edge of site.
Source: Author



Elevation of Road. South edge of site.
Source: Author

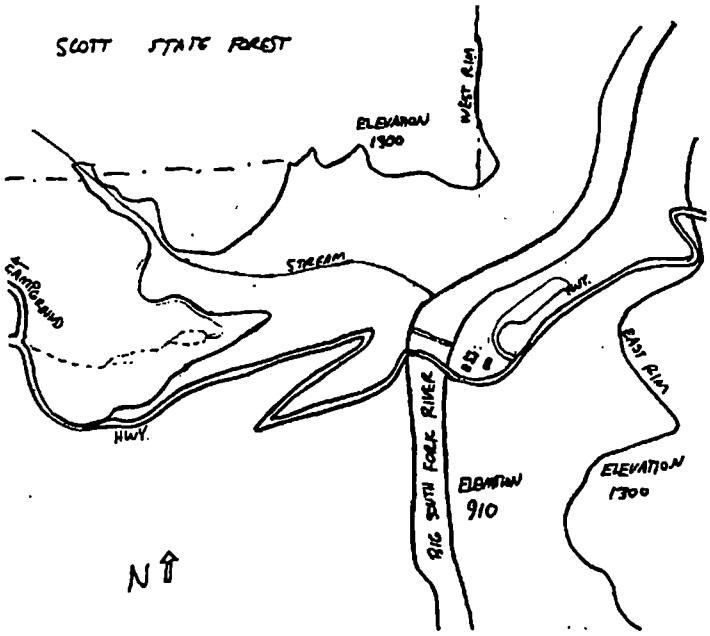
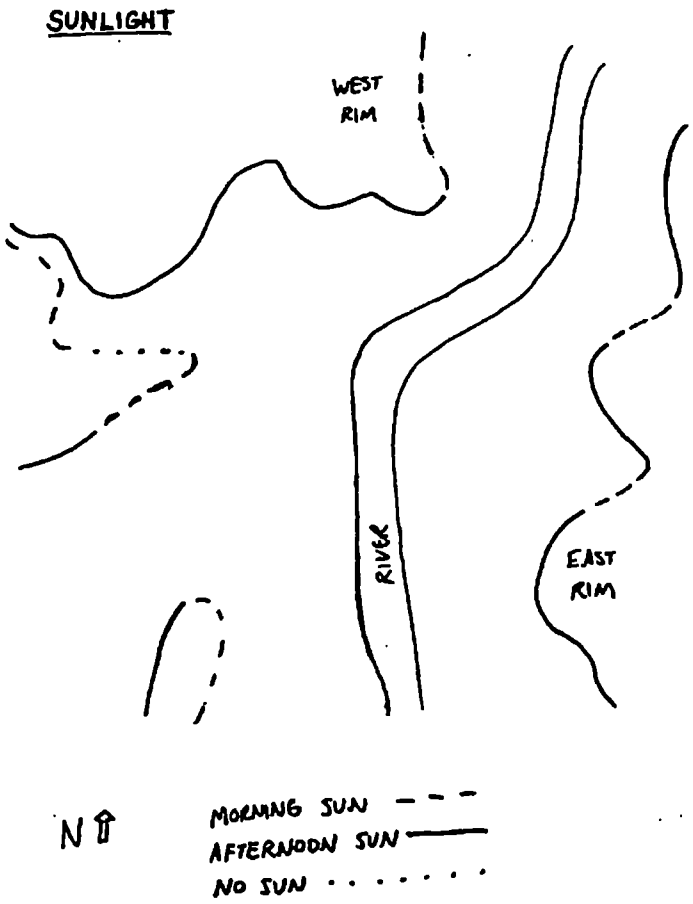


Diagram of Natural and Man-made Boundaries. Includes severe slope, water, and roads.
Source: Author

rock faces on the north and south edges of the valley. The rock formations were incredible. The rock faces were massive and solid. Some looked very smooth, as though they had been sheared off with a clean break when the cave-in occurred. Other rock faces at the same elevation looked smooth, but contained small divots and depressions along the facade, as though turbulent water had washed over the rock for a long period of time. In several spots massive rock walls would cantilever out over a section of the valley floor.

Along the top edge of the rock faces, it was very common for trees to be growing directly on the rock, roots and all. It was a very unusual site to see large trees just sitting on a rock. We found a number of fallen trees lying with a large rock at the base where the tree once stood. The shape of the tree's root system was still identifiable on the top of the rock. As we continued to descend the valley, never very far from the stream, the effort became more and more challenging as fallen trees and large boulders seemed to congregate at the lower elevation around the creek. We could see that we were drawing closer to the well-lit river gorge. The deeper sound of the flowing river began to compete with the higher sounds of the cascading stream. We finally arrived at a point where the ground seemed more solid and the fallen trees were few. The giant hemlocks seemed to be replaced by a forest of hardwoods. We had arrived at the western edge of the Big South Fork. Looking back to the valley,



Infiltration of Sunlight. The south-facing edges of the river gorge receive an abundance of sunlight while the north facing edges, particularly in the steepest areas, receive no direct sunlight.
Source: Author

we had dropped in elevation considerably without really knowing it. The rock faces which we studied up close were now several hundred feet above us, forming a rim at the top of the valley.

We had left behind what seemed to be untouched wilderness. The fact that we found no debris like aluminum cans or plastic bottles, and just the sheer difficulty of the terrain, led us to believe that not many had gone before us into this wild valley. However, we did find an old oil drum underneath a small waterfall about half way down the valley, it had a net inside it and an old plastic tube was attached at its base which was loosely laid in the stream bed all the way down to the bottom of the valley. We decided that it must have been some sort of aqueduct used by the natives that once owned and lived off of the land in this area.

As the river came into sight, we encountered a hiking trail (one of the trails that is designated by the National Park Service). It ran along side the river and was connected to a wooden foot bridge which crossed the river. We could see that on the other side of the river, there was a parking area for park visitors and a couple of service buildings. On this particular day, the river was raging. Further down stream, I have actually waded across the river on a previous visit, but not on this day. Even the foot bridge, which is normally several feet above the water, was almost submerged. However, we decided it could still be crossed (with caution). We slowly walked along the edge that wasn't being battered by water. It was a strange sensation; the water was rushing across the wooden slats in very thin sheets, and you could feel the bridge quiver from the turbulence of the rushing water. We made it safely across, just as two kayakers pulled right up to the edge of the bridge.

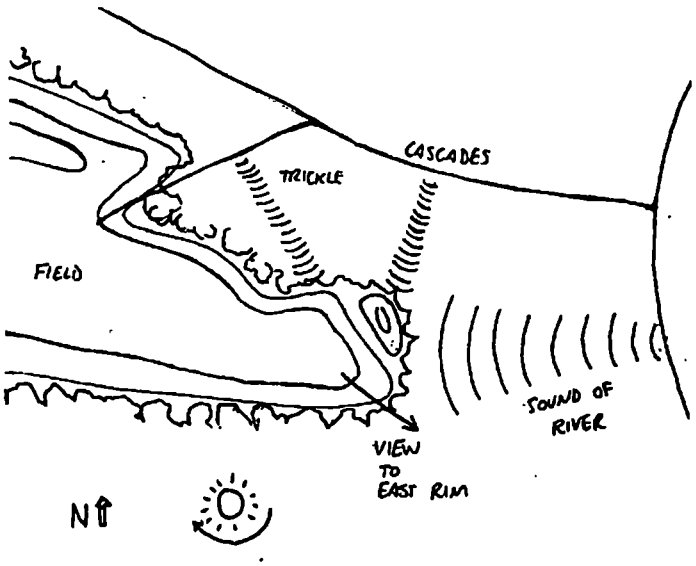
After taking a short break, we decided to head back. However, we decided to take the road on which we drove in. The vehicular bridge was right next to the pedestrian bridge, so we walked along the side of the road. It was a Z-shaped progression to the top of the plateau. After the middle leg of the "Z" we decided to climb the rest of the way up. It was fairly steep, but we quickly came to the ridge line from which we were able to look back down into the valley we had just explored. However, we weren't at the top yet. We continued to follow the ridge upward. It flattened out into a wooded area (which I thought would be ideal for camping) and then it got steep again. We finally came to a rock face which appeared to be near the top. We walked along the rock face for a while and found an overhang where a rock shelf extended several feet above us. Two trees, evenly spaced had grown up from the ground below the shelf, slipping right past the rock edge. Where the trees touched the rock, the bark was built up as though they were trying to support the massive rock shelf. It looked like a piece of architecture.

We were almost to the top of the plateau. We just had to climb up a few more feet. The trees were once again conifers, which seemed to mark the edge of the plateau. My friend and I stumbled upon a small concentration of refuse - mostly old appliances - so we knew we must be near the dirt road which provided us access to the sight. We finally came to the clearing and saw our vehicle gleaming under the sunlight in the distance. All that stood in our way was a thicket of briers. After slowly making our way to the truck, I paused to take a few final photographs.

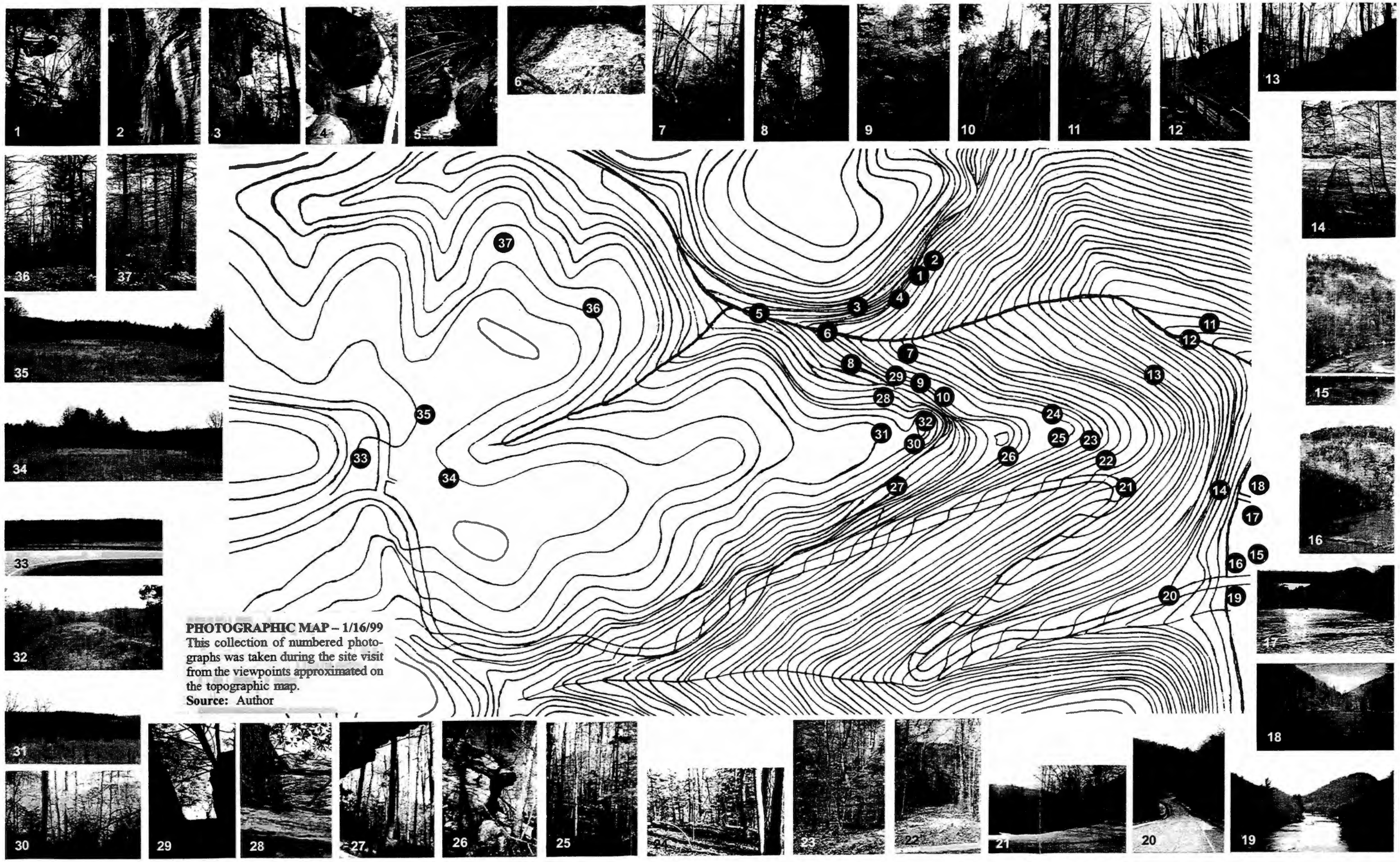
It was very peaceful on the plateau. In the distance I could see the east rim of the river gorge – reminding me I was at a high elevation – while behind me (to the west) the gently rolling field dominated the view. The sun was lower in the sky, there was a gentle

breeze stirring the nearby pine trees, and I heard something I hadn't noticed before; out there, on the peninsula of the plateau, you could acutely hear the light sound of the cascading stream, resonating from the valley below. But under that, in a more muffled tone, you could hear the deep sound of rushing water – The Big South Fork – in the distance.

It was at that moment that I realized that this was a very special place on my site. As we left, I had no doubt that this was both a rich and challenging site for my design investigation.



Sounds of the Site. The sound of moving water can be heard from multiple sources throughout the site.
Source: Author



PHOTOGRAPHIC MAP – 1/16/99
This collection of numbered photographs was taken during the site visit from the viewpoints approximated on the topographic map.
Source: Author

PANORAMIC VIEW FROM LODGE SITE.
The map above shows the scope of the view from the lodge site as shown in the photographic collage. This view is looking east, from the elevation of the plateau, towards the east rim of the Big South Fork River gorge.
Sources: Photographs - Author
Map - Dept. of Int. (GIS)

PROGRAM ISSUES Articulation of thesis issues in program spaces	SPECIFICATIONS	PROGRAM GOALS	MAGNITUDE	DISCOURSE	PRIMARY ISSUES	SITE
EVENT SPACES (LODGE)						
meeting rooms	indoors, electricity, HVAC, glazed walls	comfort	controlled, enclosed	comfort/refuge/ease	progression	views, forest edge, materials, sunlight
large activity spaces	indoors, electricity,HVAC, openness	comfort leads into challenge	controlled, enclosed	comfort/refuge/ease	progression	materials, sunlight, views
terrace	open-air, partially covered, hearth	prospect, edge of comfort	semi-controlled, sheltered	comfort/awareness/exposure	memory of place	views
covered porch	contained, open-air, flexible, hearth	edge of comfort	semi-controlled, enclosed	comfort/refuge/acuteness	memory of place	temperature, views, sunlight, wind
screened porch	screened, open-air, flexible	prospect, edge of comfort	semi-controlled, enclosed	comfort/refuge/acuteness	memory of place, progression	temperature, views, sunlight, wind
grotto	indoors, closed, masonry walls, hearth	comfort	controlled, enclosed	comfort/refuge/unawareness	protection, materiality	materials
climbing wall	indoors, stone masonry, double-height sp.	challenge	controlled safety, enclosed	challenge/effort/awareness	tasks, structure, progression	materials
suspension platform	open-air, wood & steel cables, platform	challenge	semi-controlled, exposed	effort/awareness/acuteness	structure, tasks, progression	views, sunlight, wind, elevation, materials
EVENT SPACES (OVERALL SITE)						
pavilion	open-air, roof, flexible, adj. to clearing	outpost of comfort	semi-controlled, sheltered	exposed/ease/unaware	progression	weather, clearing, views, flat/low-slope
clearing	opening in forest	edge of challenge	uncontrolled	aware/exposed	memory of place	weather, tree line, flat/low-slope, sunlight
field	open pasture used for field games, etc.	challenge/comfort	uncontrolled	aware/exposed/prospect	memory of place	weather, flat land, high elevation
low ropes course	cables, wood platforms in forest area	challenge	controlled safety	challenge/effort/exposure	tasks, memory of place, progression	low-slope forest
high ropes course	cables in trees, wooden platforms, poles, and structures	challenge	controlled safety	challenge/effort/exposure	tasks, memory of place, progression	low-slope forest, mature trees
challenge platform	wood construction, cantilevered, cable suspension system.	challenge	semi-controlled, exposed	challenge/effort/exposure	tasks, structure, progression	materials, forest
rock-climbing/rappeling	rock faces with built tie in structure atop	challenge	controlled safety	challenge/effort/exposure	tasks	rock faces
SLEEPING SPACES						
cottage	indoors, elec., HVAC, bunks, bath	comfort	controlled, enclosed	comfort/refuge/ease/unaware	progression, materiality	views; forest; materials; light
bunk room	indoors, elec., hvac, bunks	minimal comfort	controlled, enclosed (less private)	acuteness, exposure, ease	progression	
cabins	indoors, screened, open-air, bunks	edge of comfort	semi-controlled, enclosed	exposed/aware	progression	temperature, sunlight, forest, low-slope
shelter	open-air, roofed, dirt floor	edge of challenge	low control, covered	exposed/aware/effort	materiality	weather, sunlight, low-slope, clearing
staff houses	indoors, elec., HVAC, bunks, bath	comfort	controlled, enclosed	comfort/refuge/ease/unawareness		views; forest; materials; light
BATHING/HYGIENE						
in-room bath	indoors, electricity, HVAC, shower, WC	comfort	controlled, enclosed	comfort, ease/unaware	progression, materiality	sunlight
shower room	indoors, elec., HVAC, shared shwr/WC	less comfort	controlled, enclosed	ease/unaware	progression, materiality	sunlight
bath house	indoors, lights, shared, detached	edge of comfort/discomfort	semi-controlled, enclosed	effort/exposure	progression, materiality	weather, daylight, forest
EATING						
dining area	indoors (fluid w/activity space), hearth	comfort as source of challenge/effort	controlled, enclosed	comfort/ease	tasks, materiality	views, sunlight, forest edge
commercial kitchen	full-scale kitchen for meal prep. in lodge	comfort	controlled, enclosed	comfort/ease	progression, tasks	sunlight
CIRCULATION	progressions between activity sites					
indoors	room-to-room	comfort	controlled, enclosed	comfort/ease/unaware	progression	sunlight, views
board walk	walkway connecting main buildings	comfort	controlled, exposed	ease/exposure/prospect	progression	weather, sunlight, view, forest/clearing
paths	connect buildings and activity sites	edge of comfort	semi-controlled, exposed	ease/exposure	progression	weather, sunlight, low-slope
trails	connect sites or serve as activity/event	challenge	low control, exposed	effort, vulnerable, aware	progression, memory of place	weather, sunlight, forest, slope
SERVICE SPACE						
storage						
shed storage	sheds for equip. storage, utilities, etc.	edge of comfort	semi-controlled, enclosed		climate, shelter, closed, utility	tasks, low-slope, daylight
mechanical	pipes, ducts, wiring, equipment, etc.	provides comfort; opportunity for discomfort	controlled, encl. or exp.	aware or unaware	tasks, progression	wind, water
STRUCTURE						
framing	wood and steel structural members	provides comfort; opportunity for discomfort	controlled, encl. or exp.	aware or unaware	materiality	rock, wood, forest edge, views
earth	rock, clay, concrete for foundations	provides strength; uncomfortable	controlled, exposed	aware/unaware; effort/ease	materiality	bedrock, clay
PARKING/VEHICLE ACCESS	gravel lot away from camp, access road	edge of comfort	controlled, exposed	ease, unaware	progression	clearing, low-slope areas

WEEKEND PROGRAM

FRI. SAT. SUN.

		Early Morning 8:00-10:00		Late Morning 10:00-12:00		Early Afternoon 12:00-15:00		Late Afternoon 15:00-17:00		Evening 17:00-22:00		Night 22:00-	
		ACTIVITY	EVENT SPACE	ACTIVITY	EVENT SPACE	ACTIVITY	EVENT SPACE	ACTIVITY	EVENT SPACE	ACTIVITY	EVENT SPACE	ACTIVITY	EVENT SPACE
Friday								Arrival Check-in	Parking/ Trail Lodge	Warm-ups/games Introduction Group meeting Group initiatives •Circle the circle •Knotted rope •Rope knots •Marshmallows Group contract discussion (FVC)	Indoor activity space	Small group discussion Personal time/ journaling Hygiene & sleeping	Various spaces Bathroom/ bathhouse Rooms/ Cabins/ Shelters
Saturday	Bathing/hygiene Dressing	Breakfast 8:00-8:30 Clean-up Warm-ups/games Group initiative activities -trust sequence •Splitting gauntlet •3 person lean •willow-in-the-wind •light as a feather	Kitchen/ dining space Activity space* Outdoor activity space	G.I. trust sequence •trust fall •trust lunge Low elements ropes course • swinging log • mohawk walk • whale watch • islands	Low elements ropes course Designated area in forest with built-in elements (low elements ropes course)	Bandana lunch 12:00-12:30 Clean-up Low elements ropes course •wild woosey •nitro crossing •spiders web •the wall	Kitchen/ dining space Low elements ropes course	Low elements ropes course (cont.) High element "flying squirrel" Personal time/ journaling	Low ropes course area Designated area in forest Various	Rope cuffs dinner 17:00-17:30 Clean-up Group meeting Small group discussion Games	Kitchen/ dining space Activity space Various spaces Indoor activity space	Hygiene & sleeping	Bathroom/ bathhouse Rooms/ Cabins/ Shelters
Sunday	Bathing/hygiene Dressing	Breakfast 8:00-8:30 Clean-up Flex Program Depending on the group, this time may be used for worship service, group meeting, personal time, ropes course, etc.)	Kitchen/ dining space Activity space/various spaces	High elements ropes course •flying squirrel •bridge series —OR— Rapelling/ rock climbing Zip line	Designated high elements area in forest Vertical rock faces Zip launch and landing platform	Group discussion/ closure Lunch 13:00-13:30 Clean-up Departure	Activity space Kitchen/ dining space						

THREE DAY PROGRAM

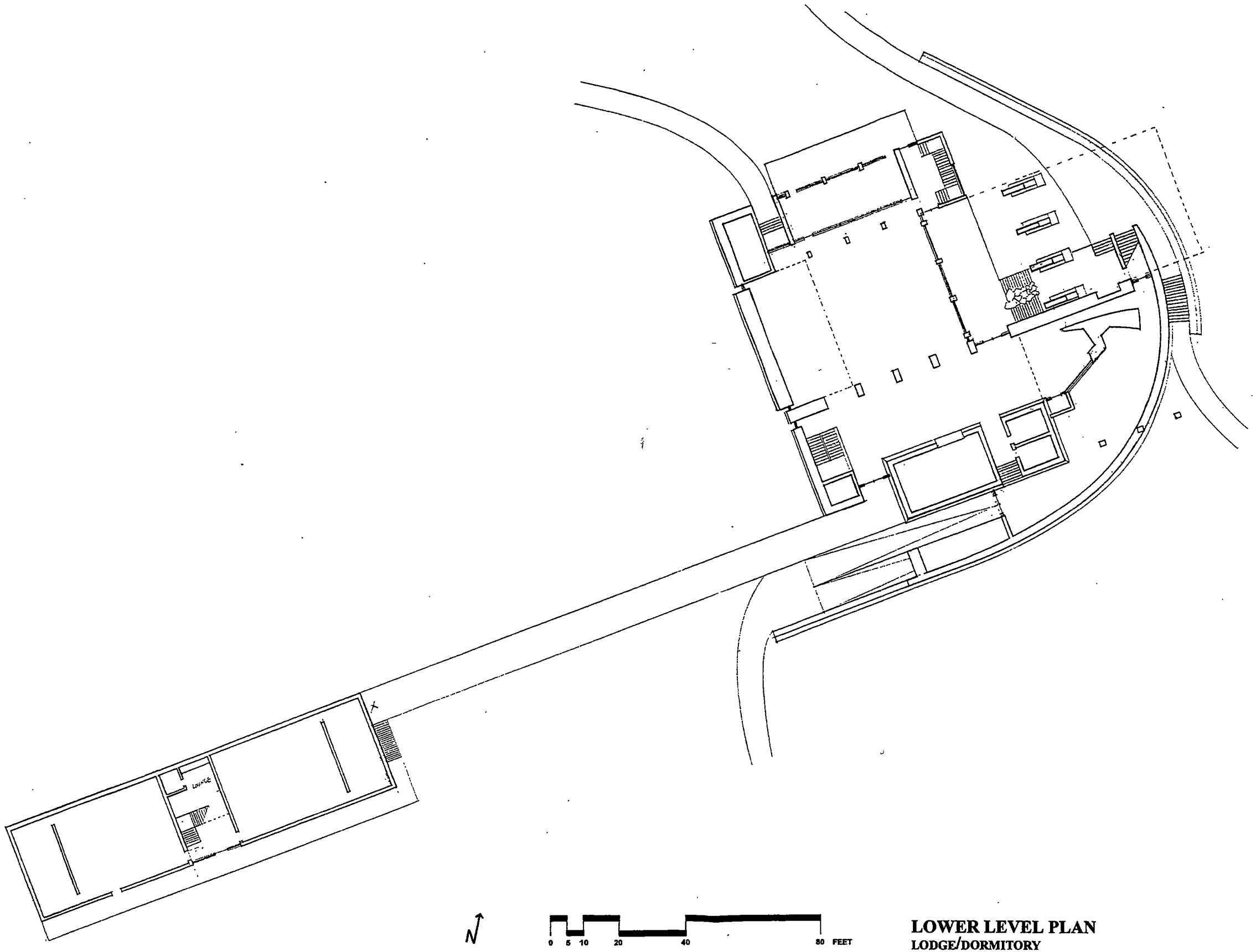
DAY 1 DAY 2 DAY 3

	ACTIVITY	EVENT SPACE	EARLY MORNING 8:00-10:00 ACTIVITY	EVENT SPACE	LATE MORNING 10:00-12:00 ACTIVITY	EVENT SPACE	EARLY AFTERNOON 12:00-15:00 ACTIVITY	EVENT SPACE	LATE AFTERNOON 15:00-17:00 ACTIVITY	EVENT SPACE	EVENING 17:00-22:00 ACTIVITY	EVENT SPACE	NIGHT 22:00- ACTIVITY	EVENT SPACE
Day 0											Arrival Check-in	Parking lot Trails Lodge	Hygiene & sleeping	Bathroom/ bathhouse Rooms/ Cabins/ Shelters
Day 1	Bathing/hygiene Dressing	Bathroom/ bath house	Breakfast 8:00-8:30 Cleanup Warm-ups/games •Name games •Asteroids •Tag games Introduction Group initiative activities	Kitchen/ dining space Activity space* Activity space Activity space	Group Initiatives •Circle the circle •Human knot •Knotted rope •Marshmallows •Traffic jam (process between) Group values discussion (Full Value Contract)	Outdoor Activity space Activity space	Rope cuff lunch 12:00-12:30 Clean-up Group initiative activities -trust sequence •Splitting gauntlet •2 person lean •3 person lean •willow-in-the-wind •light as a feather	Kitchen/ dining space Activity space (outdoor or indoor)	G.I. trust sequence •trust fall •trust lunge Free time -team games (football, ultimate frisbee, etc.) -personal time & journaling	Low ropes course area Field Various	Dinner 17:00-17:30 Clean-up Group meeting Small group discussion Games	Kitchen/ dining space Activity space Various spaces Indoor activity space	Hygiene & sleeping	Bathroom/ bathhouse Rooms/ Cabins/ Shelters
Day 2	Bathing/hygiene Dressing	Bathroom/ bath house	Breakfast 8:00-8:30 Clean-up Warm-ups/games Low elements ropes course • swinging log • mohawk walk • whale watch • islands	Kitchen/ dining space Activity space Designated area in forest with built-in elements (low elements ropes course)	Low elements ropes course •wild woosey •nitro crossing •spiders web •the wall Small group discussion	low elements ropes course Various spaces	Bandana lunch 12:00-12:30 Clean-up High elements ropes course •flying squirrel •bridge series (burma, two-line, cat walk, heebie-jeebie) •vertical playpen •pamper pole	Kitchen/ dining space Designated area in forest with elements built into trees or freestanding (High elements ropes course)	High elements ropes course (cont.) Free time -team games (football, ultimate frisbee, etc.) -personal time & journaling	High elements ropes course Field Various	Dinner 17:00-17:30 Clean-up Group meeting Small group discussion Campfire ring	Kitchen/ dining space Activity space Various spaces Clearing	Hygiene & sleeping	Bathroom/ bathhouse Rooms/ Cabins/ Shelters
Day 3	Bathing/hygiene Dressing	Bathroom/ bath house	Breakfast 8:00-8:30 Clean-up Warm-ups/games Rapelling/ rock-climbing	Kitchen/ dining area Activity space Vertical rock faces Outbuildings	Zip line Group discussion/ closure	Zip launch and landing platform Activity space	Lunch 12:00-12:30 Clean-up Departure	Kitchen/ dining area						

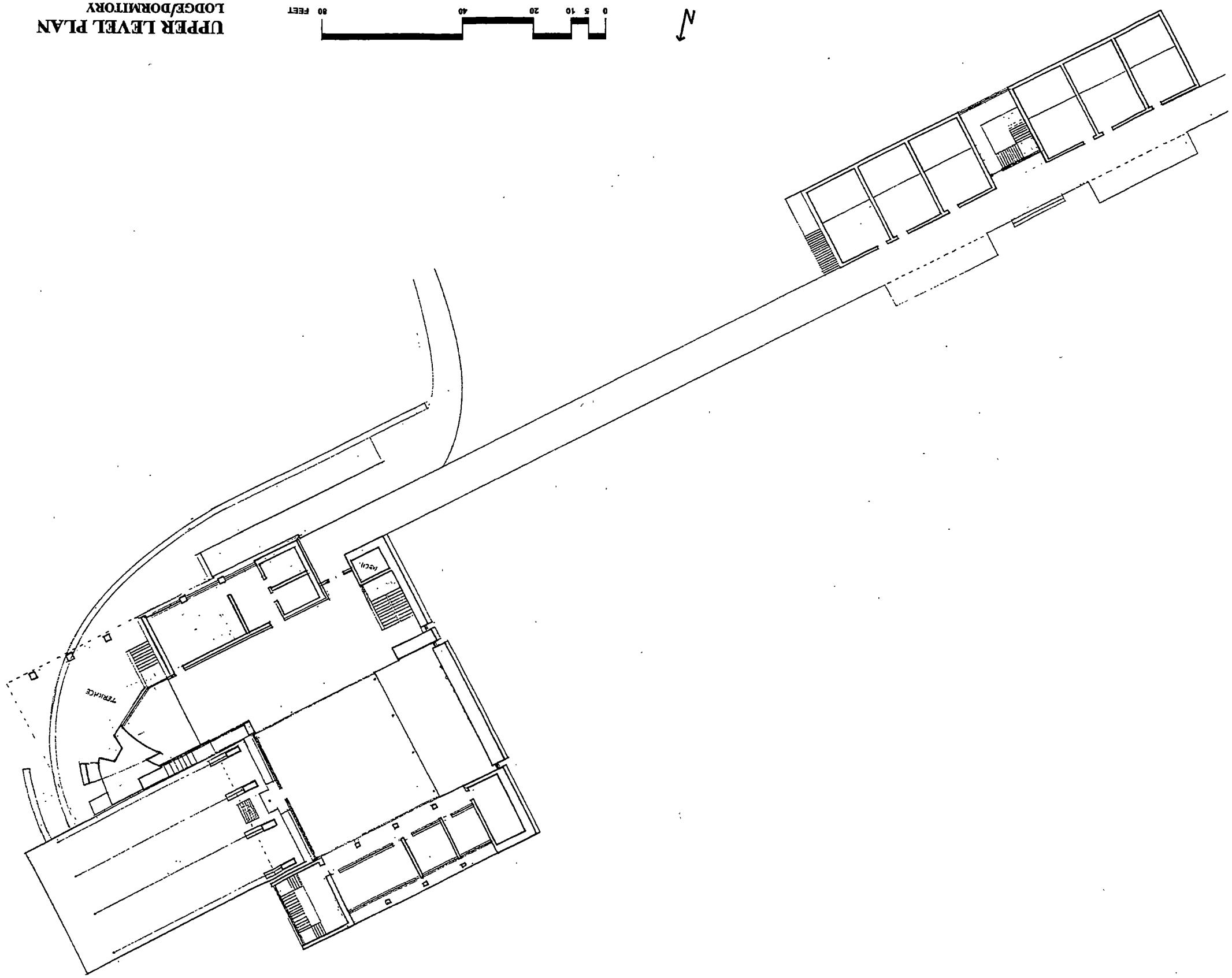
N

0 30 60 120 240 480 FEET

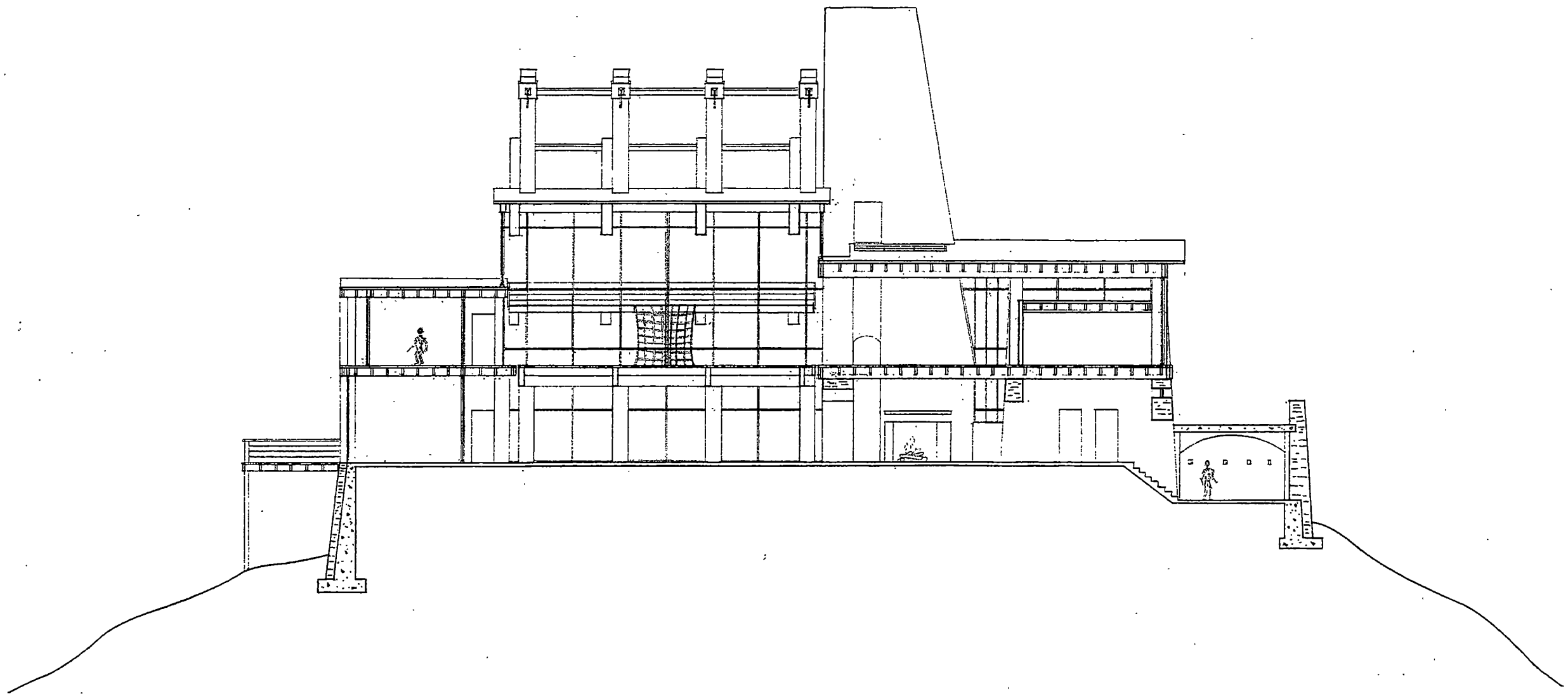
OVERALL SITE PLAN



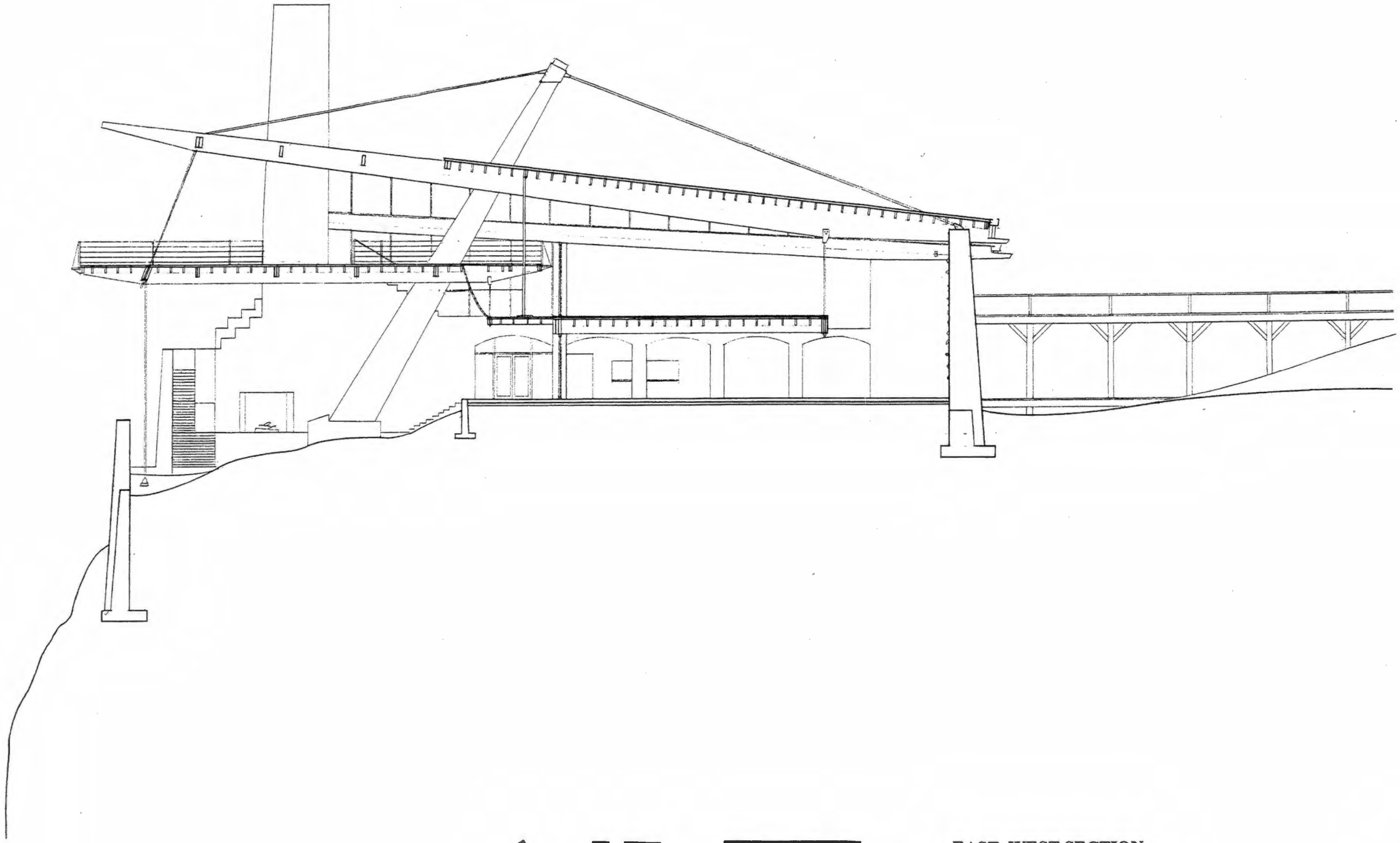
LOWER LEVEL PLAN
LODGE/DORMITORY



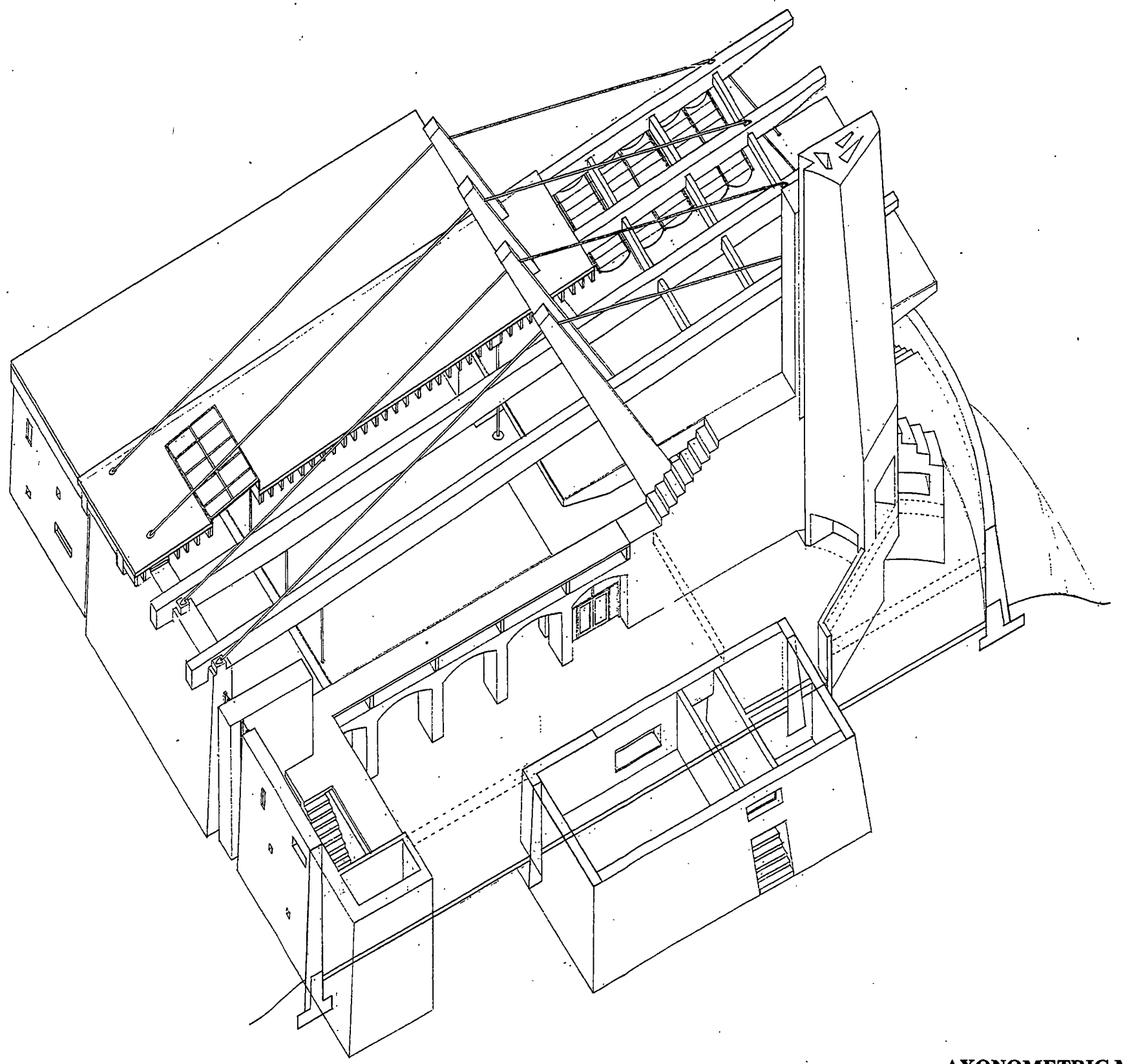
UPPER LEVEL PLAN
LODGE/DORMITORY



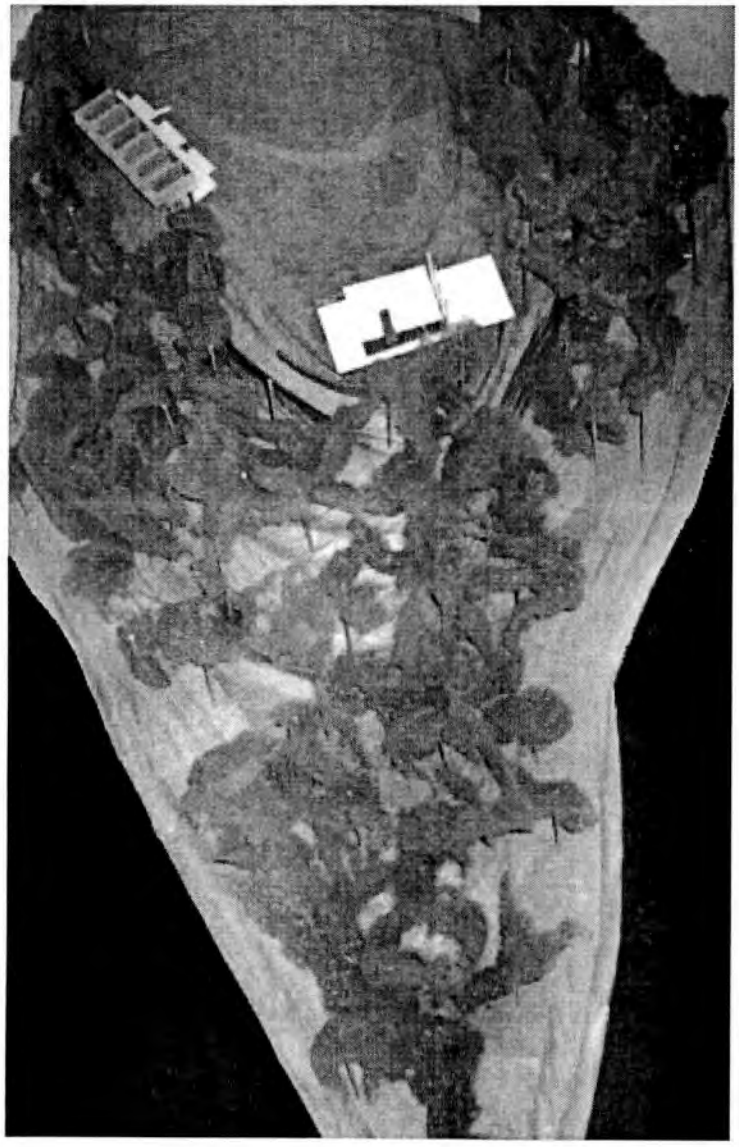
NORTH–SOUTH SECTION
LODGE



EAST–WEST SECTION
LODGE

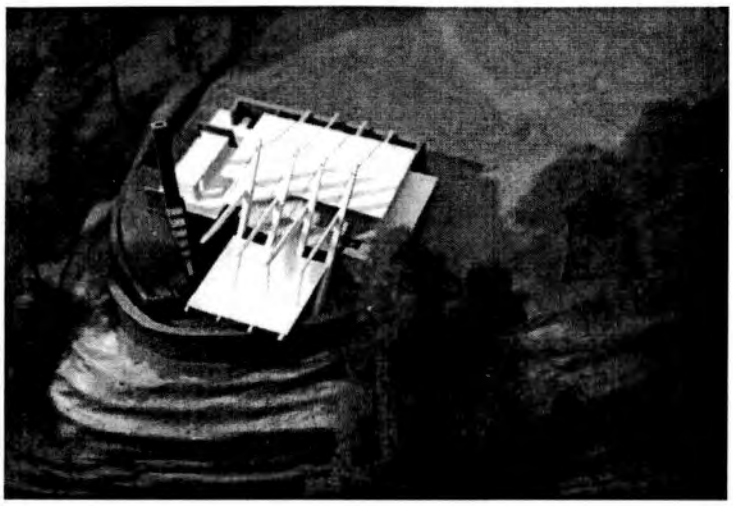


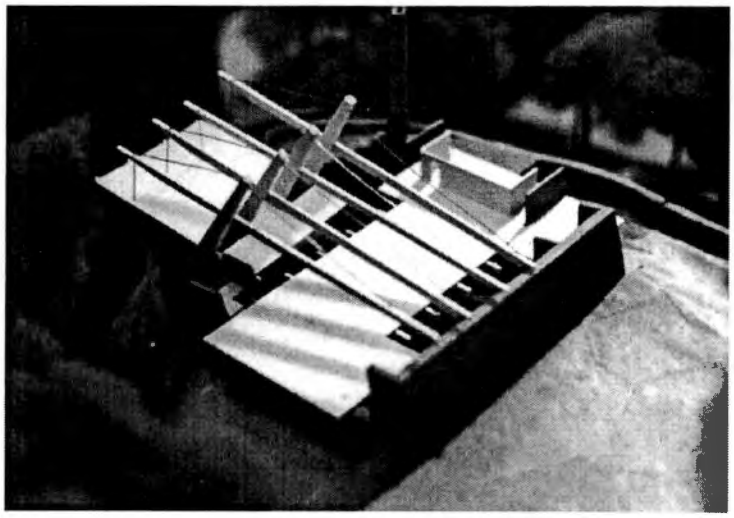
AXONOMETRIC MODEL
LODGE



SITE STUDY MODEL

This model was used to study the relationship of the buildings to the site in terms of tree-cover, elevational changes, and overall scale. The initial placement of the lodge and dormitory are shown in these images. The scale of the model is 1/16" = 1'.

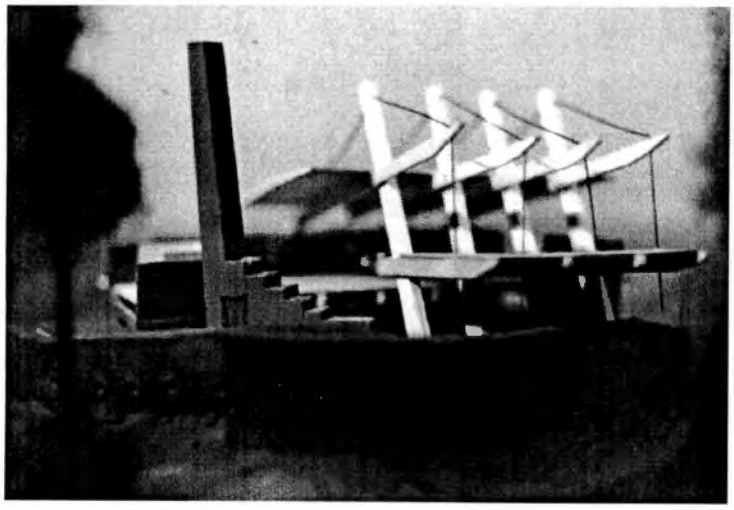




LODGE STUDY MODEL

The site model was used as a base for a series of sketch models of the lodge building. These models were used as three-dimensional design tools throughout the building program exploration.

The images in the left-hand column show the placement of the building on the outcropping of the plateau. The structural suspension system and the overall massing of the building are also expressed. The image in the right-hand column (below) shows the massing of the chimney tower from the final design drawings.



VITA

Jim Ellis was born on January 21, 1971in Owensboro, Kentucky. After attending the University of Louisville and receiving a Bachelor of Arts Degree in 1993, he sought to pursue graduate work in the study of architecture as the fruition of a persistent personal interest in the field. Jim entered the Master of Architecture program at the University of Tennessee in 1996, which culminated in the completion of this thesis exploration and the awarding of a Master of Architecture Degree in 1999. An interest in experiential learning through adventure-based programs along with personal involvement in *ChallengePoint* – a christian organization devoted to team-building and personal spiritual growth – was the inspiration for this investigation.

THE END.