

**Vertical Regionalism:  
A Pilgrimage in Canada's Western Mountains**

by

Mark Erickson

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for the degree of Master of Architecture

at

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## **Abstract**

Wilderness is defined as being “A wild or uncultivated region or tract of land, uninhabited, or inhabited only by wild animals” (Oxford English Dictionary 1989). But just how natural is the concept of wilderness? The idea of conserving nature suggests that we think of ourselves as something ‘other’ than nature, but the truth is that nature is our origin, and although this is often forgotten, it is a connection that is deeply rooted in our being. I am interested in finding an architecture that speaks to our most primal memories, acting to locate humans *within* nature. Through the creation of 3 mountain refuges, each a point in a larger path of pilgrimage, I will explore the connections that we as humans can share with the Canadian mountain wilderness.

## **Acknowledgements**

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This thesis is dedicated to my Grandfather Phil Gates, who passed away in December 2010. My love for the mountains comes from a lifelong collection of fond memories at the cabin in Windermere. It is here that my Grandpa calmed his soul, lived simply, and accepted the embrace of nature. He will live on through the memories that I hold dearest to my heart.



## Chapter 1: Introduction

The Tetons and Snake River.  
From Adams 2007.

Architecture is essentially an extension of nature into the man made realm, providing the ground for perception and the horizon of experiencing and understanding the world. (Pallasmaa 2005, 71).

The word nature is derived from the Latin word *natura* meaning birth, and is also the root of the words *innate* and *native* (Macy 2003, 1). Humanity shares with all living things an origin in nature, therefore we have an innate connection with it. This deep-rooted connection is best understood through our senses. Architecture is an interpretation of nature that reveals to the senses an impression of place, space, and time. In this way, architecture has the power to speak to the body, mind, and spirit; To achieve this, it must be founded upon a sense of reverence for nature, as well as offer comfort and respite. There is architectural meaning to be found in the “archaic responses and reactions remembered by the body and the senses... Architecture has to respond to traits of primordial behaviour preserved and passed down by the genes” (Pallasmaa 2005, 71).

The mountains are best able to speak to these memories because they occupy a vertical dimension that encompasses both the earth and the sky. This verticality boasts a range of unique regions, each of which has specific physical and atmospheric characteristics that define them. The act of ascension results in a transformation of perception wherein the landscape gradually reveals itself in greater dimension. I am interested in searching for an architecture that responds to these varying conditions through the use of the materials of the site and an understanding of its inherent sensory and experiential qualities. I want to foster a meaningful dialogue with the landscape of the mountain that will speak to its powerful presence. I believe that each region has the potential to connect to specific aspects of the human psyche, be they our physicality, morality, or spirituality, and the act of pilgrimage places these aspects at the forefront of our consciousness.

In various cultures around the world, especially in the east, mountains are meaningful and are revered for their spiritual aura and their powerful physical presence. Regardless of specific religious beliefs, all pilgrims ascend mountains with personal, moral, and spiritual goals, in hopes that the power of the mountain landscape will open the doors to revelation and transcendence. In response to this act of ascension and the resulting paths of pilgrimage, shrines, temples, and monasteries have been erected at high elevations within the mountains in order to fulfill the pilgrim's spiritual aspirations.

In Canada the culture of mountaineering, skiing, hiking, and biking is strong, making 'outdoor living' a defining characteristic of its identity. As a result there are a number of backcountry shelters used by adventurers, hikers,

mountaineers, and the like. Most of these huts belong to the Alpine Club of Canada and provide for basic human needs such as heat, shelter, a place to prepare food, and a place to sleep. These huts are sited everywhere from the valleys to the peaks. These huts are not associated with any pilgrimage paths, but they do have one thing in common with the idea of pilgrimage, and that is an almost ascetic emphasis upon restraint and simple-living. Spiritual asceticism requires that worldly comforts and possessions be cast aside in order to prepare oneself for personal reflection, or what is known as 'mind body' transformation. In a similar way, back country hikers and skiers pack lightly, taking only the necessary things to ensure survival. Any extravagances in packing will only weigh the traveller down and make the journey more difficult. A consideration of the essential elements of life is an important part of the experience.

Alpinism is the art of climbing mountains by confronting the greatest dangers with the greatest prudence. Art is used here to mean the accomplishment of knowledge in action. You cannot always stay on the summits. You have to come down again... So what's the point? Only this: what is above knows what is below, what is below does not know what is above. While climbing, take note of all the difficulties along your path. During the descent, you will no longer see them, but you will know that they are there if you have observed carefully. There is an art to finding your way in the lower regions by the memory of what you have seen when you were higher up. When you can no longer see, you can at least still know. . . (Daumal 2004, 105-106).

Although these pre-existing alpine huts serve their purpose, I feel that the mountains demand an architecture that has a deeper connection with the landscape that envelops it, and which helps us understand our place within it. These existing huts are environmentally conscious, but they do not speak to the human experience of ascension, or the

change in our perception as the landscape transforms. As Pallasmaa states, “architecture gives a conceptual and material structure to societal institutions, as well as to the conditions of daily life. It concretizes the cycle of the year, the course of the sun, and the passing of the hours of the day” (Pallasmaa 2005, 41).

My project is sited approximately 35 kilometres (19 miles) beyond Panorama Mountain Village on an existing road to an abandoned sawmill site located in the upper Jumbo Creek Valley, British Columbia. It is accessed from Invermere in the Columbia River Valley in B.C.’s East Kootenay region, between Radium Hot Springs and Fairmont Hot Springs. This is a destination sought by backcountry skiers, hikers, and climbers for its pristine, untouched natural landscape, and for its commanding views. The site is considered to be sacred to the aboriginal people, who have been fighting against a currently proposed ski resort development for the last twenty years. The pilgrimage will act to acknowledge the sanctity of the site and will offer an alternate way of occupying and reflecting upon our relationship with nature. The journey to the peak of the mountain from the base will be a personal pilgrimage, and the architecture will assist in this pilgrimage by providing stopping points that acknowledge the act of ascension by reacting to the changing landscape and the resulting shifts in perception.

### **Thesis Question**

How can architecture’s role in connecting people with nature be revealed through a response to the shifting conditions in landscape and perception within the Canadian Mountains?



## **Wilderness and Mountains in North American Culture**

In North America, the concept of nature has evolved from our colonial past. This is the land of the plentiful, the frontier that has yet to be completely conquered. People come here in hopes that they can find a piece of the frontier to call their own. As a result, we have a composite culture that is not founded on any single system of beliefs or traditions that are tied to the landscape.

In North America nature has been segregated into conservations (what Canadians call national parks) that stand alone as pockets of wilderness. The purpose of conservations is to protect the nation's natural resources from exploitation. These conservations also contribute to our national identity, attracting local visitors and international tourists alike. For this very reason the economic value of keeping them protected is greater than utilizing them strictly for resources. Although we are conserving these natural places, they are still treated as commodity. They are sold as a place of retreat where man can visit nature. In Canada this was first done in the Rockies by the Canadian Pacific Rail (CPR) when it built some of the first hotels in the mountains, the most notable of which is the Banff Springs Hotel. From that point on we began selling the mountain's scenography in earnest.

### ***Architecture as Scenography***

Today we often treat the mountains as spectacle. Resort developments in the Rocky Mountains are the most convenient way which to experience this grand landscape and the success of these resorts is based on the strength

of the tourist industry. In fact the mountains have been marketed to vacationers ever since the CPR first made the mountain landscape accessible to all. In a culture based on the concept of commodity, the resort villages that are created are developed by big industry according to economic considerations, such as providing investor's a monetary return. The resulting architecture of these resorts is primarily scenographic, meaning appearances are superficial, much like a stage set or backdrop. Its purpose is to sell an image, while providing all the comforts of domesticity. The architecture of these resorts reduces the landscape to a visual scene, separating man and the wild.

Resorts often use conventional building standards that you would find in hotels anywhere. Too often the structures make no inherent attempt to relate to site. The connection that the architecture makes is only on the surface, suggesting only the most superficial sense belonging to the place. In this way the architecture follows what seems to be a universal convention: its priorities are dictated by economic viability.



Banff Springs Hotel, built in 1914. From Canada Tourism.





*All-Inclusive Special Rate at  
BANFF SPRINGS HOTEL*

or stay of 7 days or longer during season. Room with  
arb and table d'hôte meals. Privileges of golf course,  
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It's thrifty to come to beautiful Banff this year...and really very sensible, too! The surprisingly low rates make your visit a bargain investment in the health and efficiency which these times demand of yourself and your family. Accommodations and service are perfect . . . food is marvelous...social life is congenial . . . outdoor recreation is endless in variety...scenery is inspiring.

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**Canadian Pacific**

Canadian Pacific ad from 1942. Image from Ads by Dee.



Like other resort developments in the Canadian Rockies, the Banff Springs Hotel was built in a style imported from a different culture. In the case of the Banff Springs, it seems to have been built in the French Chateau style, resembling a baronial fortress (Dorward 1990, 319). This style was not a reaction to the unique and specific regional characteristics of the Rocky Mountains, but was rather a romanticized aesthetic imported from Europe in the hope of cashing in on nostalgia for the colonial motherland. This architectural aesthetic lineage continues to this day in many mountain resorts.

### **Site: Jumbo Creek Valley**

The Jumbo Creek Valley, or Qat'muk as the local Ktunaxa Nation call it, is near the centre of a group of glaciers at an elevation of over 3,000 metres (9,842 feet). These glaciers are well known and are already utilized for helicopter skiing. There is one well used back country hut along with a series of established hiking and skiing paths. The proposed resort's location is considered prime both because of climatic conditions and because it offers access to major glaciers from an existing infrastructure that is only a short distance away.

### ***A Proposed Resort Development***

Currently there is a controversial development proposal to create a new mountain resort. The resort would consist of 143 single-family chalets, 240 townhouse units, 974 condo/hotel units, and 369 hotel rooms, as well as retail outlets and restaurants. The vision is of transplanting a European-style resort into the heart of Canadian wilderness, in order to appeal to those who seek a pampered weekend of skiing away from urbanity. The development's proponent is Glacier



Panorama Resort, BC. From Panorama Resort website.



Photo taken from Jumbo Pass. Photo by Garth Lenz, from Jumbo Wild website.



Jumbo pass cabin. From Columbia Valley Hut Society's website.



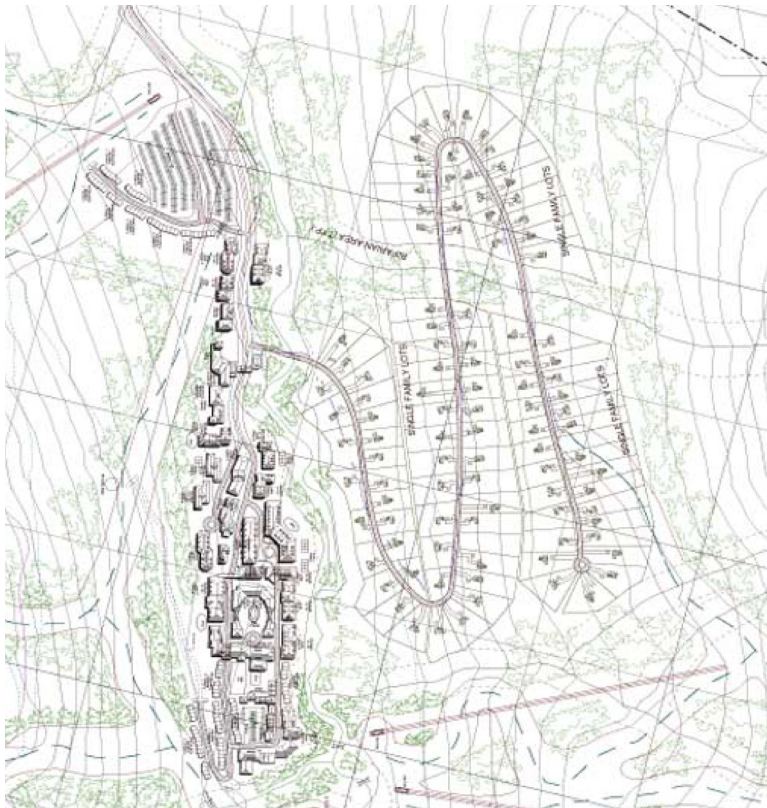
Valley access to Jumbo Creek Valley from Invermere. Base map from Google Maps.

Resorts Limited, and is backed by numerous undisclosed foreign investors. The new resort would be a mere 55km away from Panorama Resort in the same mountain range.

I believe there is a greater value in keeping this magnificent site wild, and perhaps we can learn from and avoid the mistakes of the European continent in how we go about relating with nature. For instance, the Alps have a history of heavy development, and much of its wilderness has already been pushed from its mountains. The Europeans themselves view the west as being 'the mythical frontier' that hosts wilderness unlike any in the world, and they come to Canada not only to ski, but to reconnect with the wild.



An illustration of the proposed style of architecture for the resort. From Jumbo Glacier Resort website.



The proposed Jumbo Glacier Resort scheme. From Jumbo Glacier Resort website.





***An Alternative System of Beliefs: Ktunaxa Nation, Qat'muk and the story of creation***

Considering that the site is sacred to the local Ktunaxa Nation, a people who have an established culture in this land dating back 10,000 years, perhaps there is something greater to be learned from these mountains. Through a story of creation the Ktunaxa believe that the mountains of Jumbo Creek are where the spirit of the bear resides. The Ktunaxa's system of belief is strongly tied to the land. They believe themselves to be keepers of the land, and that the spirits of the animals who have ascended above are their spiritual guides. The bear is especially sacred because of its cyclical nature of ascending and descending the mountain depending on the season. The bear will climb the mountain during the winter to find places for hibernation, then they will return to the lowlands during the warmer months to find sustenance. To the aboriginal people, this act of ascent and descent is part of why the bear has such a powerful spiritual presence (Clark 2009, np.).

The road from the nearest large city, Calgary, through the mountains to the remote site of Jumbo Creek Valley. Base map from Google Maps.



Members of the Ktunaxa nation in the Kootenay mountains. From Ktunaxa Nation's website.

## Man Within Nature

### *Spirituality and Mountains*

Today mountains around the world are mostly viewed with admiration and affection. In Canada they represent a wild untouched part of our country, and are considered one of the country's natural gems. The human attitude towards mountains throughout time, history, and different cultures vary, but the predominant feeling used to be one of fear, suspicion, and awe.

In primitive times, the mountains were associated with weather. They were seen as the birthplace of storms, lightning, wind, and clouds (Price 1981, 7). These natural forces were viewed as signs of the gods' pleasure or displeasure with the people, and so cultures would have ceremonies and make sacrifices in order to appease the Gods. The peaks of mountains are often shrouded in clouds and out of view, making them extremely mysterious. They were seen as the meeting point between heaven and earth, a place of communion. Shrouded in clouds, draped in snow with sharp stone edges, these mountain peaks were the most uninhabitable and hostile places on earth, making them a natural abode for spirits and gods. Mountain-worship has been a part of the belief systems of Eastern religions like Buddhism, Taoism, Confucianism, Shintoism and Hinduism for thousands of years and persists today.

Mountains had a tremendous impact on early Chinese culture. Through personification the mountain was viewed as being the body of god, the rocks his bones, the water his blood, the vegetation his hair, and the clouds and mists his breath (Sullivan 1962, 1). This belief is said to have originated from the 'ancient cult of the earth' where man was viewed as an integral part of nature.



The passage of mount St. Gothard, as depicted by J.M.W. Turner (1775-1851) reflects the fear and awe with which high mountains were regarded in his time.  
From Dorward 1990.



'Summer Mountains' by Ch'u Ting. An idealized depiction of the Chinese mountain landscape. From Dorward 1990.



The attitude toward the mountains that developed in these cultures largely depended on the relationship shared with the land. In mountain areas where the weather was harsh and the landscape inhospitable, the people were likely to associate those qualities with the spirits that lived there. The landscape became a source of stories and legends, inspiring traditions and ceremonies that formed a cultural backbone. These gods and spirits have maintained their significance in cultures such as that of the Incas and Sherpas, and the aboriginal people of North America. The mountains in many other cultures are imbedded with meaning, and the architecture of the mountains is a response to this meaning. It is easy to see that throughout cultures all over the world, the mountains are not merely a religious symbol; they are a landscape that has a universal appeal to the human spirit, body, and mind.

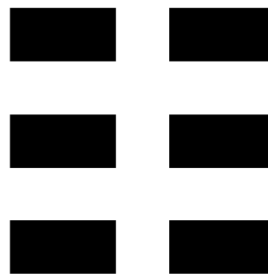


“The Chinese express the English word *landscape* with two characters, mountain (shan, top) and water (shui). In the Taoist concept of natural harmony, the mountain is the passive center (yin), and water is the active counterbalance (yang).” From Dorward 1990.



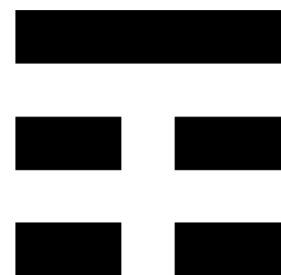
乾

Sky, or Heaven  
(The Creative Force)



坤

Earth  
(The Receptive Field)



艮

Mountain  
(Keeping still, Bound)

Three Trigrams from the I-Ching, an ancient Chinese text containing a system of divination, a method of describing elements and forces. From Wilhelm 2010.

### ***Korea's San-Shin – Spirit of the Mountains***

In Korea respect, gratitude, and admiration for the mountains generated the animistic concept of the San-shin, meaning the Mountain God or Spirit of the Mountains. This ancient concept embodies both a universal truth of all Korean mountains and the uniqueness of each mountain and its individual set of peaks, ridges, slopes, valleys, forests, and streams. (Mason 1999, 16). The San-Shin is based on the belief that “every mountain has a spirit, and those who live on or climb the mountain receive that spirit and experience a deepening of their humanity.” (Mason 1999, 16). Ascending a mountain meant encountering nature on a grand scale, and to ‘receive the spirit’ meant experiencing a return to an original humanistic ‘nature’.

### ***Incas of South America***

The Incas were an indigenous people who began as a tribe in the Cuzco, Peru region, dating back to around 1200AD. The Incas revered the mountains as Gods who governed all living things below them. Although their indigenous sovereignty was lost due to Colonization by the Spanish, their beliefs still exist today when communities address their pleas to the mountain gods for good weather and abundant crops and flocks, as well as for good health and increased prosperity.



Machu Picchu, Peru, existing on a high mountain ridge.  
From Margolies 1980.



The Temple of the three windows, showing the intricate stonework of the Inca people. Machu Picchu, Peru.  
From Margolies 1980.

## Pilgrimage

For in their hearts doth nature stir them so, then people long on pilgrimage to go, and palmers to be seeking foreign strands, to distant shrines renowned in sundry lands. (Chaucer 2005, 1).

A pilgrimage is the telling of a story from which we can derive individual, cultural, and spiritual meaning. This story is told through the act of moving through nature, and by finding points of intersection between man and nature. A pilgrimage is a journey or search of great moral significance, and is not necessarily a journey specific to any one religion. The mountains present a natural context that is inherently appropriate for a pilgrimage because of its ascending and descending motion, its spiritual aura, and because mountain journeys naturally evoke an emotional response. The peak is easily the most uplifting and striking, presenting an expansive panoramic view of the landscape beyond. It is the placing of an individual in a vast, untouched nature that evokes deep reflection.



Sharda village pilgrimage map. From Dozafar, Flickr.

## Case Studies: Architecture and Nature

### *Shinto and Shirakawa: a system of beliefs and a way of living in the Mountains*

In Japan the practice of Shintoism emphasizes harmony with nature and the balance between the human and natural world. This system of beliefs can be evidenced in the architecture of the village of Shirakawa, located in the mountainous northwest part of Ōno District, Gifu Prefecture, Japan. The buildings in this village have a transformative nature, reacting to the changing seasonal conditions. In the summer many of the houses have an open air portico that allows for the summer breeze to penetrate through the house, while during the winter this portico is enclosed using thatching which effectively creates a dead air space between the house and the harsh winter conditions outside. This thatching also helps keep the snow from breaching into the house. These are functional principles that are founded on the Shinto belief that humans must find harmony with nature. The architecture's ability to transform with nature is an idea that is found in all three refuge designs.



House in Shirakawa, summer condition on left, winter condition on the right. From Saito 1996.



In the village the people of Shirakawa belong to a mutual help organization called the kumi, which acts to form a sense of community and to work in cooperation with each other as well as with the surrounding natural landscape. This social system includes the sharing of communal responsibilities such as re-thatching roofs, house construction, cleaning canals, and harvesting. These actions are productive, but also act to reinforce a sense of community and strengthen the morale of the people. From the beginning, this type of social system was necessary for surviving in the remote mountainous area that is subject to harsh climatic conditions.

In support of their system of beliefs, the central hearth in the houses and various community buildings offer a place to gather, eat, speak, and find warmth. Around the hearth recollection, the telling of stories, and reinforcing cultural traditions and rituals strengthen the core moral beliefs.

### ***E. Fay Jones' Thorncrown Chapel***

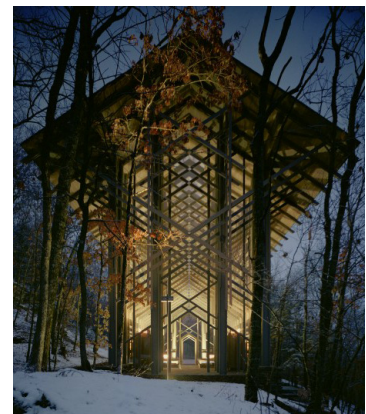
This chapel resonates with ideas about the forest hut. Jones' chapel is sited in a forest overlooking the Ozark hills in Arkansas. The vision for this chapel was to make a place for visitors to stop and take in the surrounding forest and landscape. It stands as a patron to the forest. The building is of light wood frame construction and has a very gentle footprint on the land. It is perfectly contextualized within the forest, achieving an intimate connection with it. The chapel is about revealing and distilling qualities of the forest and presenting them in the transparency of structure, and articulation of form. This chapel reveals the power that is held within the forest. It truly is a meeting point between the forest and man.



Communal thatching, Shirakawa Village. From Saito 1996.



The living room in a Shirakawa House, with central Hearth. From Saito 1996.



Thorncrown Chapel, photo by Greg Hursley. From SGA Art History.

***James Turrell: Sky Spaces and the Roden Crater.***

I chose to investigate the work of James Turrell with relation to the peak refuge. Turrell is a visual artist who deals with light as his medium. There is purity in his use of light, where light is not depicted through painting or sculpture, but is simply light itself. In this way, Turrell is able to create a powerful perceptual experience by paring down the act of making and creating a minimal space that reveals light in its most elemental state. Light is distilled, revealing its power to be both enlightening and transcendent.

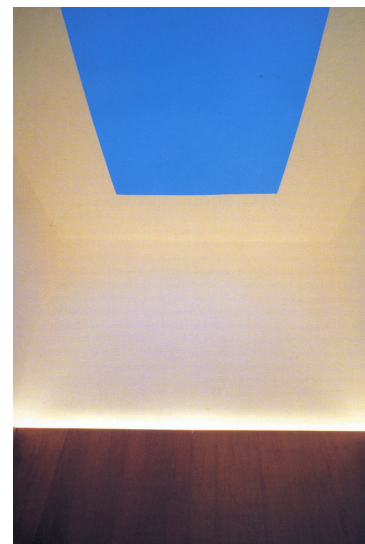
Like the air we breathe, we take light for granted. It is so fundamental to our being that we don't tend to dwell on it. And yet, it is light's elemental nature that gives it the potential to be so powerfully enlightening. (Turrell 1998, 11).

Turrell engages perception as a medium. With no object, no subject or symbol, viewing becomes a primal experience. Science, religion, and art history are forced to take a backseat to primitive visual intelligence.

An excerpt from an essay on Turrell by Lynn M. Herbert, titled *Spirit and Light and the Immensity Within*:

For many, viewing Turrell's work leads to thoughts about the spirit and religion. Religion has become an unwelcome word in critical discourse about contemporary art, and unfairly so. It has fallen victim to those who would narrowly define it as being part of this or that specific ideological group or institution when, in fact, religion is defined as an individual's recognition of some higher unseen power. (Turrell 1998, 96).

Light has always been a subject of spiritual discourse, finding its way in to the architectural language of places of worship all over the world.



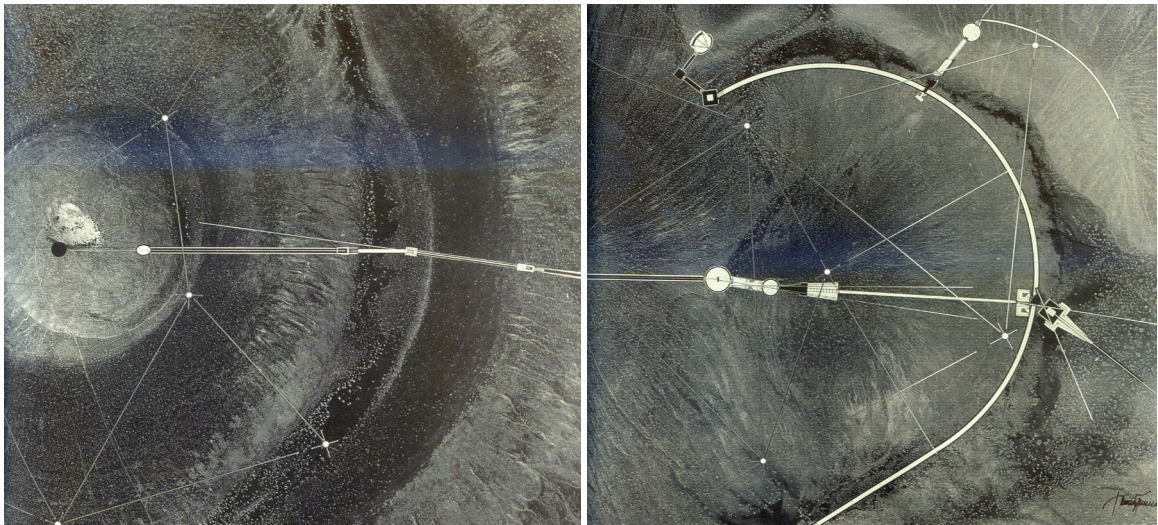
Permanent installation in the Israel Museum, Jerusalem. part of the Skyspace Series. The same space at different times of the day. From Birnbaum 2001.

For centuries, 'divine light' has streamed through stained glass into the interiors of churches. A person who comes from the outside into the relative darkness of a cathedral such as Chartres is struck by the light pouring through the colored glass. Such an experience intentionally underlines the difference between the inside and the outside. (Turrell 1998, 14-15).

Describing the idea behind his sky spaces, Turrell has said:

The sky would no longer be out there, away from us, but in close contact. This plumbing of visual space through the conscious act of moving, feeling out through the eyes, became analogous to a physical journey of self as a flight of the soul through the planes. (Turrell 1998, 16).

The Roden Crater is a land art project by James Turrell that is still under construction. The project was first conceived in 1979, a life's work for James Turrell. The project is meant to be a naked-eye observatory that captures light, solar, and celestial phenomena and its cyclical nature. Moments such as the winter and summer solstice will be captured, as well as events that happen very infrequently such as when the moon reaches its southernmost declination every 18.6 years. The Roden Crater will take into account many moments in space and time, acting to locate Earth in the Grand scale of the universe.



Aerial view of the Roden Crater project. From Turrell 1998.



### ***Hanle Observatory and Monastery, Ladakh India***

Observatories occupy some of the most remote and isolated sites in the world due to their need to escape air, noise, and light pollution caused by human inhabitation. It is for this reason that they find themselves in places like deserts and mountain peaks. These solitary conditions offer the perfect context for exploring the outer reaches of space and science. Monasteries are often located in similar circumstances in order to find solitude in isolation. A monastery exists in order to facilitate meditation, which is an act of exploring the inner self.

In Ladakh India, there is an interesting juxtaposition between an observatory and a monastery, being located across from each other on a mountain peak. In a sense, they are both in great contrast: one is exploring the outer reaches of our universe, and the other is looking deep within to connect with the spiritual self. But at the same time, they are both intent on achieving the same thing: to understand the meaning of our existence within a greater context of space and time.



The Hanle Monastery. the observatory stands on a peak across from the monastery. From Skyscraper City Website.



The Hanle Observatory, one of the highest observatories in the world at 15300 ft. From Naik, Flickr.



## **The Value of Verticality**

In North America, mountains provide context for the exploration of our primal relationship with nature, not just with relation to architecture but also human experience. Today, humans go to the mountains in search of a place away from the urban condition. The mountain exerts a call to the wild, a vertical landscape that appeals to the body, spirit, and mind. It should follow that the architecture that exists within this context should capture a sense of intimacy with the specific landscape that surrounds it, speaking to the timeless experience of ascending and descending a mountain.

Within this act of ascension and descension are embedded deeper meanings that resonate with our sensual faculties, relating to the build up and release of energy as one rises and descends. This potential is stored in the mountain's verticality, becoming a means to experience the power of gravity. It is this same power that inspires water to turn into rapids, and to form rivers. The mountains inspire us to move.

Many mountain resorts offer an experience of the mountains by providing facilities for downhill skiing. The buildings are there to provide for the act of descending a mountain. A skier does not have to expel any physical energy during the moments of ascension as the chairlifts do all the work. All the energy is used during the downhill trek and in the mitigation of gravity's pull. The act of ascension has been devalued, and the intimate value of verticality is lost. The spectacular moment at the peak has lost its significance because that moment was not viscerally earned through the act of exchanging energy for height. It is similar to the act of





climbing stairs, going from the basement to the upper floors. That act, or the ascent anything for that matter, expresses the verticality of the human body (Bachelard 1994, 32). To describe the experiential sequence of spaces experienced in a typical house through the vertical movement up a stair, it would begin in the cold, dark, earthly depths of the basement or cellar, ascending to the higher, lighter, more heavenly heights of the attic. The act of ascension links these two polar opposite spaces. This same experience can be related to the more macroscopic context of ascending and descending a mountain.

### ***Differing Scales of Time embedded in Nature's elements***

The glaciers, stone, rivers, forests, snow, sun, and other aspects of the world of mountains, all have a way of revealing a sense of time, each functioning on a different scale. Some are seasonal, revealing the cyclical nature of time, some speak to the ephemeral aspects of time, and others reveal time as being eternal. Glaciers recede and grow over thousands of years; a movement that has been witnessed by man through the ages. Stone is the most ancient of the elements, originating in the depths of the earth and is usually millions of years old, predating humanity. Trees grow taller with time and are shaped by atmospheric forces such as wind and sun. If you observe a wind-swept tree for instance, a story is imbedded in the marks left by the forces it has endured over its lifetime. You can read a trees age by counting the rings in a cross section of the trunk. And similarly a stone tells the story of its life through its layers and form. Perhaps you come across a smooth, polished pebble near a river, and this pebble will tell the story of its relationship with the rushing water and the journey it

has endured. The sun tells a story of perseverance, an everlasting story that begins and ends all time.

Each material or element has a story, a memory of time. We as humans are witnesses and tellers of these stories, building upon them over ages. Time is a continuous thread that has inscribed these stories in our memories since the beginning. For the Ktunaxa Nation and many other cultures both current and old, these stories are the foundation of their spiritual beliefs. It is how they have ensured a healthy, symbiotic relationship with the land, and how they found their place within it. In thinking of materials and the making of architecture, these stories are integral in helping to embed meaning in both the site and the built form.

### **Ascension and the Dematerialization of Mass**

Mountains are the bones of the earth. This is most evident at the peaks where the living network of trees and vegetation gradually recedes. At the upper reaches all that is left is the strongest and most resilient thing: stone. As you move closer to the valley, the 'meat' and 'skin' of the earth begins to reappear. You see trees, shrubs, and soil. At the lowest point are the veins, flowing with water. These things are all built upon the stone.

Architecture can be seen in the same light. The concrete, stone, or brick foundations of a building have a solid, rock-like nature. This is the heavy, rooted element, or the stereotomic element as Frampton would describe it. Like the stone of the mountains, the foundations are most resilient. Built upon this foundation is the framework, which creates the walls and roof. This is akin to the trunks and branches of the trees and vegetation in the forests and valleys of

the mountains. This frame element expresses the vertical nature of the building. Onto this framework is the skin of the building, such as shingle siding, straw thatching, or the like. This is like the leaves on a tree or the bark of a trunk. This 'skin' or cladding is secondary to the structure. Foundations and framework are the primary architectural elements. Frampton discusses the ontological consequences of these two contrasting structural elements:

Framework tends towards the aerial and dematerialization of mass, whereas the mass form is telluric, embedding itself deeper in the earth. One tends toward the light and the other toward dark. These gravitational opposites . . . may be said to symbolize the two cosmological opposites to which they aspire; the sky and the earth. (Frampton 1995, 45).

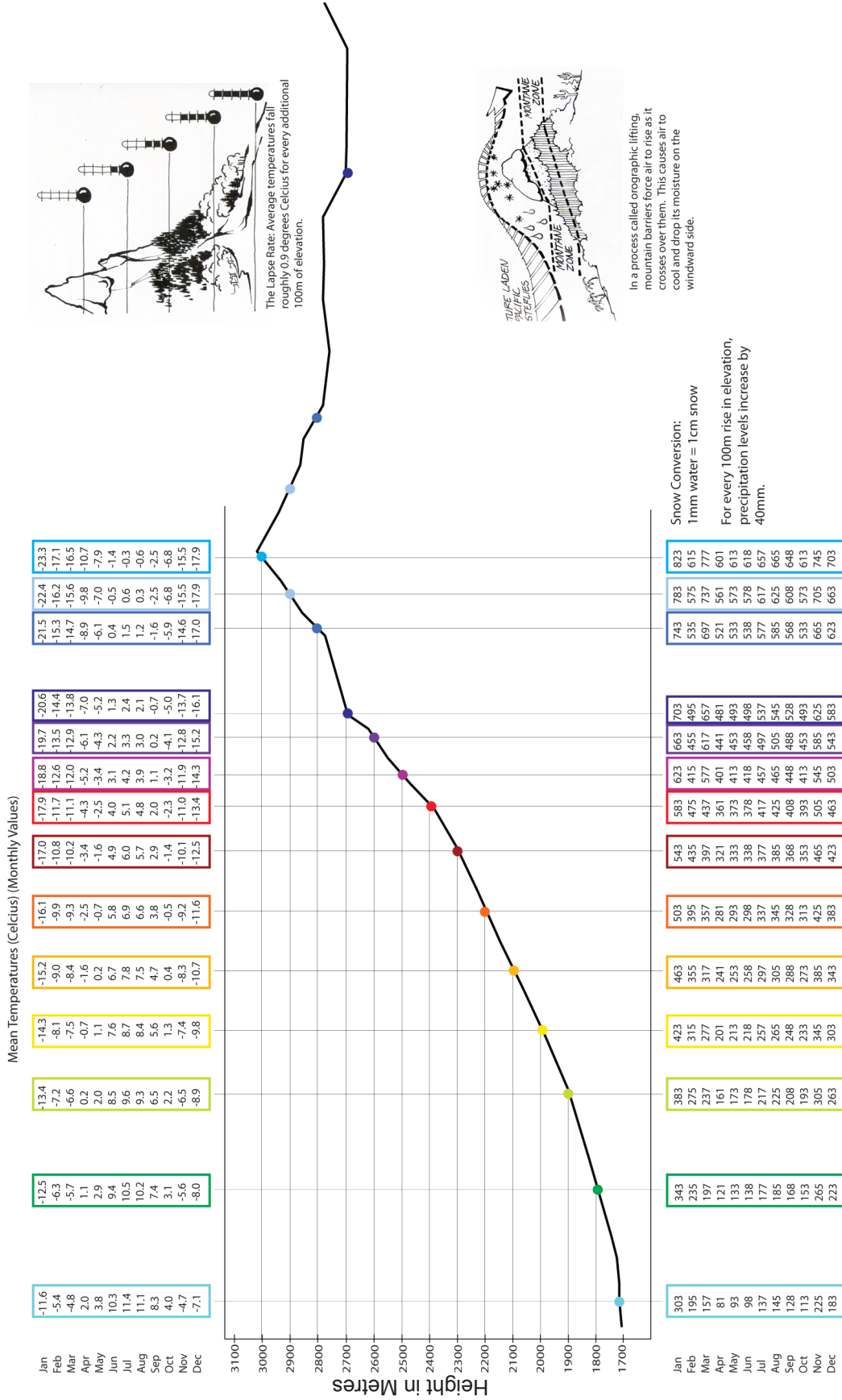
In creating architecture on a mountain, a vertical landscape that finds itself between these two gravitational opposites, it is important to understand the characteristics that define each region in the vertical dimension.

### **Vertical Regionalism**

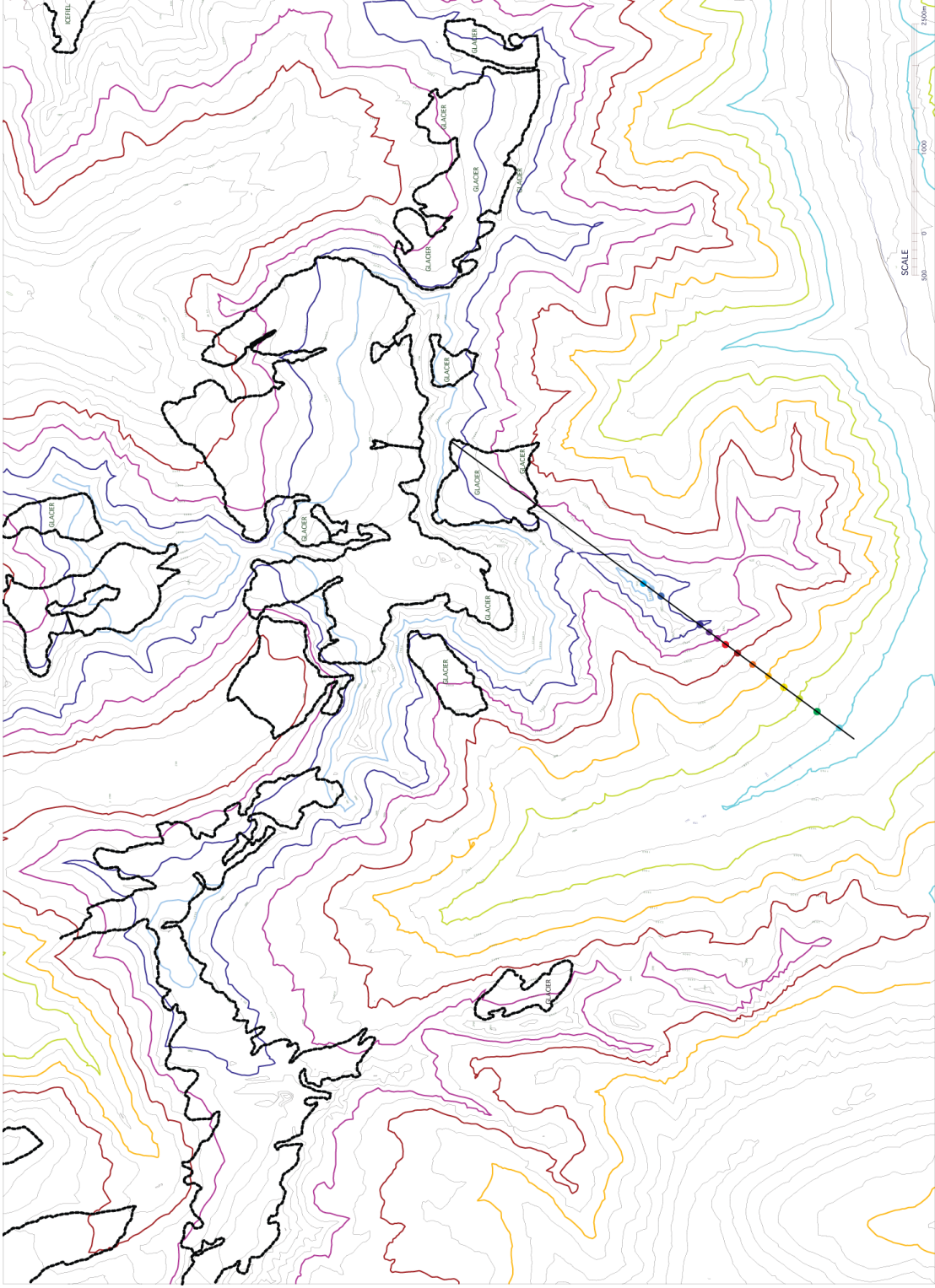
The mountain is the bond between earth and sky. Its solitary summit reaches the sphere of eternity, and its base spreads out in manifold foothills into the world of mortals. (Dorward 1990, 43).

As a mountain rises into the air it begins to transform. There is a multitude of different micro-climates that meld one into another creating a gradient of regions that are all stitched together, one reliant on the next (see pg. 23). The differences between the alpine region of the mountain and the valley region are vast. For one to experience these vastly different regions, it is only a matter of traveling a short distance from the base to the peak. When thinking of regionalism in the horizontal plane, the distance that must be traveled to experience the same shift in regions is much





Precipitation and temperature, an altitudinal study.



Mapping Altitudinal Shifts (relating back to previous diagram).



further. For instance, in terms of temperature, the difference would be like going from Los Angeles to Halifax, the former representing the valley and the latter the peak.

Each region has its own set of conditions that must be considered architecturally. I have pinpointed 3 distinct regions within the mountain landscape to focus on as sites for the mountain refuges. These regions are the valley, mid mountain (forest) and the alpine region.

## Valley

The valley is the most habitable region for humans and many other living organisms. In the valley the surrounding rising mountains provide a sense of containment and protection; they are a place of refuge. The mountain masses are like giant walls that create a well-defined sense of space. The mass of the mountains provides protection from harsh winds and limits the amount of daylight that penetrates through to the valley. Therefore while in the valley, the days are shorter and the area is often cast in shadow, especially during the winter. The valley experiences the most fluctuation in seasonal changes out of all the regions, experiencing both the heat of the summer and cool of the winter. Spring comes earliest in the valley, while it may take months before it is experienced at higher elevations. The valley proves to be the most transformational through the seasons with the wax and wane of the river, the falling of leaves from the deciduous trees in the fall, and the blooming of shrubs in the spring.

The most prevalent element in the valley is water, and you will always be able to find a river or a creek there. In terms of its geological history, the valley has been carved deeper



Cougar Creek, Canmore, Alberta. Photo taken in the spring.

and deeper over millennia by constantly moving water. Be it a river or a glacier, water has the power to carve and shape the landscape. Because there is bountiful moisture and abundant rich soil, the vegetation that grows in the valley is unique and plentiful. For this reason, traditional cultures would reserve the lowest regions of the valley to grow crops and orchards. The valley offers the sustenance of life.

### **Mid Mountain**

This region's dominant element is vegetation, largely inhabited by Coniferous trees that range in density as they rise in elevation. This forested region is the most habitable because the trees provide an insulated climate and protection from the elements. The forest is a safe haven. At this elevation the vantage begins to extend and the horizon line begins to become more comprehensible. Quite often low clouds will sit in this region.

As you move up the mountain, the trees become less dense as they become more and more exposed to harsh, abrasive atmospheric forces such as wind. This happens because for one, the oxygen levels start to thin, and the landform becomes more rigid and rocky. There are more stone cliffs, harsh slopes, and uneven topography as you get closer to the alpine region. The tree line usually marks the transition zone from mid mountain to alpine.

### **Peak**

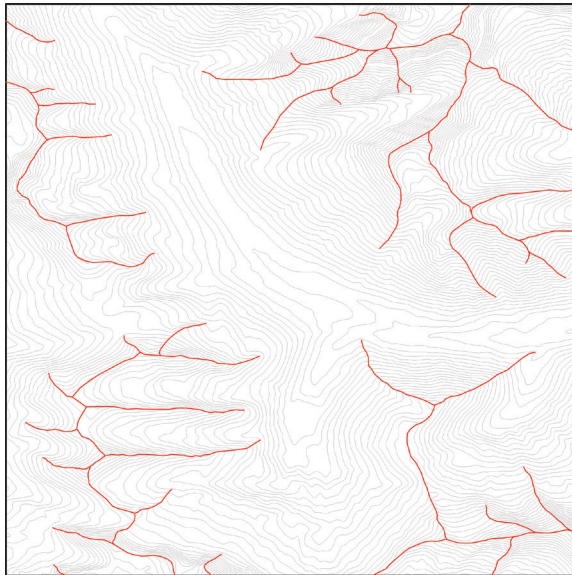
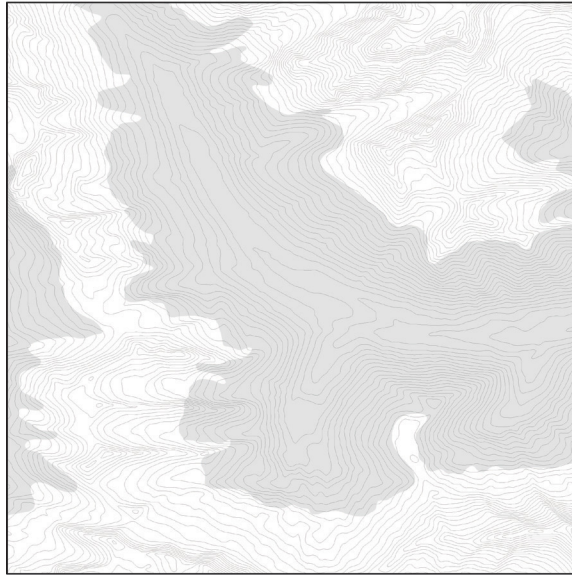
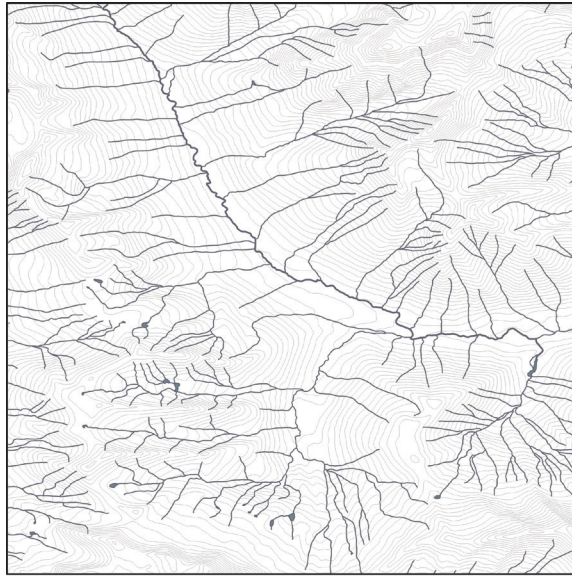
For centuries, religions have recognized the spirituality of mountain summits by making high peaks into symbols of ascension, abodes of gods, and objects of sacred journeys. Altitude is a universal symbol of an uplifted spirit, and the mountain itself is a symbol of enlightenment (Dorward 1990, 41).



Forest close to the valley bottom. Photo taken at Panorama Resort.

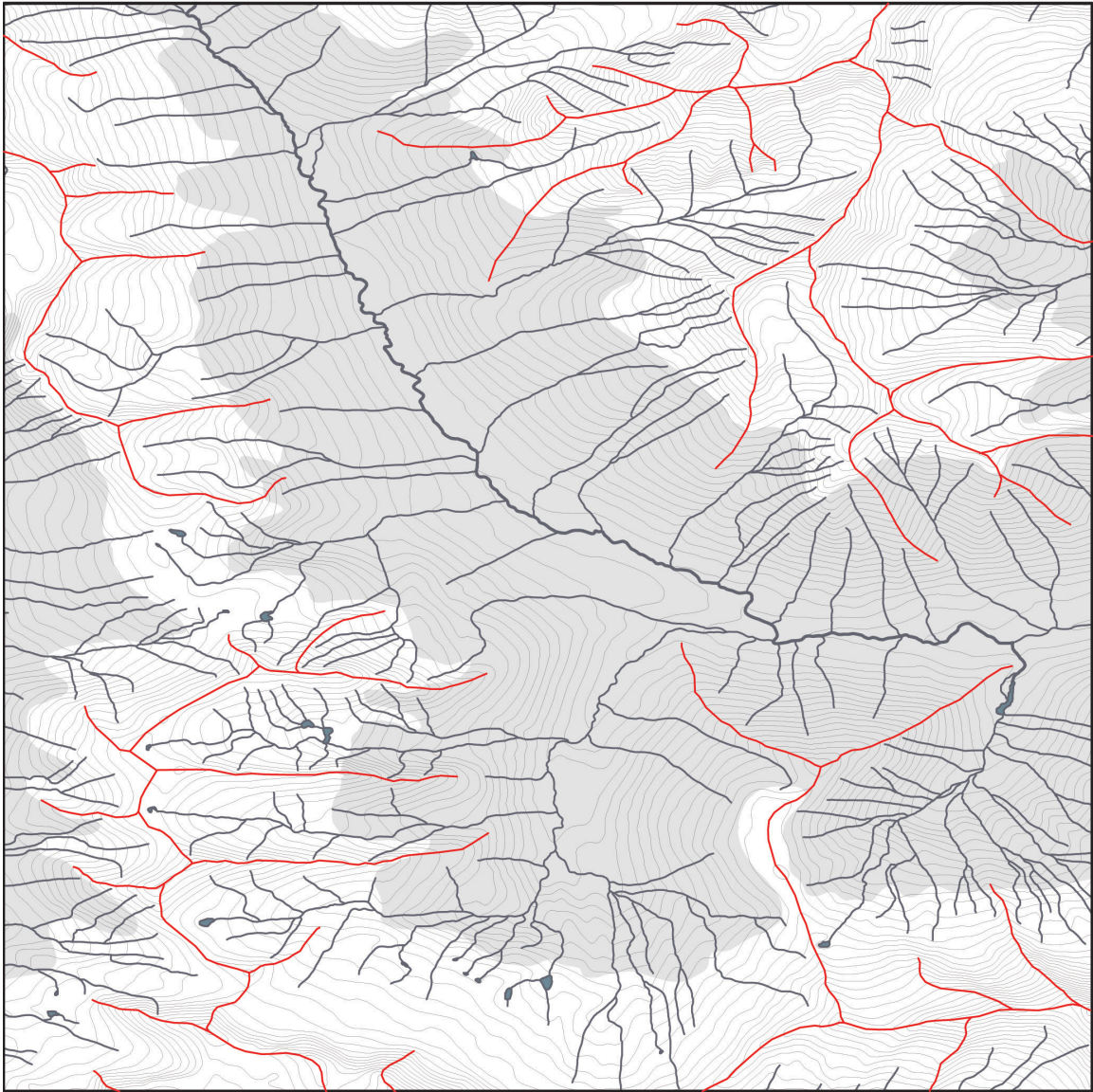


Forest at tree line. Photo taken at Panorama Resort.



Maps of Jumbo Creek Valley.  
Top: Watershed system (relating to the valley).  
Middle: Forested zone (relating to mid mountain).  
Bottom: Ridge lines (relating to the peak). Mapping Data from GeoBC.





Map of Jumbo Creek Valley illustrating the three systems together. Mapping Data from GeoBC.

Towards the top of the mountain one will experience climatic extremes, with the only reprieve being in the lee of rock outcroppings. There are harsh winds, blowing snow, and extreme solar exposure. In terms of perception, the peak is where one can grasp the panoramic horizon. There is a sense of expanse that extends from the inhabited peak to the peaks of distant mountains ranges. Perception can change from being able to see for hundreds of miles on a clear day, to being able to see only a couple feet in front of you when the peak is veiled in a cloud. The alpine environment is at such a high altitude that “the environments become more compressed and life processes more deliberate. Organisms become more directly tied to the environment, less complicated, and more exposed to view.” (Dorward 1990, 23).



View from summit building at Panorama Resort.



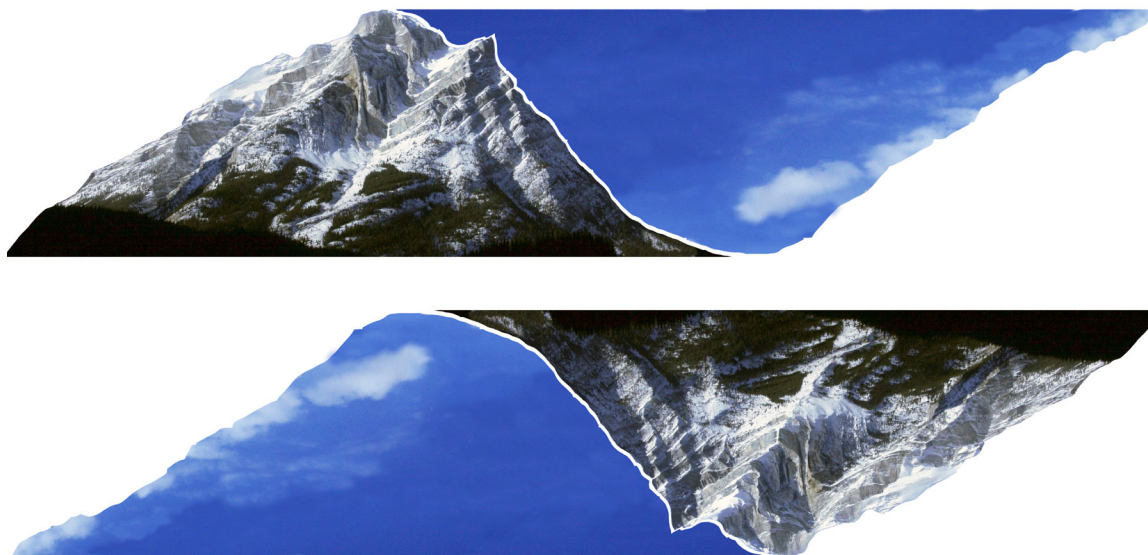
## Dualities

Many dualities can be drawn using the mountain as a subject. The prime duality, and the most evident, is that of the earth and the sky. Every other duality is a result of this: Dark and light, heavy and light, hot and cold, ephemeral and timeless, solid and void, singular and multiple, compressive and expansive, physical and atmospheric, material and immaterial, force and field. Depending on where you are located on a mountain, these dualities will shift, aspects receding or advancing respectively.

The mountain represents the solidity of matter, and the water, like the sky, is transparent and always in motion. The mountain, being a vertical entity, activates the movement of the water via the forces of gravity.

Snow is an extremely fascinating thing because it is an instance of the atmosphere articulating itself as a material. It describes the dynamism of the atmosphere that surrounds us in a tangible way, and unites the disparate elements of nature into a singular plane of white.

Water belongs to the sky just as the sky belongs to the water. This relationship is described in the reflection of sky in the waters of rivers, lakes, and oceans. From space the oceans appear as blue because the colour is a reflection of the sky. The sky and the rivers, lakes, and oceans are in constant exchange. The water is always ascending and descending, going from material to immaterial in a constant cycle that ensures the perpetual motion and evolution of life. Water is necessary for all living things.



Ideogram illustrating the dualistic nature of the mountain landscape



Yang



Yin



乾

Sky, or Heaven  
(The Creative Force)

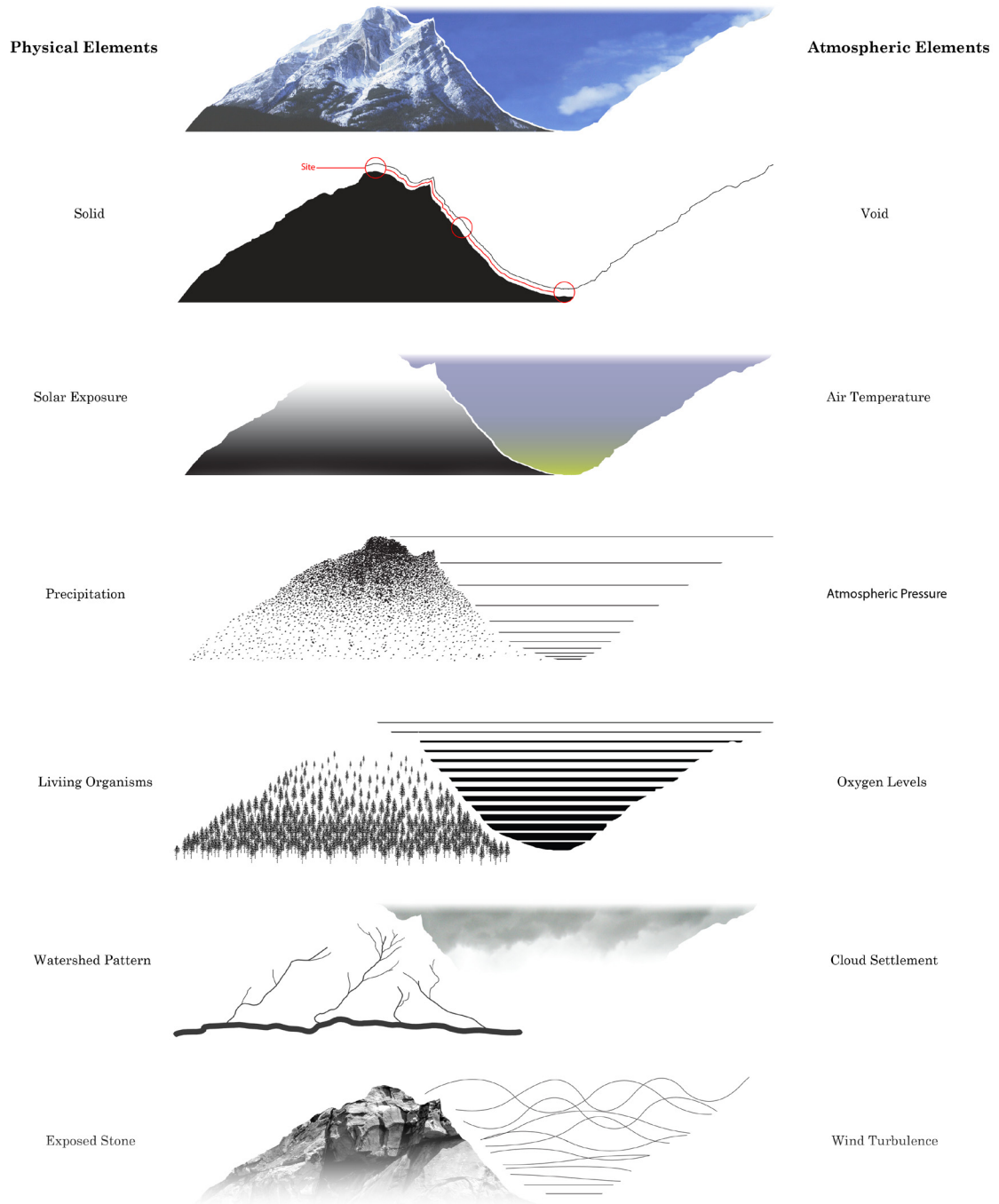


坤

Earth  
(The Receptive Field)

Trigrams from the I Ching describing the Earth and Sky. From Wilhelm 2010.

## Altitudinal Shifts in Canada's Western Mountains



Ideograms illustrating the relationships between the mountain and valley.

Glaciers, with their layered strata, describe time much like stone does. This relationship between stone and ice can be found at the highest elevations of the mountains. Glaciers are the atmosphere's way of describing its history, just as the stone describes the history of the earth.

It is a Chinese belief that mountains and water are interdependent. In the Taoist concept of natural harmony, the mountain is the passive center, and water is the active counter balance (Dorward 1990, 19).

## **The Refuge**

The Primitive hut is often seen as the original architectural form from which the purest and most fundamental architectural elements were born, representing something primordial, something that speaks to our species' beginnings. But before there was a hut, "man placed a stone on the ground to recognize a site in the midst of an unknown universe: in order to take account of it and modify it." It is the act of placing a marker that signifies our place amidst the immensity that surrounds us. This mark can be a fire pit for instance, where a group gathers and occupies a site before the built form takes shape around it. This simple act of marking a site signifies human inhabitancy and reveals the nature of our necessities for dwelling such as the quality of light, the ground conditions, proximity to resources such as water and food, and our relation to the other species that inhabit and share the same site. This act of surveying is first and of the foremost importance, coming before the refuge is constructed.

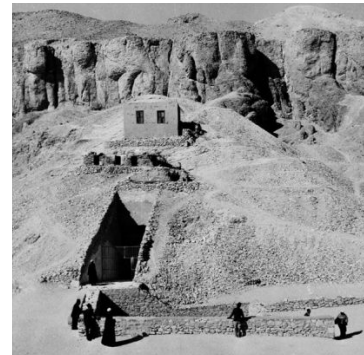
Gottfried Semper speaks of the 4 key elements that the primitive hut is comprised of. These elements include the



earthwork, the hearth, framework, and the weatherproof covering. These elements find balance with the determined site, and so each element does not necessarily have the same level of prominence. Marc-Antoine Laugier speaks of the primitive timber hut originating in the forest; applying similar logic, Quatremere De Quincy's conceives of the cave being the origin of Egyptian architecture and of the tent being the origin of Chinese architecture. Each of these archetypal primitive refuges are largely determined by site and the materials that the site has to offer. Laugier writes, "Such is the course of simple nature; by imitating the natural process, art was born. All the splendours of architecture ever conceived have been modeled on the little rustic hut [primitive hut] (Laugier 1977, 12).

The timber hut that Marc-Antoine Laugier speaks of resulted from the surrounding trees, which acted as pre-existing vertical structure rooted to the ground. A tree is naturally balanced and anchored in both the earth and the sky, and so it was the simple act of adding the roof that constituted the making of a hut.

For the Egyptians, the stone cliff faces were a pre-existing mass that resulted in a subtractive method of creating refuges: the digging of caves and tombs. This was naturally a very stereotomic refuge, being heavily anchored in the ground. In relation to Semper's four elements, it is the earthwork that is prominent while the other elements tend to recede. The opposite is true for the Chinese origin, being the tent. Here we see the framework finding prominence while the foundation is diminished. Again, the tent is a reaction to the site, being flat lands with little vegetation. The foundations are reduced to single points where the framework can be anchored.



Entrance to the tomb of King Tutankhamun at Luxor, Egypt, May 1950. From Beaumont Enterprise.

### ***Mountain Refuge***

Building with these basic principles in mind, the mountain presents an incredible range of circumstances with regard to site. The 4 building elements named by Semper relate back to the natural elements present on the mountain, as described earlier (stone, vegetation, water). Just as the natural elements gain prominence and recede depending on the mountain region, so will the building elements present in each of the three refuges. To be specific, there will be a balance between foundation (earthwork) and framework in the mid mountain refuge, much like a tree. In the alpine refuge, the prominent element will be the earthwork (stone). And in the valley, the prominent element will be the framework. Each refuge will capture the tectonic qualities of site through use of structure and materials, and in turn will reveal the sensual and perceptual qualities of the site to the occupant. These elemental conditions in both site and built structure will inherently relate to the programmatic aspects of the site, and the idea of pilgrimage as being about finding one's origins and personal place in the grand scheme of things.



The primitive hut. (Laugier 1977, xxiv).

## Chapter 2: Design

Each refuge is an invitation for the imagination to wander and for the recollection of primal, deep-seated memories. Its interaction with nature goes beyond the visual, appealing to all of the senses. There are no windows in these refuges, at least not in the prosaic sense, but rather points of exchange between inside and outside, where one bleeds into the other. These points reveal the dynamic, ever changing qualities of nature, which in turn shape and describe the inner space of each refuge. The structure is an expression of this exchange.

No refuge is completely inside, or completely outside. Any definition of inside and outside depends on the season, the material used, and the programmatic needs of each space.

There will be 3 places of refuge along a path of pilgrimage, and each refuge acts as an anchor along the path, stitching the earth and sky together at each specific moment in place and time. The refuges will be part of the path, offering a means to get from one point to another.

### ***Site Studies***

Studying the site at a larger scale reveals the interconnectedness of the larger mountain range, as well as the conditions that exist across different horizontal and vertical planes. In order to gain a comprehensive understanding of the mountains as a landscape, I have taken both horizontal and vertical sections through the site, identifying and describing the three chosen regions of study: The valley, mid mountain, and peak.

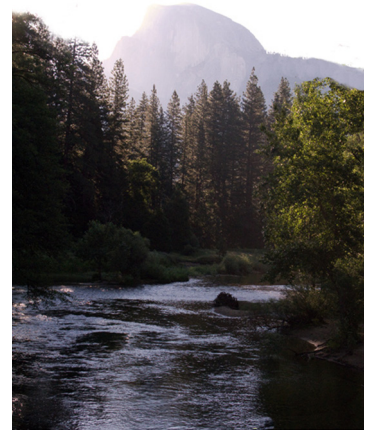
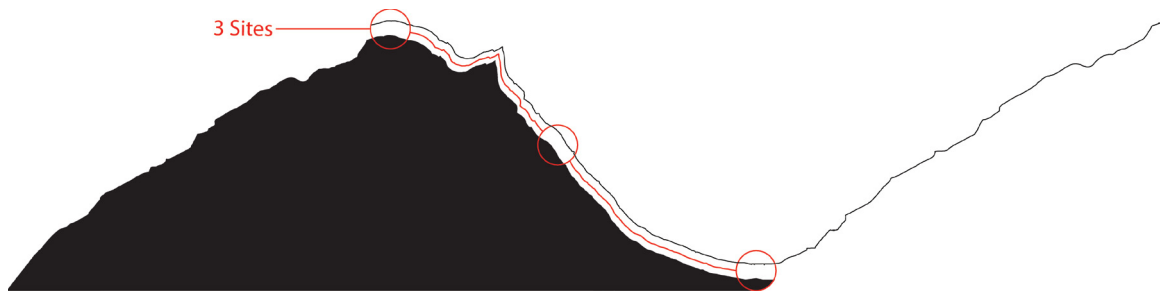


Photo taken at Yosemite National Park. From Blaylock.



Ideogram of the mountain, valley, and three sites conditions.

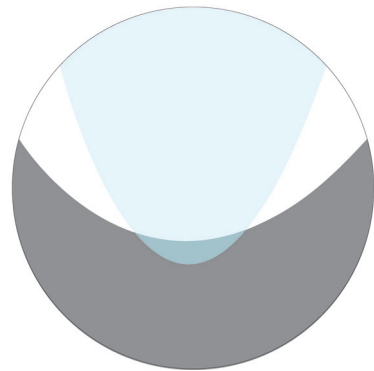




Peak



Mid mountain



Valley





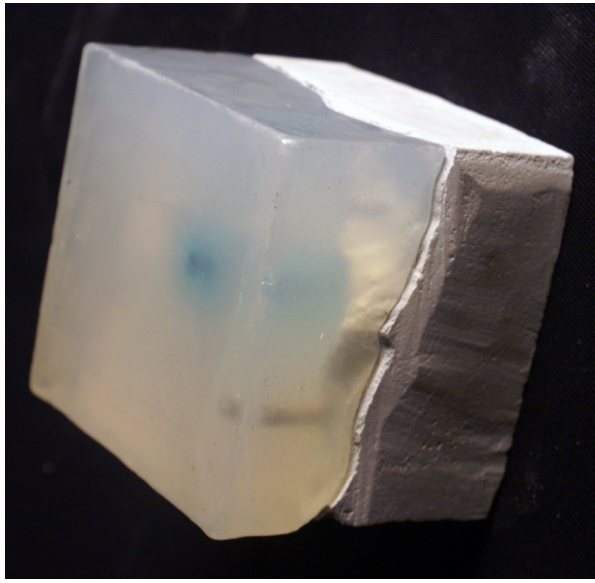
-  Earth
-  Stone
-  Sky
-  Water

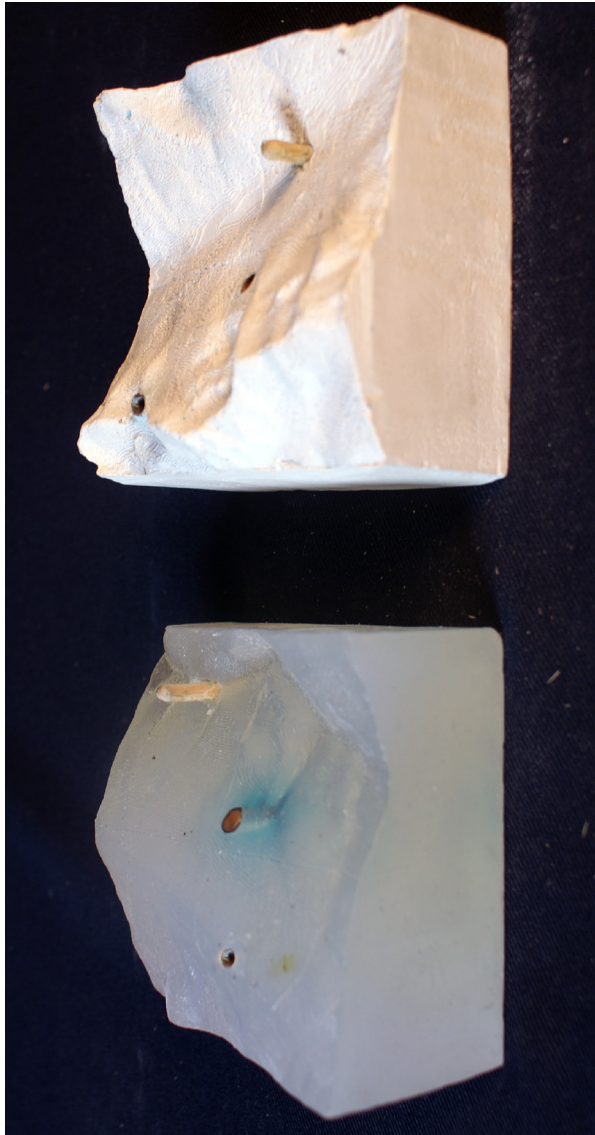
Diagram of the three sites



A 3d Printed model of the jumbo creek valley and surrounding mountain ranges.

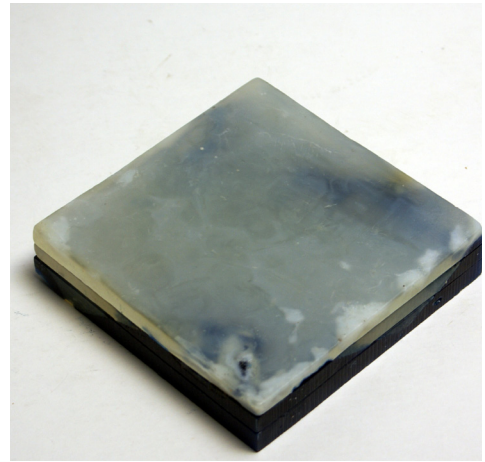


A model of Jumbo Creek Valley and the surrounding mountains, locating the three sites of each refuge in relation to both the topography of the earth and the sky.

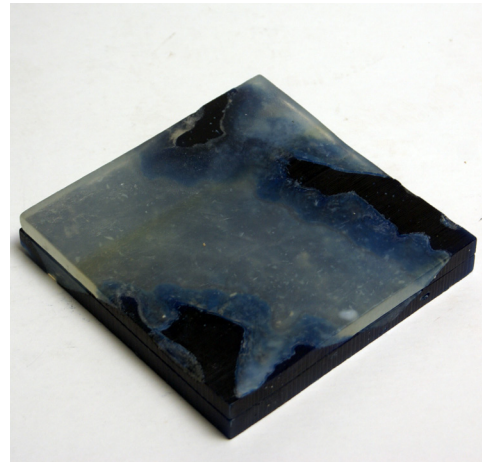
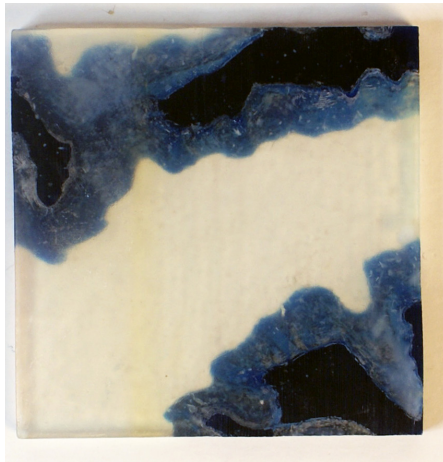




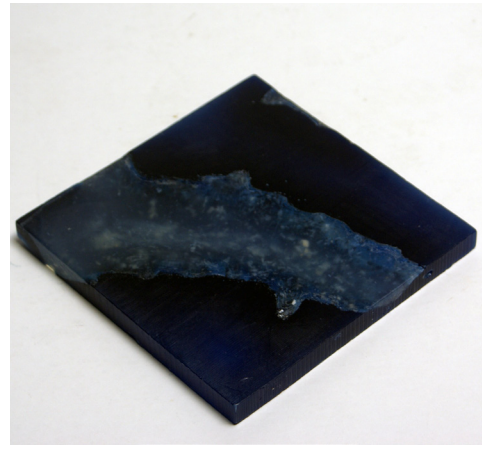
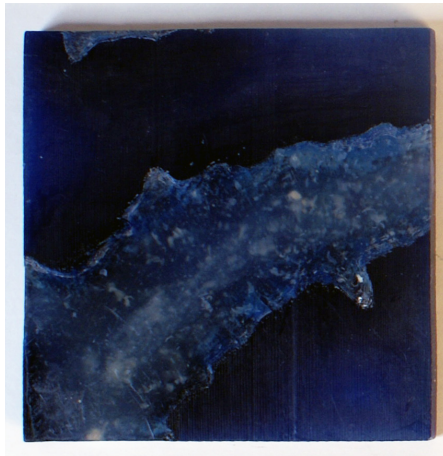
Peak



Mid Mountain

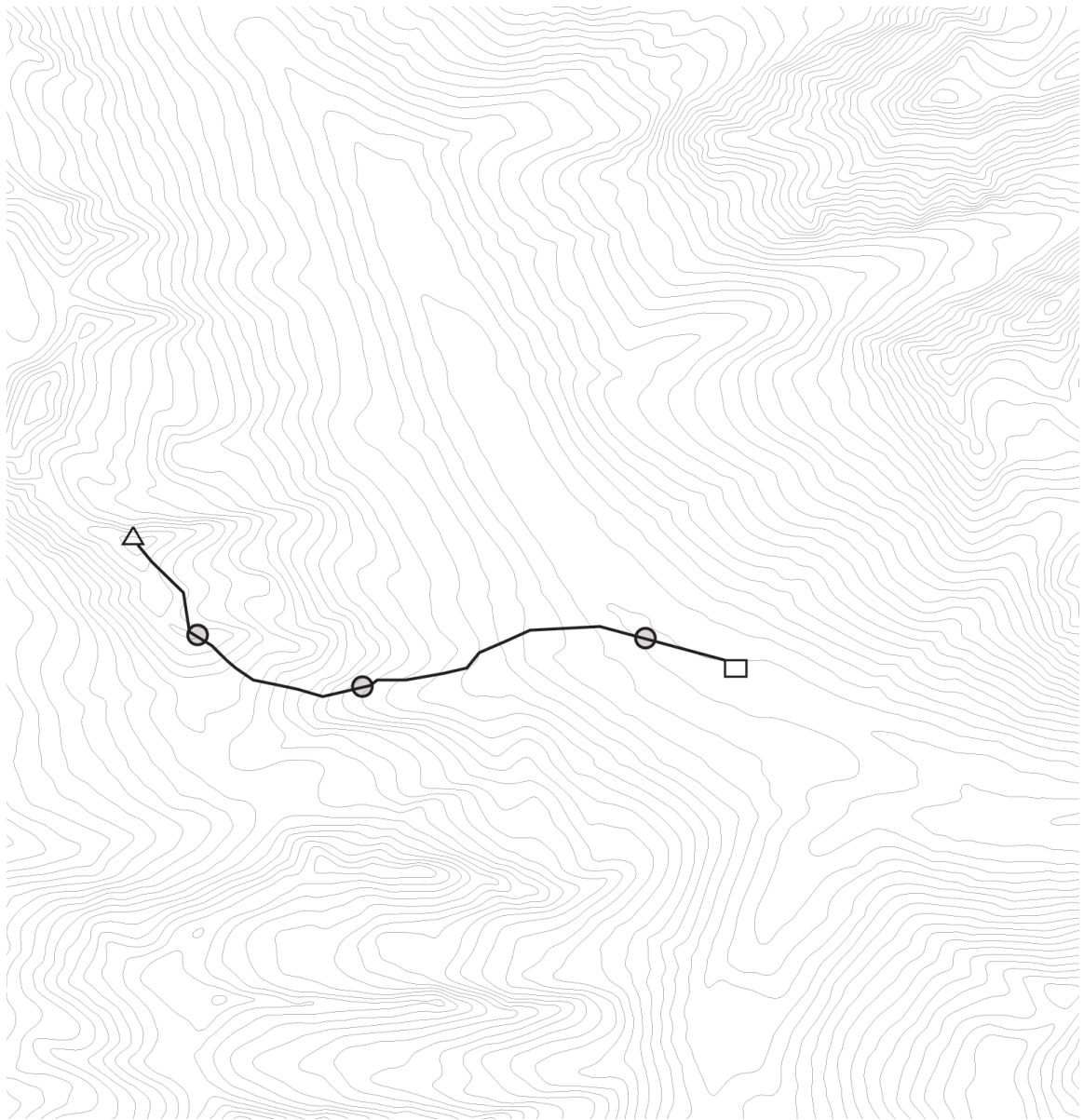


Valley



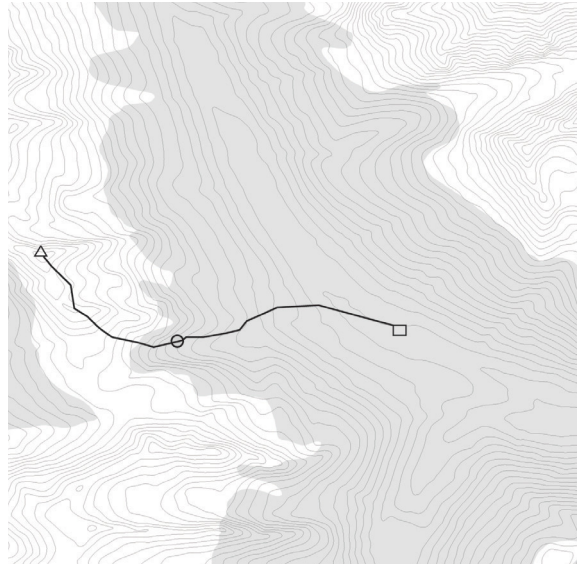
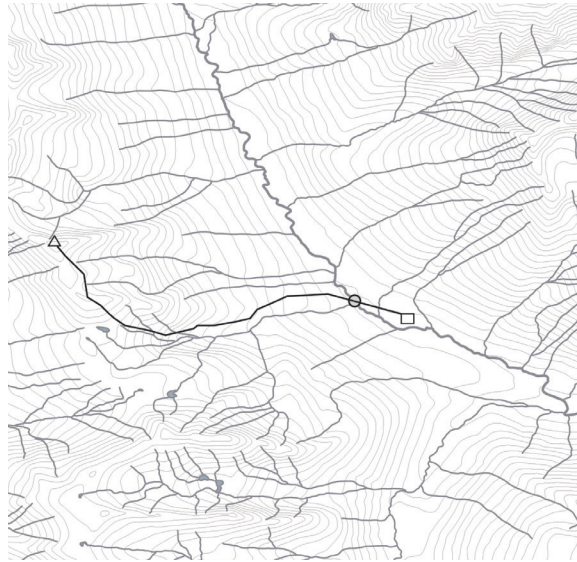
Horizontal sections through the mountain, describing the relationship between the solidity of the mountain mass in relation to the void space of the sky, and how this relationship transforms as you ascend.





- path start
- refuges
- △ peak

The path of pilgrimage from the valley to the peak, with the three refuges located along this path. Mapping Data from GeoBC.



Maps of Jumbo Creek Valley.  
Top: Locating the bridge within the watershed system Middle: Locating the hut within the forested zone Bottom: Locating the chamber on a ridge line  
Mapping Data from GeoBC.





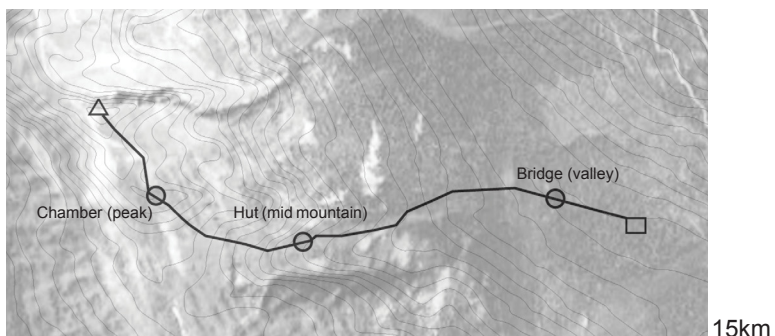
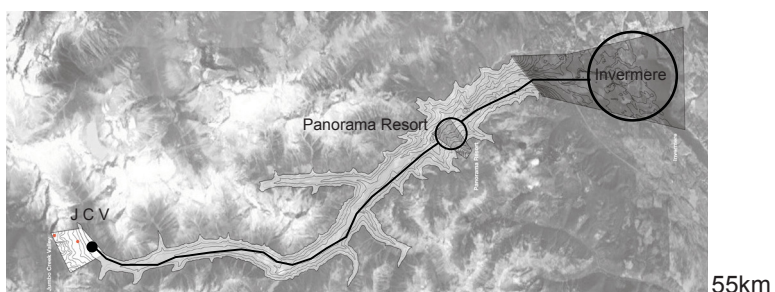
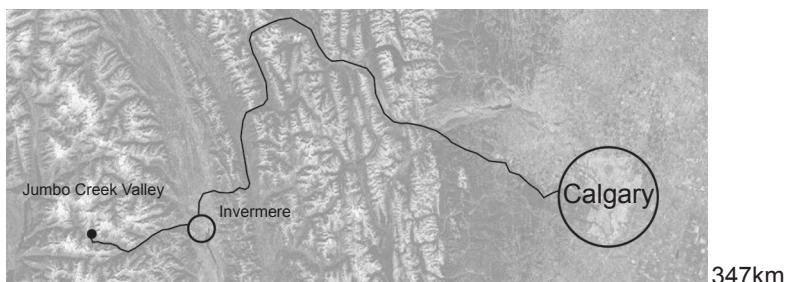
Topographical model showing the progression from Invermere to the site of Jumbo Valley.



A close up view of the three significant settlements along the valley. Top: Jumbo Valley. Middle: Panorama Village. Bottom: Invermere

### ***Scalability of the Pilgrimage***

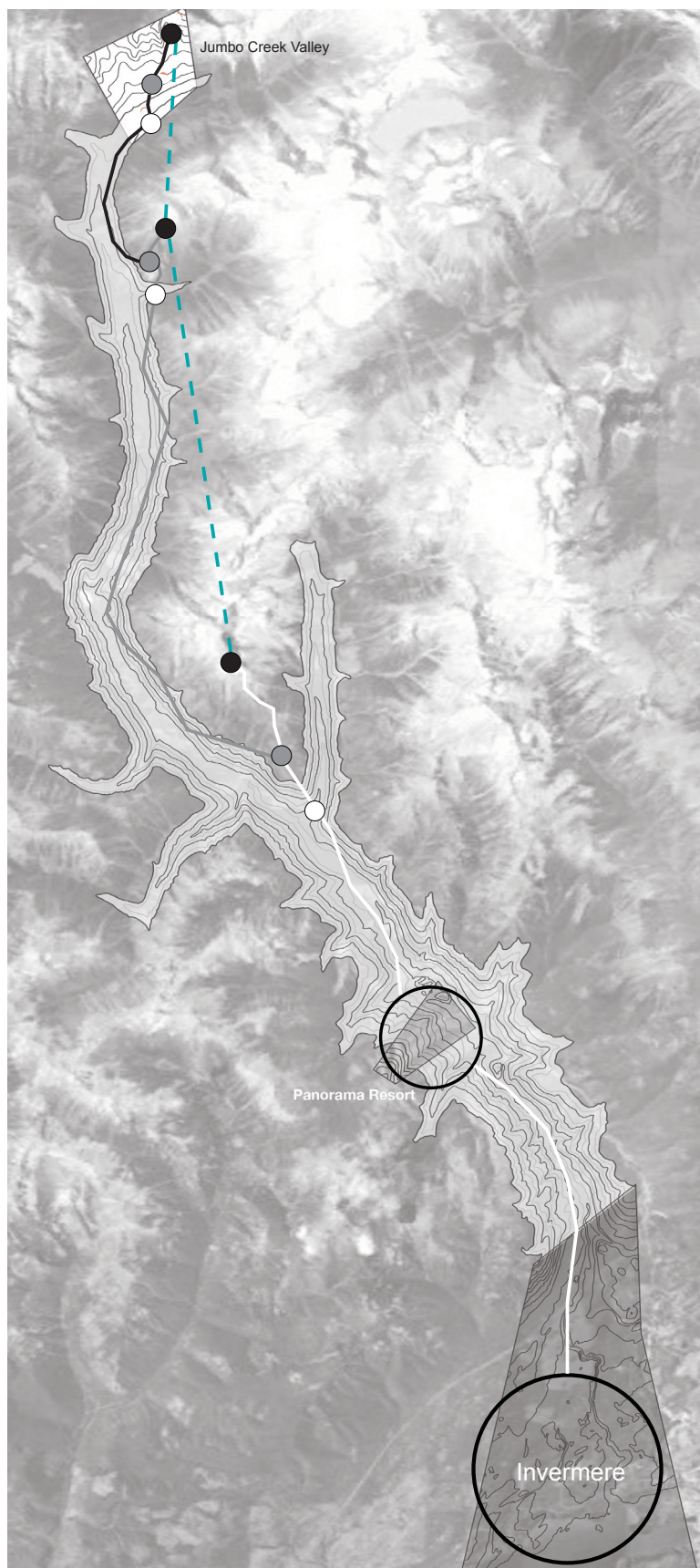
A pilgrimage is a departure from civilization to confront nature as an individual; a singular entity amid the immensity and diversity of nature. This relationship can be understood at different scales, and the distance of the traveled path can be scaled accordingly. The pilgrim must travel by foot, meaning to say that if the path is taken by car for example, the connection between the individual and nature would be lost.



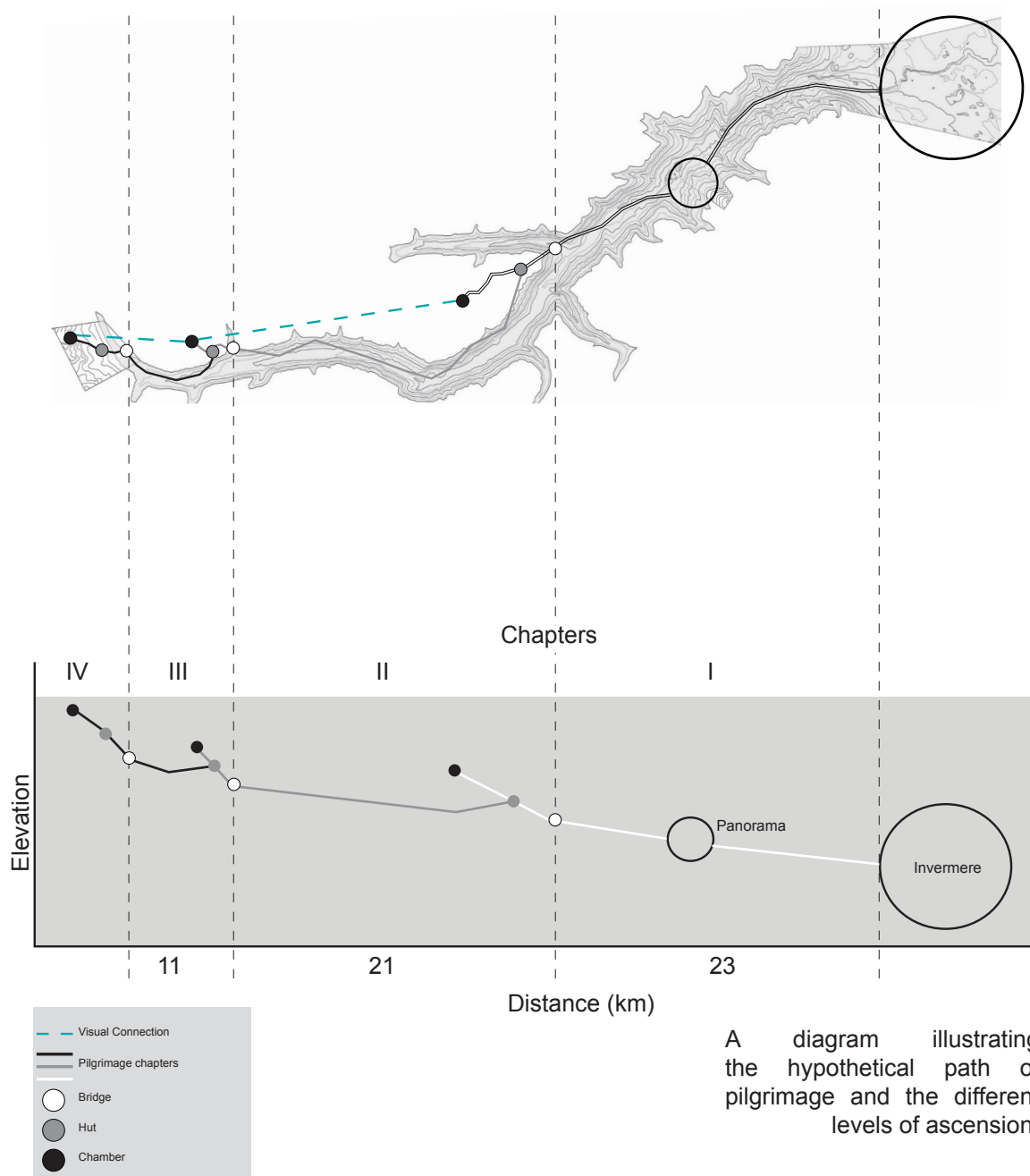
Isolation Level

Maps of differently scaled paths to Jumbo Creek Valley. Base maps from Google Maps.





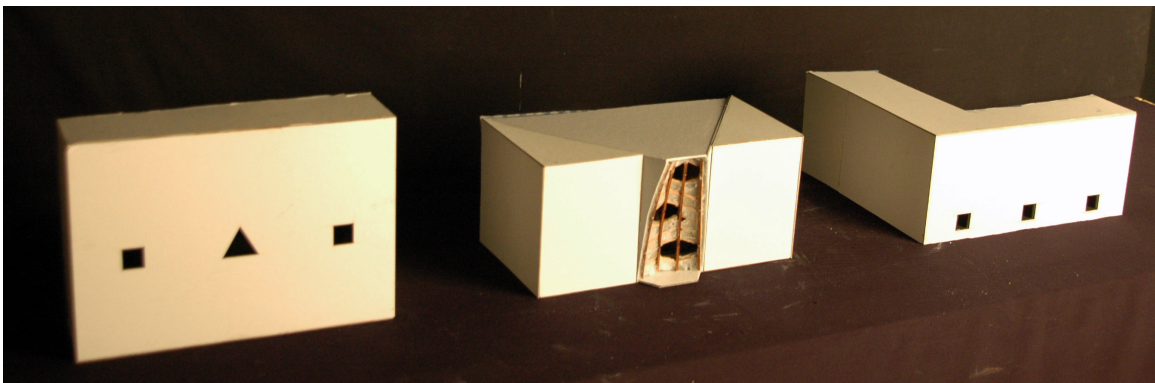
Map illustrating the hypothetical path of pilgrimage broken in to chapters, allowing for different levels of endurance.



A diagram illustrating the hypothetical path of pilgrimage and the different levels of ascension.

## *Experience*

In order to create a sense of experience within the 3 refuges, I created three dioramas that captured three moments in each. The viewing windows, or apertures, framed the landscape and created a narrative as one moved their eye from one window to the next. The dioramas were meant to create a sense of space, and to illustrate the transformative nature of the landscape.



Three dioramas. Left: Bridge. Middle: Hut. Right: Chamber. All views illustrated are through the middle window.

## The Bridge

The bridge speaks to the body and the immediacy of the act of movement. Before there were man made structures, humans relied on naturally occurring bridges to cross waterways, like a fallen tree. Within this act exists a narrative of bodily experience of walking across a fallen log over a rushing creek, describing the bodily kinetic and mechanical movements negotiating those inherent in the trunk of the fallen tree. The bridge marks the entrance of the pilgrimage.

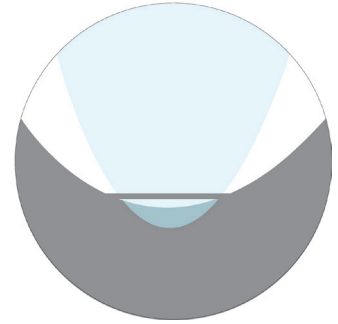
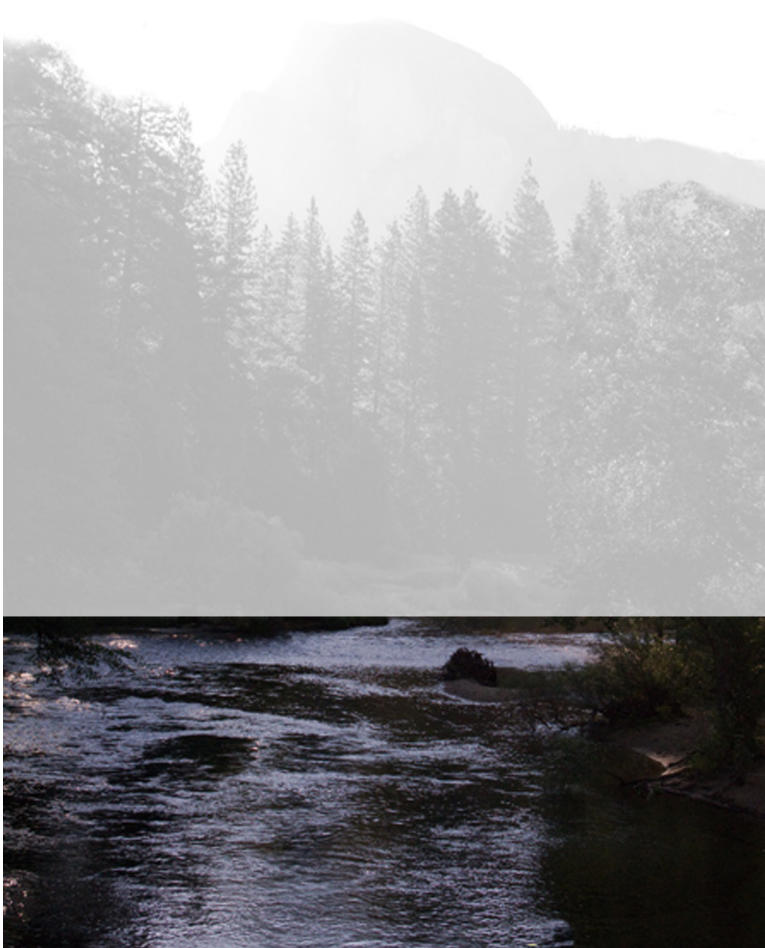


Diagram of bridge  
(see pg.42).

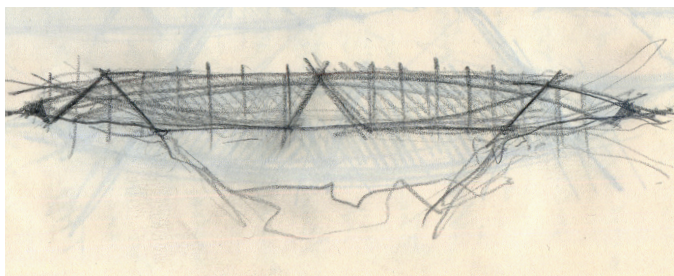
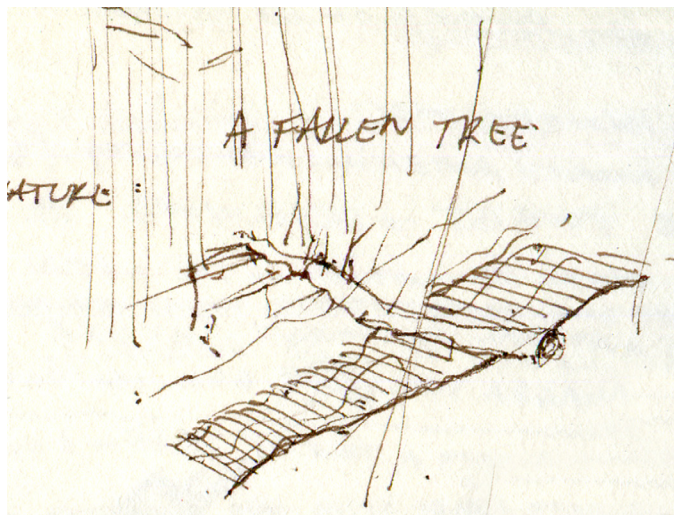


Water flowing in the river marking a low point in the valley. The first threshold of the journey.



## Primal Experience:

Knowing I want to cross, I first look for a fallen tree that can support my weight and is adequately grounded on either side. I step cautiously onto the log, testing it with my foot before I continue. Feeling the riverbank behind me, I now know that I am committed. I'm aware of my body beginning to tune itself to the log, tensing to bring us to a precise balance. When I reach the log's half-way point the danger flashes the brightest: I am too far to turn back but there is still so far to go. I'm focusing more and more on the water rushing beneath me, and less and less on the safety waiting at either end. Then, at a critical moment, my awareness rushes from the bark, through my soles, and up through my whole body. I am fully synced to the log.



A personal journal entry. April 2011

## ***Bridge Design***

This physical experience is expressed and revealed in the tectonics of the bridge and the gradual unveiling of the river, opening at its centermost point, where the water is flowing and rushing most intensely.

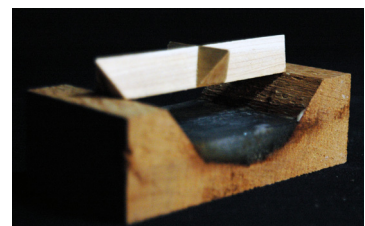
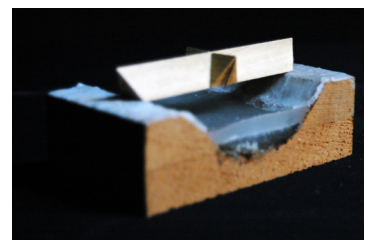
The river expresses the ground or floor of the bridge, the built form tells the story of the roof. There are no windows, only gateways or connection points between the senses and the natural context that defines that specific moment or place.

The dynamism of the river is reflected in the bridge. The water reflects light from the sun up and in to the bridge. The bridge acts to catch the sound and light from the river, and also frames the view down to the river.

## ***On Transformation***

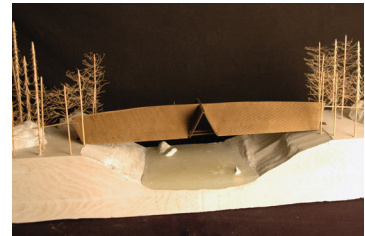
The river changes with the seasons and as a result, so does the experience of the bridge. The river breathes life into the bridge, animating it and giving it character that describes moments in place.

The spring/summer: The snow is melting in the mountains, gaining momentum as it descends. The rivers are swelling and moving fast. The bridge captures this turmoil and presents its sound and brilliant shimmering light reflecting off of the water.



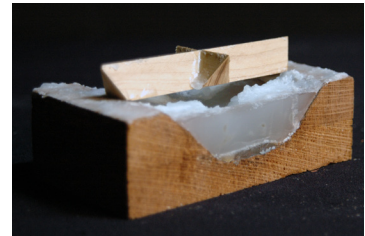
Top: model of the bridge in spring Bottom: Bridge in the summer

The fall: The water is now trickling, as the melt off of snow from the higher elevations is decreasing, and snow is beginning to accumulate once again. The water level is low, and the riverbed is more exposed. The reflections of light and sound caught by the bridge reflect these conditions.



Model of the bridge in fall

The winter: Snow and ice begin to form on the river, especially along its edges, while the water continues to flow in the centre most part. The snow reflects light into the bridge, but doesn't have the same shimmer and movement as that of flowing, dynamic water. The snow absorbs sound rather than reflecting it, so the acoustic qualities will change drastically. The bridge will feel more enclosed because the snow level is rising and closing the bridge in.



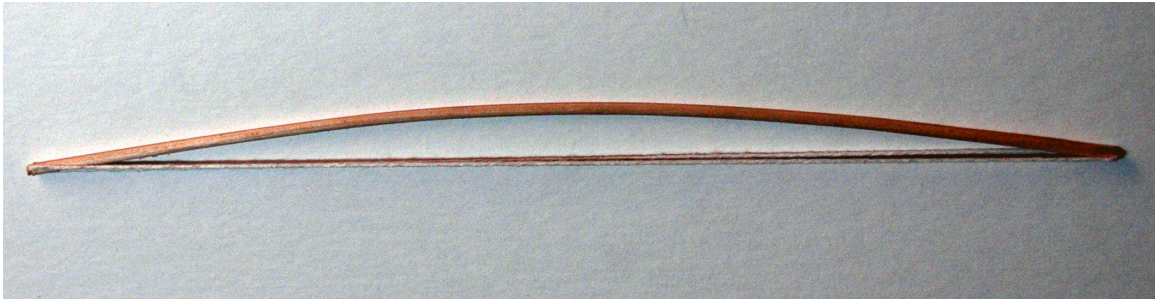
Model of the bridge in winter

Layered on top of these seasonal, cyclical conditions are the daily conditions that vary depending on the weather. For instance, on a sunny day in the summer, the bridge will feel much different than a cloudy day in the spring. The variations are seemingly endless. The bridge reveals the intersection and relationship between the physical (the mountain, humans) and the atmospheric (the sun, weather). This relationship is ever changing.

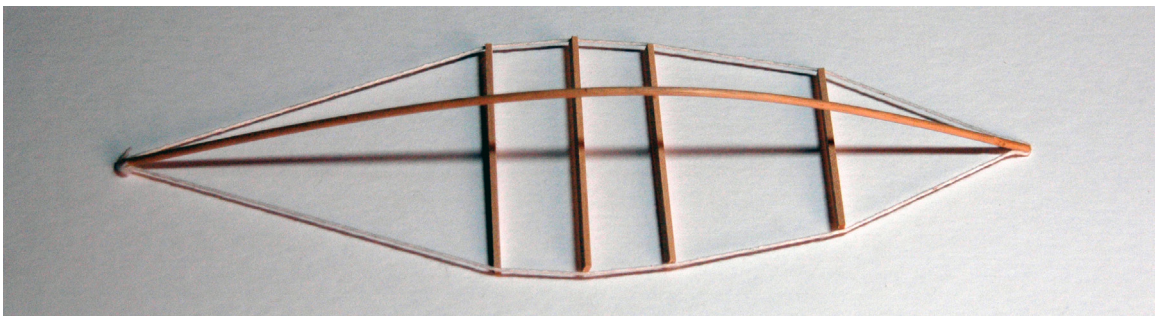
The central moment of the bridge is a resting place where the visitor can step down off of the path to sit on a hung bench, allowing for ones feet to hang above the rushing water below while viewing down the length of the river.

The foundation is de-emphasized, being reduced to 2 single point loads on either side of the river, where a compression member spans across the river to form the central spine of the bridge. To balance this moment of compression are 2 tension cables that run below.

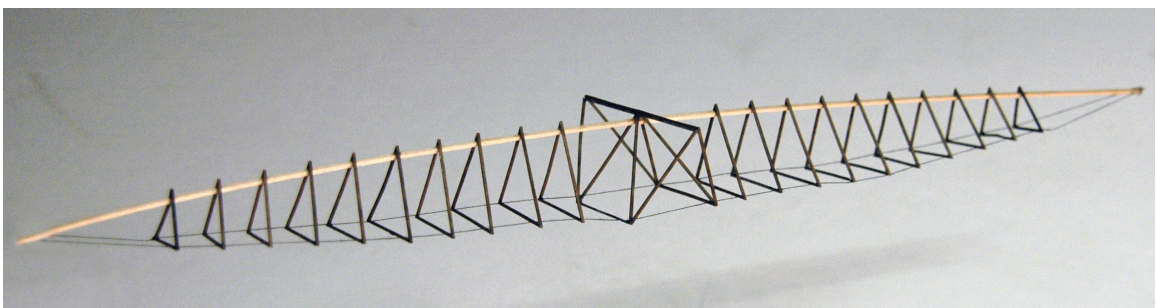
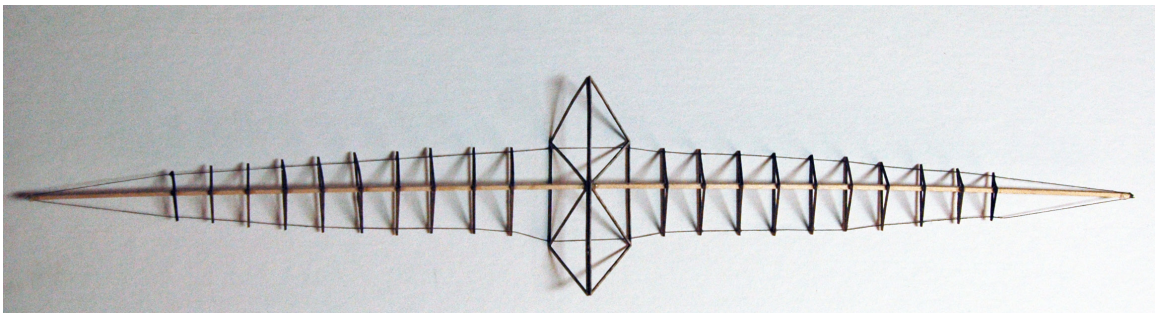


**Bridge Structural Studies**

A compressive member (wooden dowel) with two tension cables (strings) joined at either end.

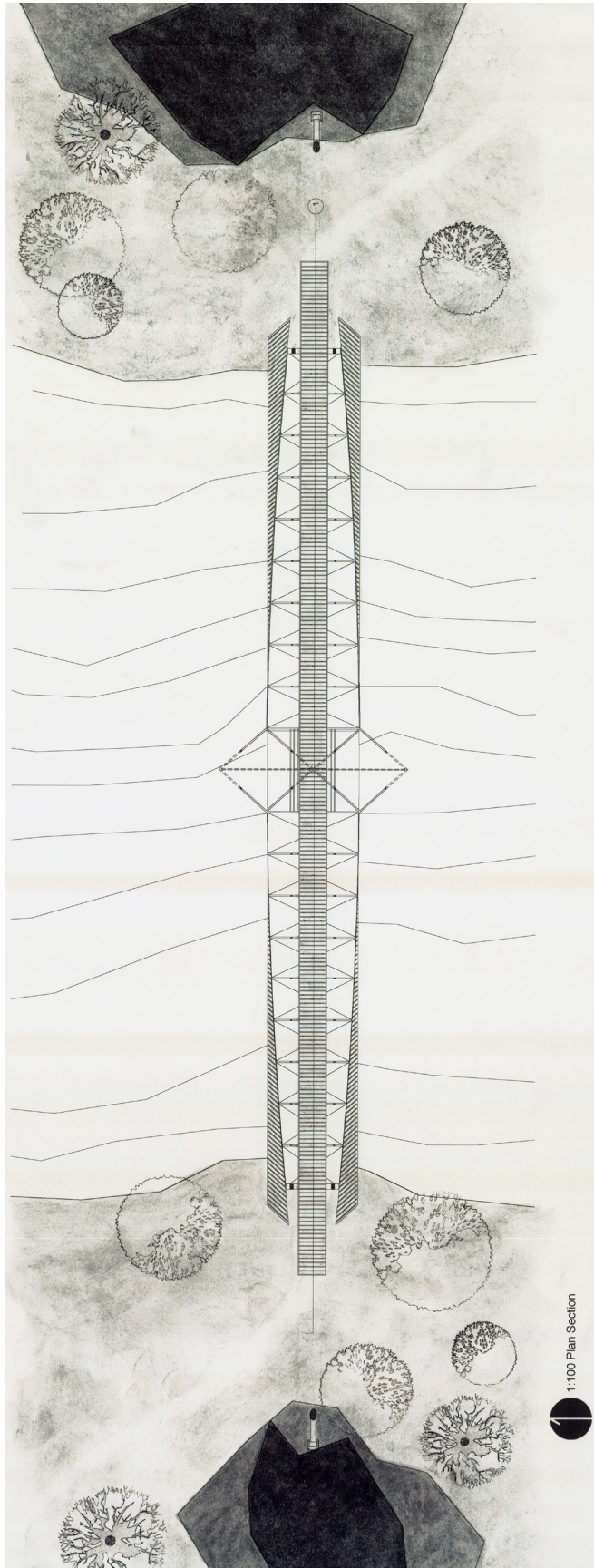


The model put in to tension and compression using wooden cross members between the two tension cables

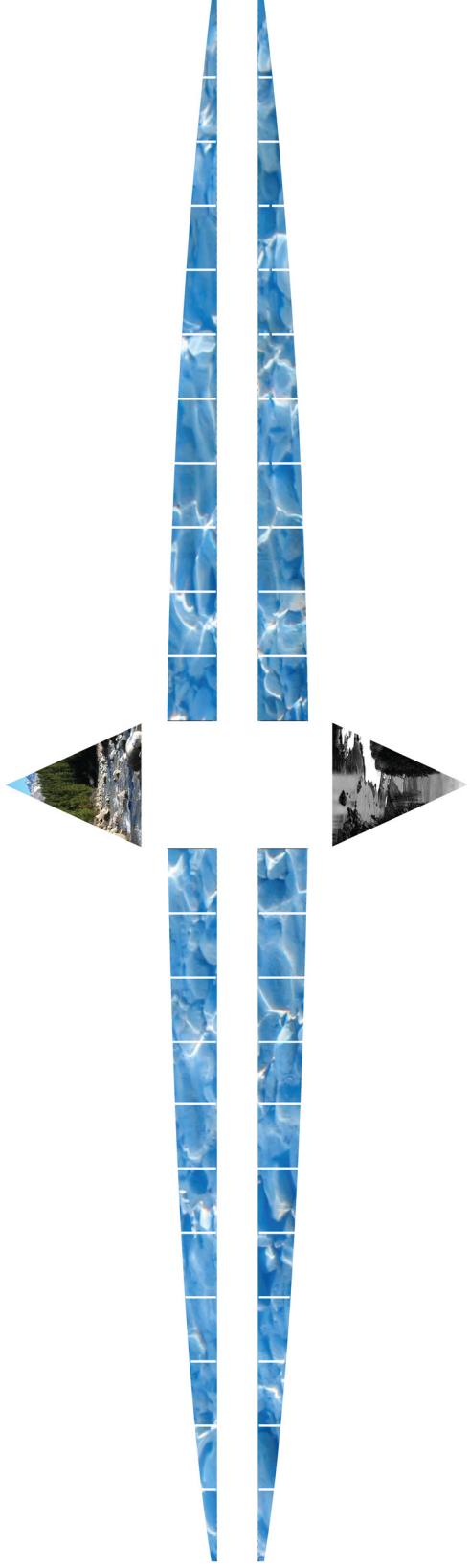
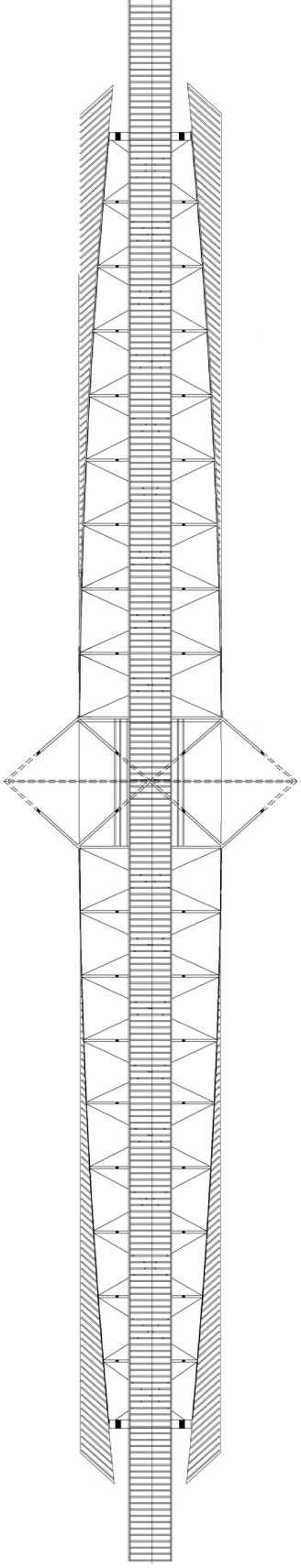


A model describing the structural idea for the bridge.

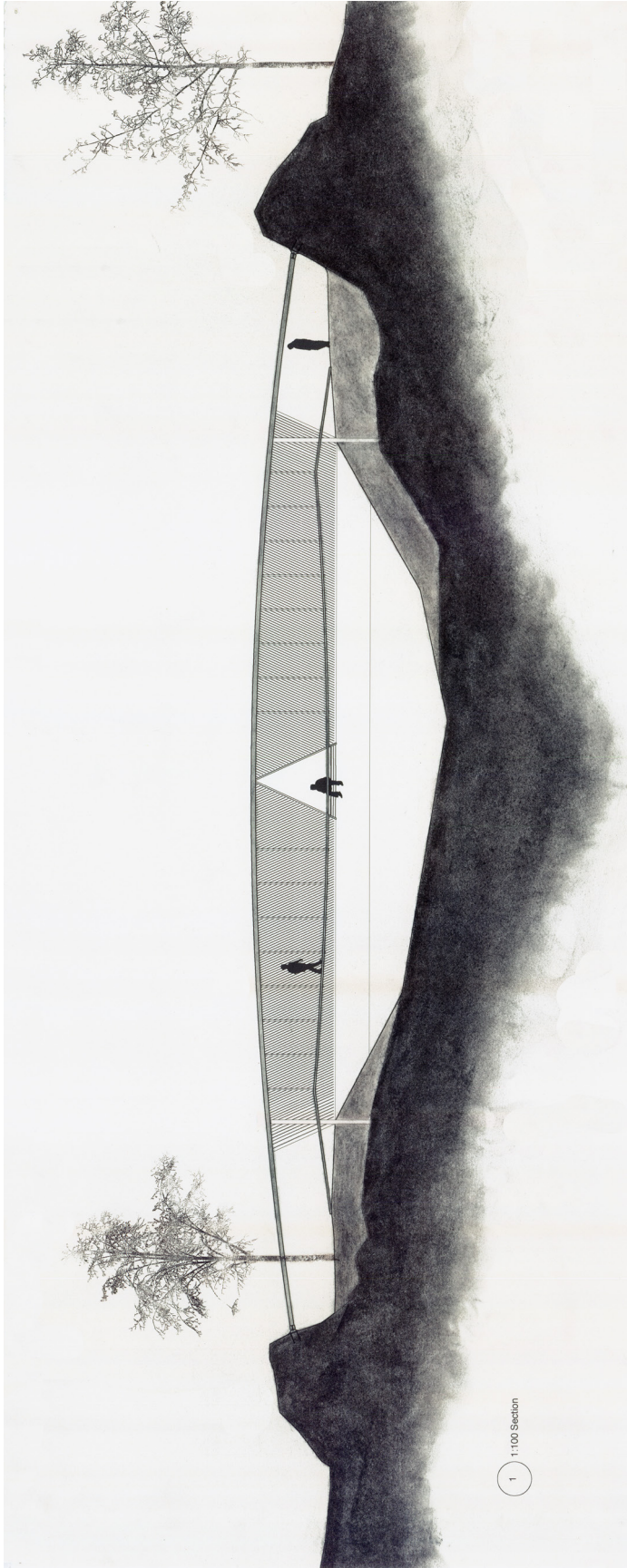




Bridge plan

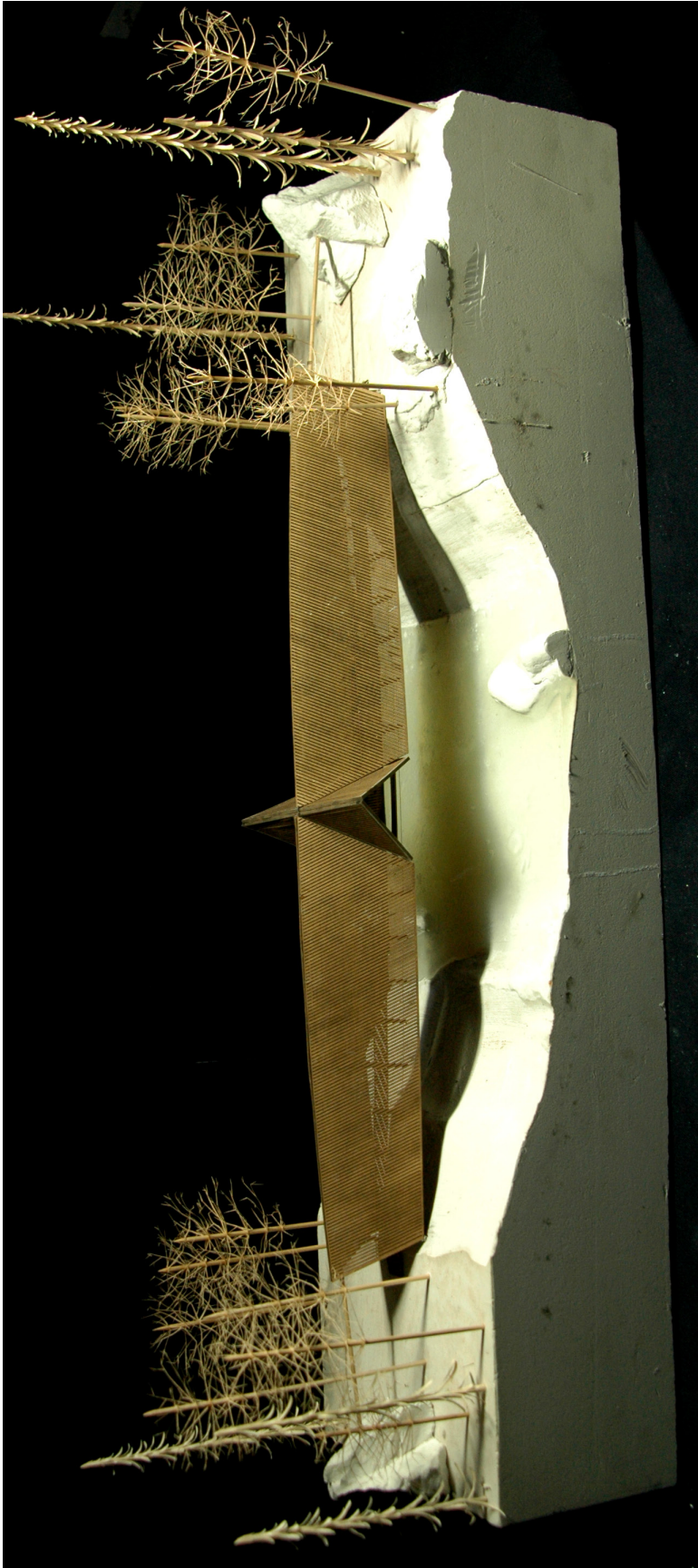


The structure and cladding are a framing device acting to reveal the sensual qualities of the river. 59



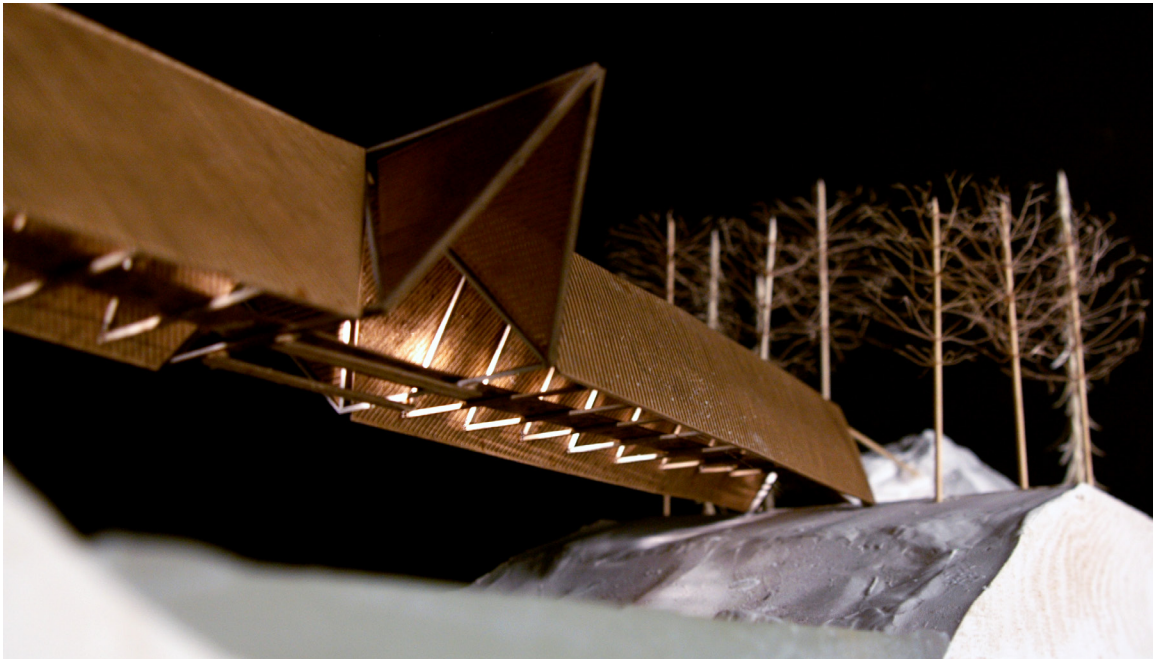
Bridge section



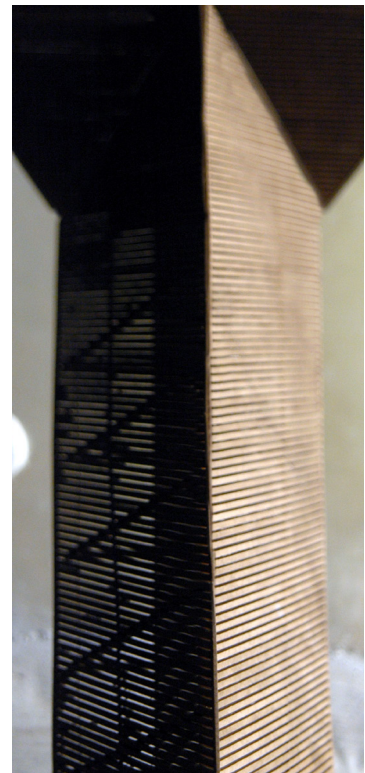


Bridge model

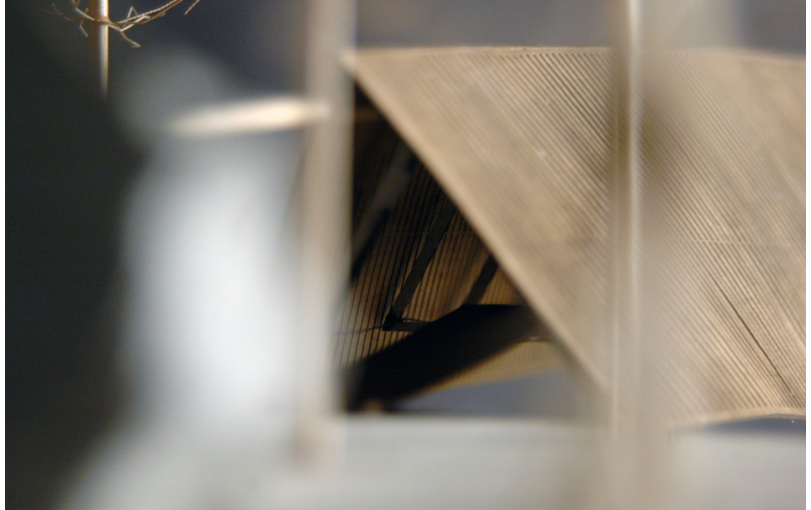




View of model from river looking up, showing the reflection of light off of the water and in to the bridge.



Cladding detail



Bridge entrance



Bridge structure

## The Hut

The hut speaks to the mind. Our mind represents our capacity for thought, reflection, identity, and control. We seek a place of dwelling for rest, comfort, sustenance, and to gather as a people. We reinforce our moral values through speech amongst kindred.

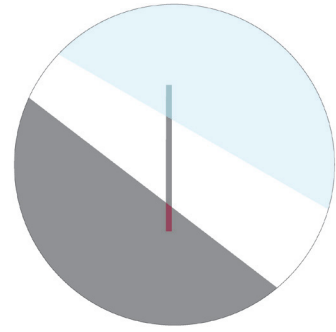
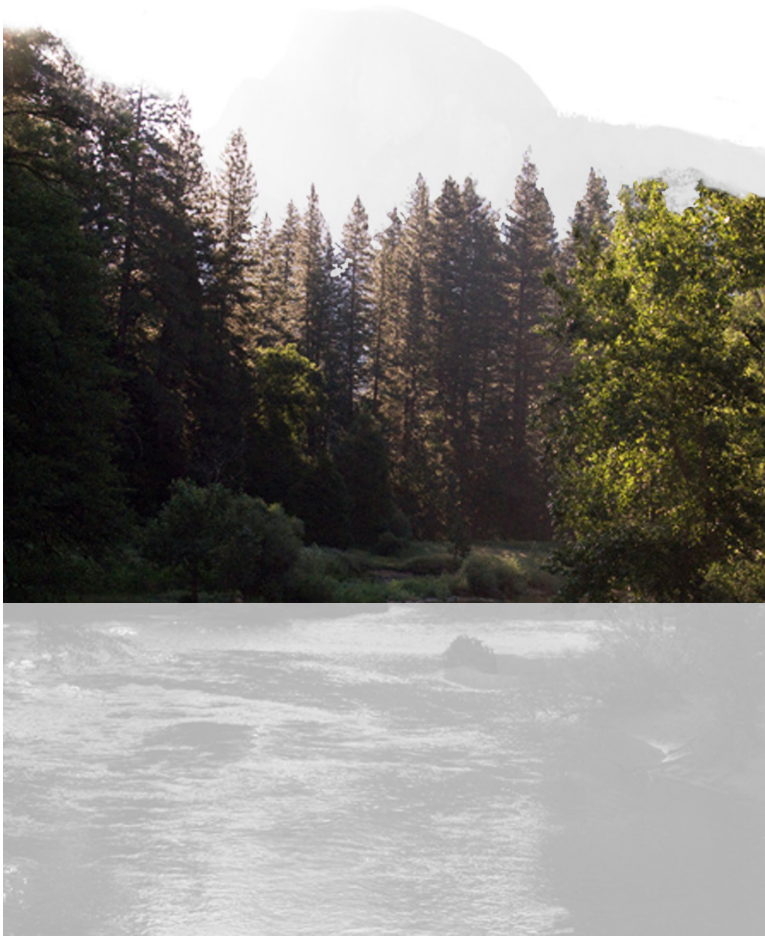


Diagram of hut.  
Red represents fire  
(see pg.42).



The forest region where the hut finds its site.

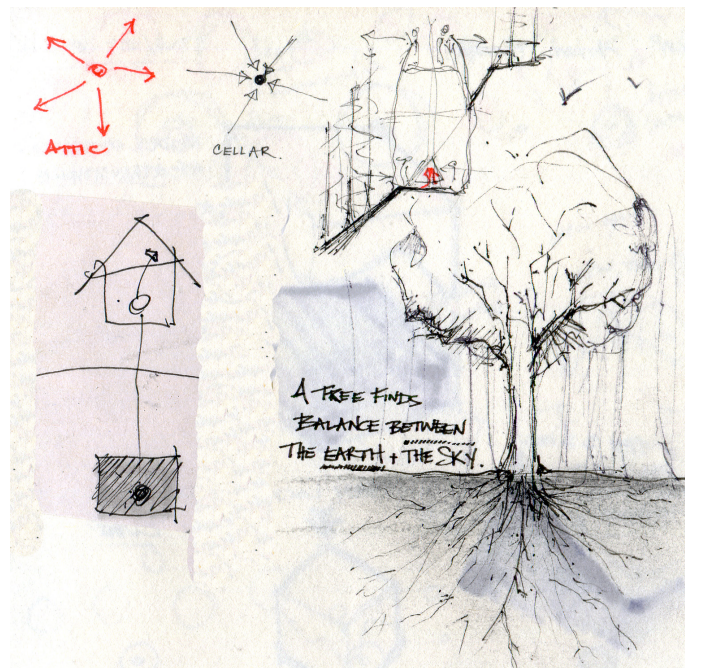


## Primal Experience:

I am contained by the forest. Though my path and my ultimate destination are both obscured by the trees before me, with every step they reveal a little more. Little glimmers fall from the thick canopy to light up the shadowy floor, while the slight rustling above punctuates the still air below. I feel protected.

Still, I'd like to see beyond the endless green and recognize the opportunity to re-enact a vital activity of my childhood. I look for the tallest, sturdiest tree and begin my ascent. My feet negotiate with every branch, and as the light gets brighter and the wind stronger, a view out of the forest begins to open and I can catch glimpses of the mountains and valleys beyond the canopy. I start to feel more and more exposed and when I reach the top the tree starts to sway with my weight and the wind; I appreciate the roots. Now I can spy the valley I took to reach the base and can also see that I have a long ways to go. At this moment I can comprehend my presence within the mass of this mountain.

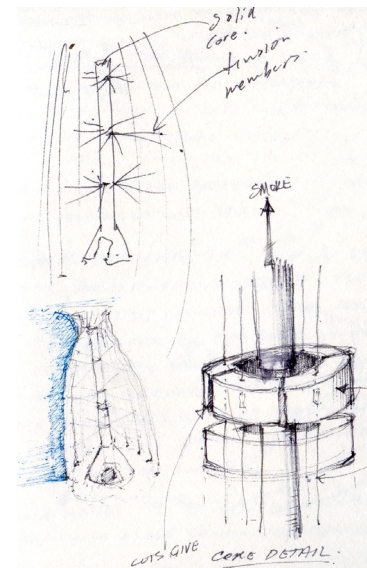
Once I climb back down the tree and continue my ascent up the mountain, I notice that the trees are becoming shorter, sparser, and more gnarled. The forest is receding, giving way to ridged rock and a perspective interrupted only by the monolithic stone mass of the mountain. Here the trees can neither take root nor withstand the elements. And here I walk to reach a sky that they can no longer touch. - Personal Journal Entry



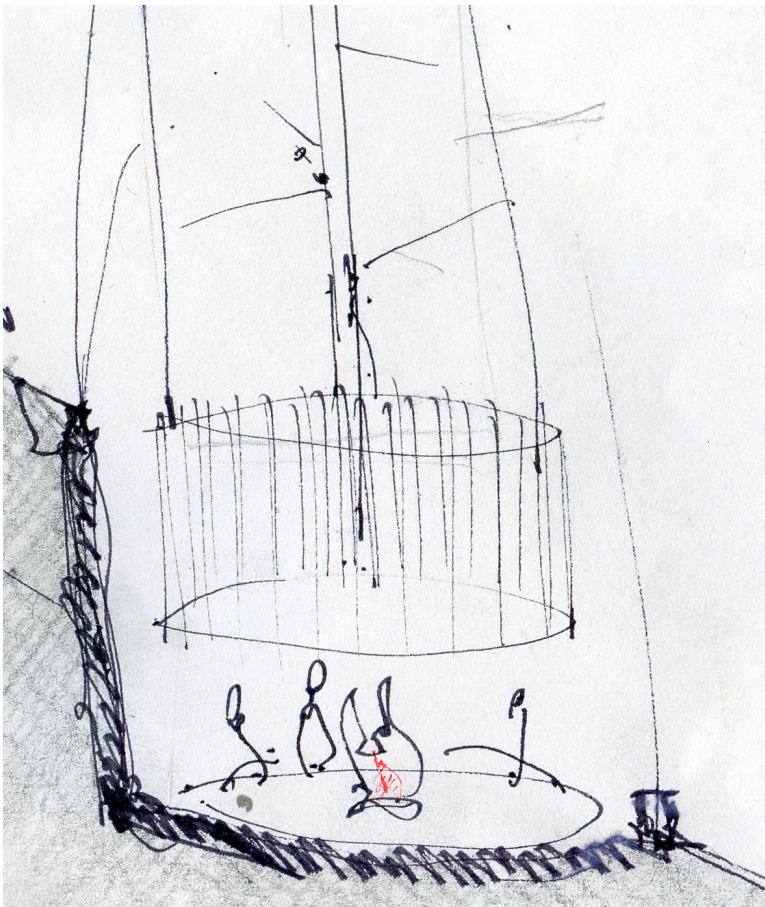
A personal journal entry. April 2011



At the core of the hut is the hearth that facilitates the fire. Much like Semper describes, the fire is the moral element which all other elements revolve around and protect. It is around the fire that we gather to speak our thoughts and minds, to form bonds, to tell stories. We speak of the past, present, and future. It is here that we as a people formulate our moral beliefs. The fire is also where we prepare our meals in order to replenish our bodies. It provides us with warmth, a place that we can find enough comfort for sleep. On a mountain, a fire is essential for sustaining and developing our being. Like a tree, the hut is balanced between the earth and the sky. The moral implications of this are that a dwelling must foster the development of the body, mind, and spirit equally.



Initial sketch of the central core of the hut.



A sketch of a gathering space located at the base of the hut, centering around the fire.

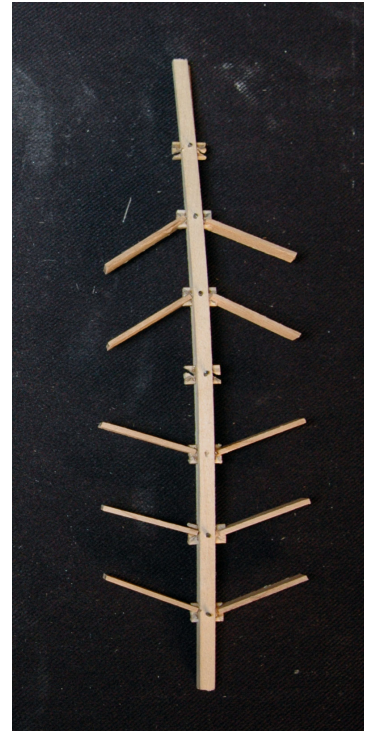
*Hut Structure and Cladding Studies*



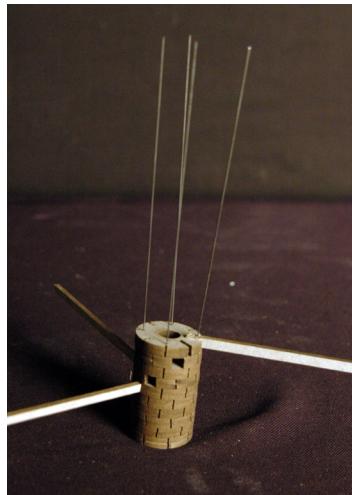
A cladding study model



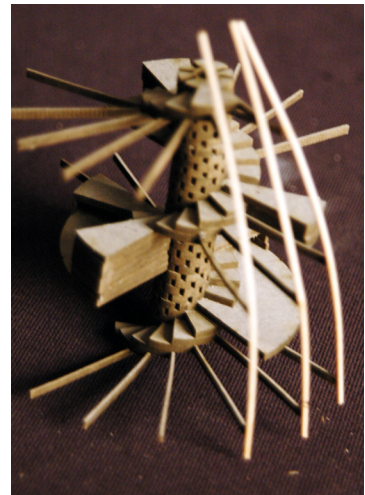
Cladding model in the winter



Louvre connection detail

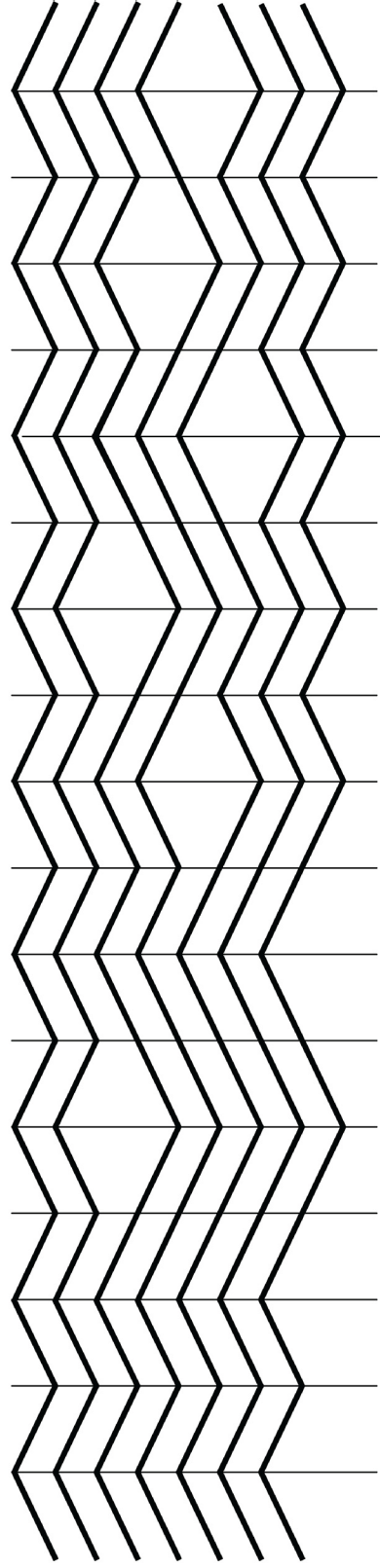


Central core study model

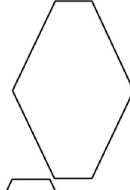
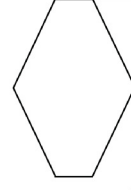
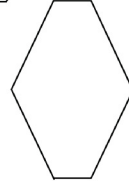
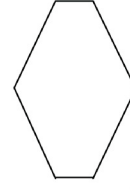
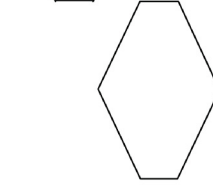
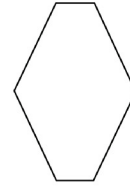


Cladding and structure working in unison

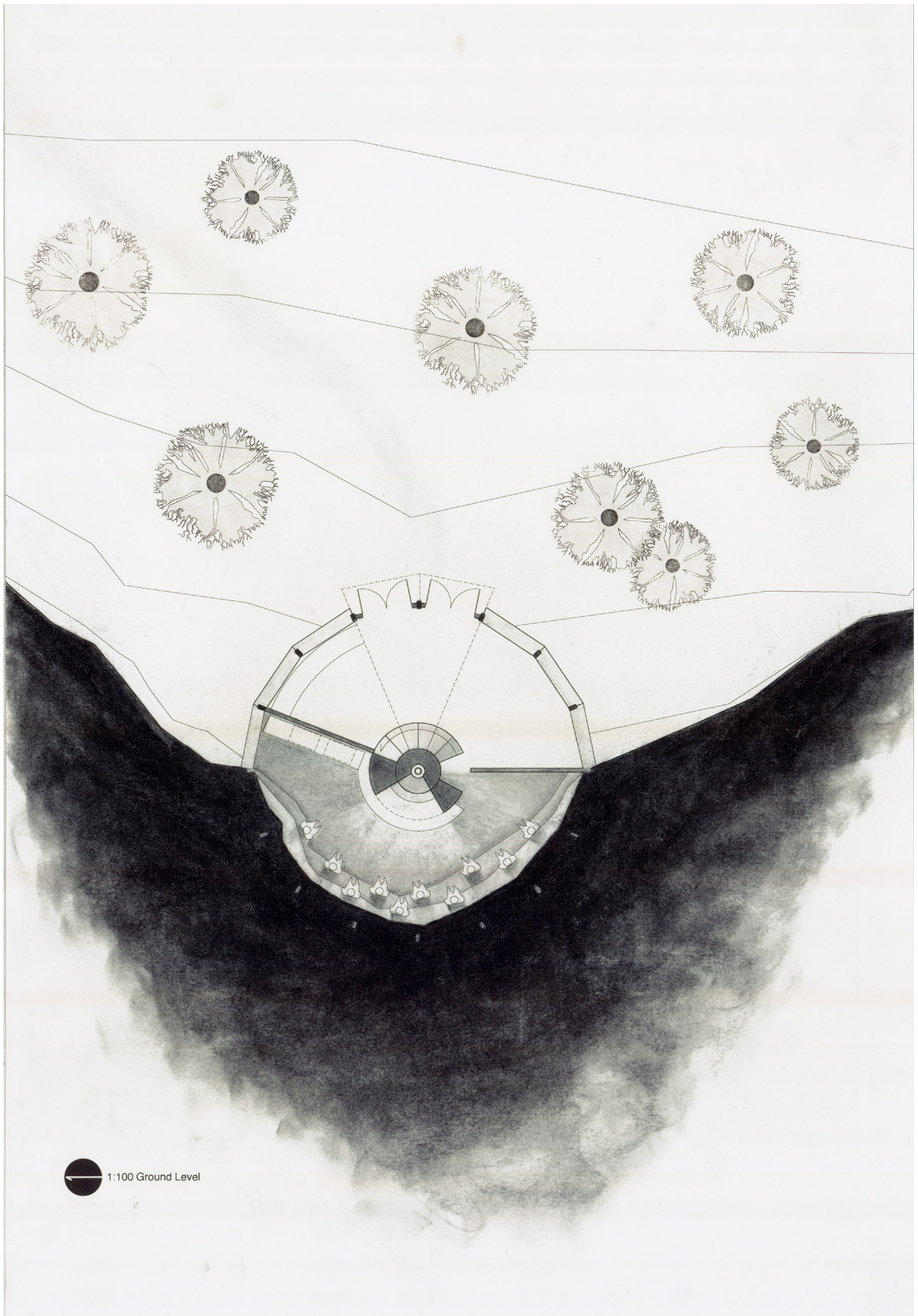




Summer

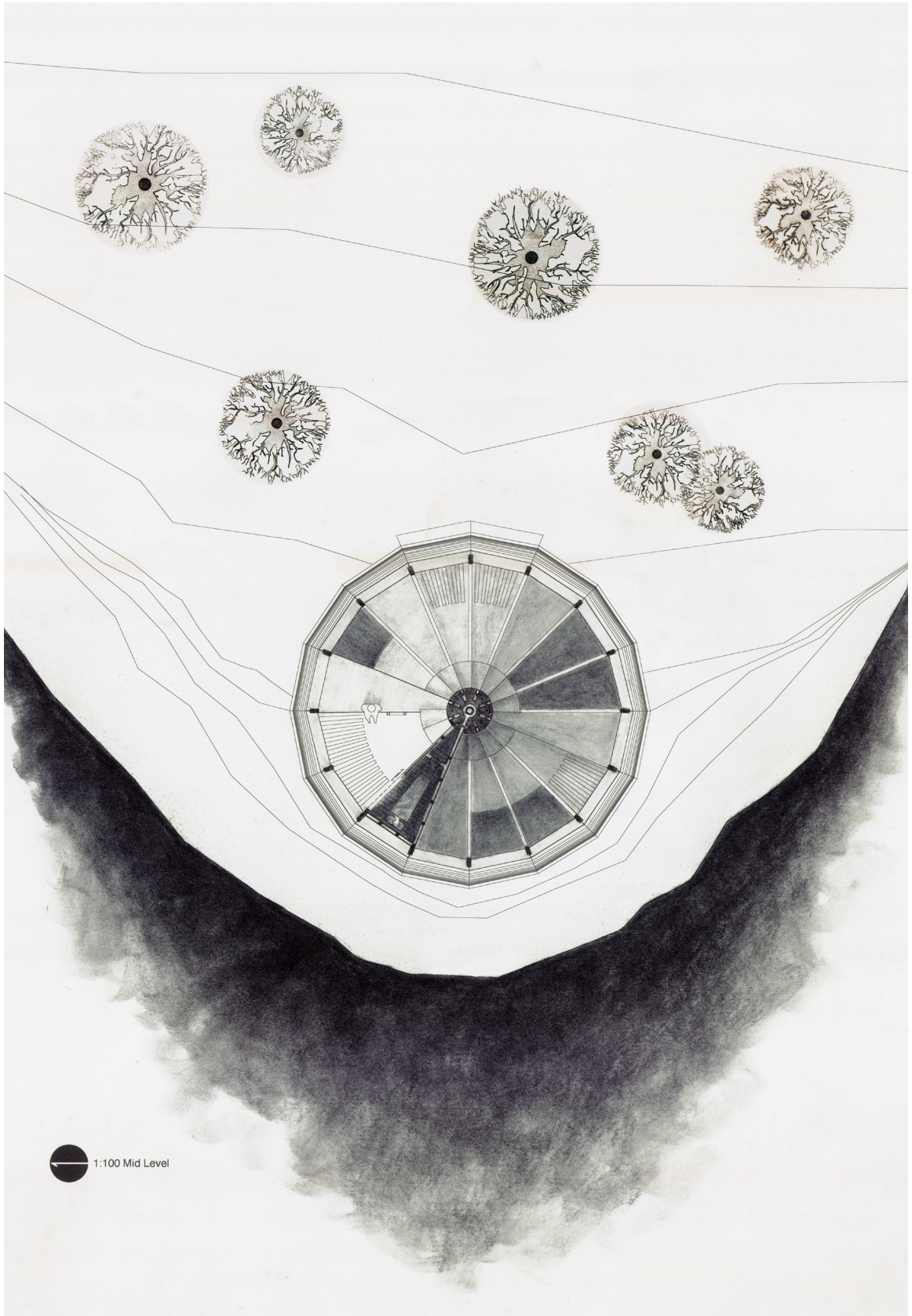


Winter



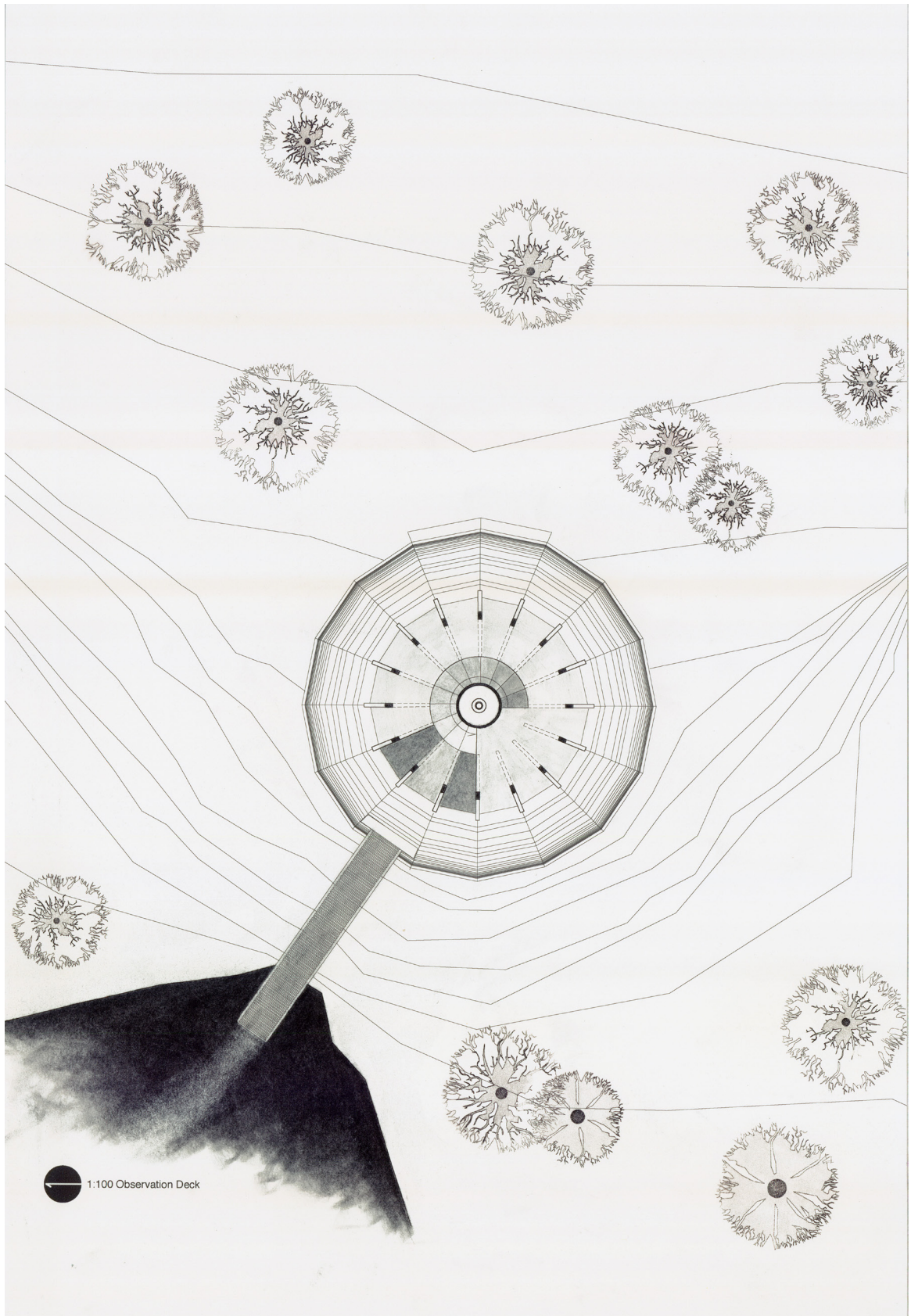
Hut communal area (ground floor) plan





Hut sleeping quarters (mid level) plan





Hut observation deck (top level) plan



1:100 Section

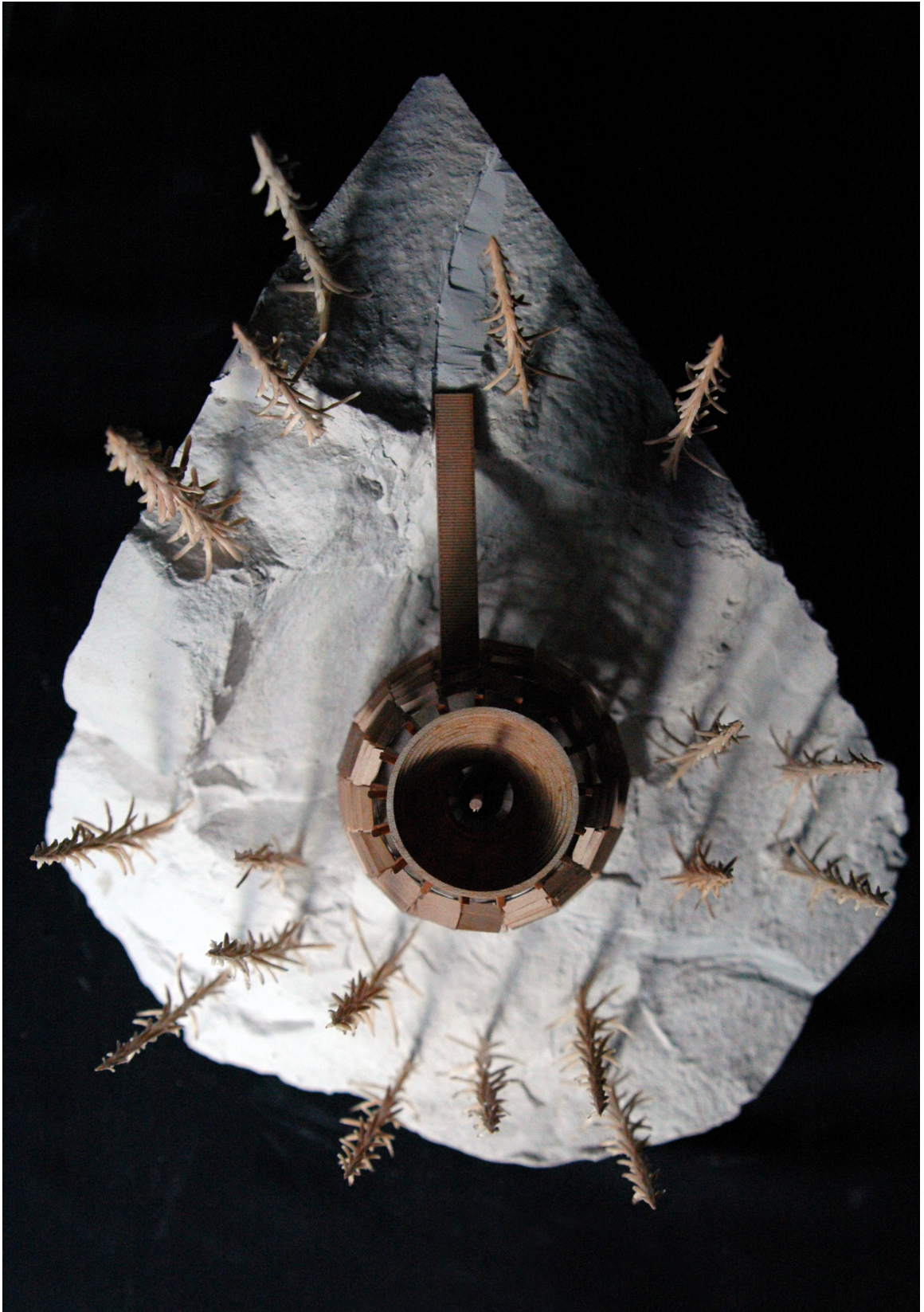
Hut section





Hut model



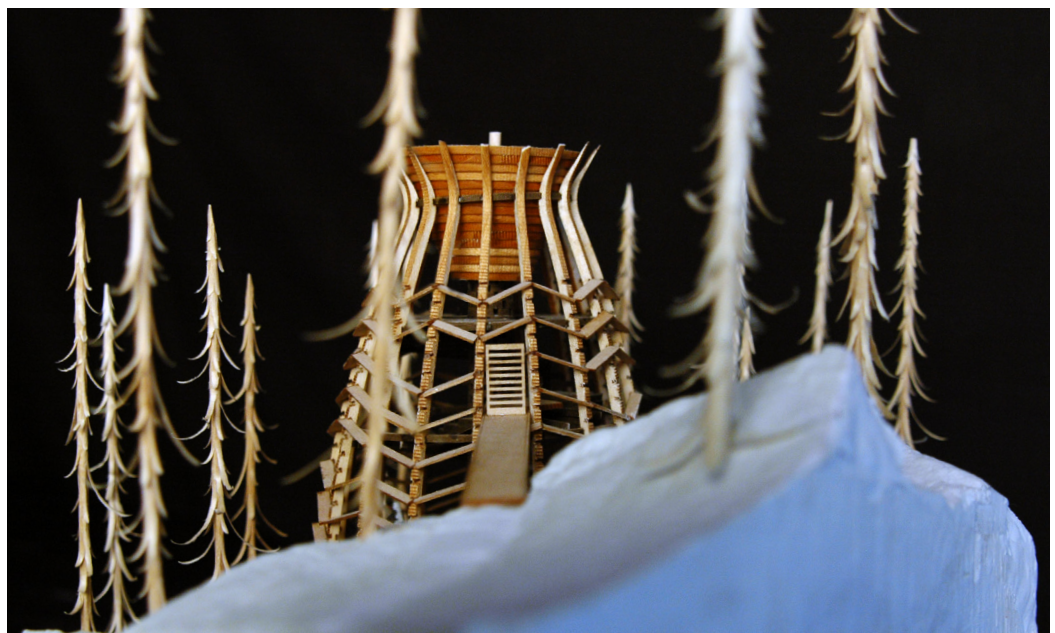


Plan view of hut model





Approach from below

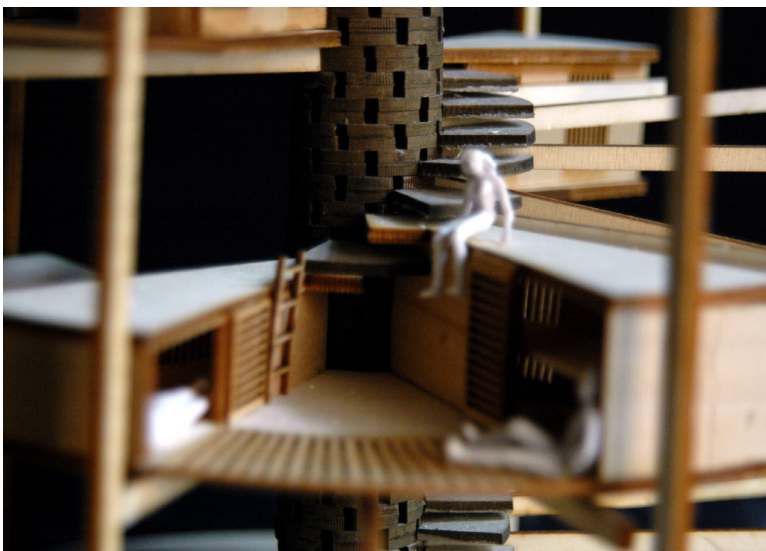


Approach from above





Observation deck



Living and sleeping quarters



1:50 scale model showing interior spaces



### ***On Transformation***

The roots of a tree grow to anchor itself against the forces such as wind and snow. These are its foundations. A hut in the forest must find its anchor in the same way. A tree that is at the bottom of a mountain is shaped much differently than a tree that borders on the upper alpine region. The trees that form the timberline are usually stunted, and its shape indicates the prevailing winds. Its roots take much longer to find their way through the stone to grab hold. Although it is not obvious, the roots are reflected in the shape of the tree above it.

The hut uses these same principles in dealing with atmospheric forces. The shape and penetrability of the hut depends on its siting on the mountain. If the hut is in the thick forest closer to the mountain valley where the soil is thicker and the surrounding forest provides protection from the elements, the hut walls will be more porous and open, and the structure will be taller. If the hut is sited in the upper reaches of the mountain, its siting will be more deliberate and the walls will be less penetrable (see pg.60). The hut is a negotiation between the earth and the sky. The ground condition transforms as the mountain rises into the air, going from primarily soil to primarily stone. This will inevitably effect the nature of the foundations.

The façade articulates the seasonal changes of nature and reveals the nature of its site. Like a tree, the façade collects snow in the winter, filling in the open spaces and making the hut more contained and impervious. This snow acts as a blanket that creates an insulative layer that counters the forces of nature. In the summer when the snow melts away, the façade acts as a shade that helps keep the hut cool, and allows for wind to pass through (see pg. 61).

The façade can be calibrated to react to the nature of its site. In an exposed environment, a tree might only grow branches on the leeward side of its trunk in order to counteract the forces of wind and the weight of snow, leaving the hard surface of the trunk to deflect the wind away from its body. The snow might collect only on the side where the wind has been broken.

The hut will occupy a vertical dimension, much like the trees surrounding it. At the base, or 'root' of the hut will be the hearth where there will be a place of gathering. This is where those who are occupying the hut will find warmth, sustenance, and comfort. It is also in the most insulated zone of the forest, where the canopy of the surrounding trees is at its thickest. As you move vertically, there will be places to sleep moving radially upwards along the central chimney stack. At the very top of the hut, the 'attic' will be a place of viewing the surrounding landscape, a place to survey, understand the state of the weather before taking the next chapter of the journey up the mountain.



View of model

## The Chamber

The peak refuge speaks to the spirit.

Like the temples, shrines, chapels, mosques, and monasteries that are placed on mountains and other high places around the world, there is a fundamental connection between the peak of the mountain, and the human spirit. It speaks to the mystery of our existence.

At the peak of the mountain through the stone that elevates you can sense the vast geologic age of our earth (day) in relation to the eternal expanse of the cosmos (night).

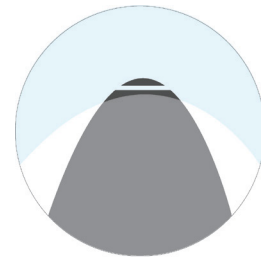


Diagram of chamber  
(see pg.42)



The peak, the highest elevated region within the mountains



### **Primal Experience:**

I realize that I am at the mercy of the full force of the natural elements here in the upper reaches of the mountain, stripped of the protection of the forest. This is an austere, un-earthly land where most living things would not be expected to prevail; a few stoic and opportunistic shrubs hunker in the stone's lee. The snow is sharp and sparkling in the bright sun, pulled by the wind over the bones of the mountain. Wincing at the glare, I close my eyes and listen: where once the air whispered through branches and leaves, here the gale finds its hard, unrelenting voice in stone. My words are torn from my mouth and hurled, unheard, into the expanse. Opening my eyes again, I realize that I am immersed in the sky. The harsh sun above tells me exactly what time it is: I need to seek shelter.

I enter a cave and my sun-blasted eyes stumble into the new dark. My ears, buffeted mercilessly a moment before, ring with silence. However, I can sense the shape and proximity of the space even with my senses in shock. Now my words echo with the hardness of the walls; indeed every sound seems to reverberate amplified. When my fingertips brush the cool, damp, roughness of the stone I can think of nothing else. At some point I turn back and light starts to bleed back into my irises. Colour and detail creep back into my vision. I follow the source of light, stepping out of the aperture. The wind flies from the sky and makes everything real, from the enduring stone, to the snow that collects, shifts, and dances at its touch.



A personal journal entry. April 2011

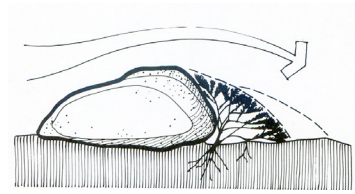
Firstly, the site of the 'viewing' and 'sensing' chambers must be chosen very carefully, taking in to consideration all the various factors such as wind and sun exposure, snow accumulation, avalanche risk, and views. Like the stunted shrubs that hunker down behind stones to find reprieve from the blowing wind and snow, this refuge must be opportunistic in finding its place. At the peak of a mountain, the sky is hard to ignore. The primary material is stone, and the space created will offer an experience that speaks to the sensual characteristics of stone and what it means to inhabit stone. The secondary material will be steel and wood in the articulation of connections and hapticity.

Mountains are formed through the pushing and pulling of continental plates, and the stone of the mountain has been thrust upward through immense force. The manipulation and use of stone must take this geologic process into consideration. The strata of the stone, its position relative to the larger body of the mountain, and its form must be carefully considered.

Stone is a material that can be manipulated to take on a variety of shapes and textures. In its unaltered state, it is rough because of its gradual degradation due to atmospheric forces. If it is cut and polished, it can take on an extremely soft, smooth texture, and mirror like finish.



Cut and polished limestone from a quarry in the Rocky Mountains

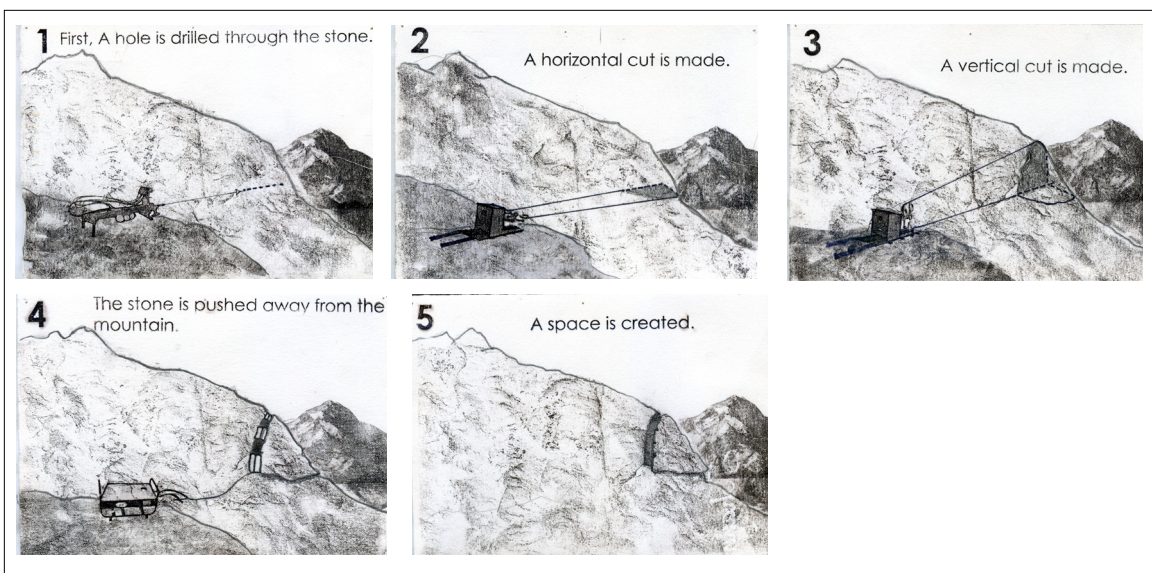


A shrub grows in the leeward side of a stone. living organisms must be opportunistic in a hostile environment such as that of the alpine region of the mountains. From Dorward 1990.

## Cutting Process

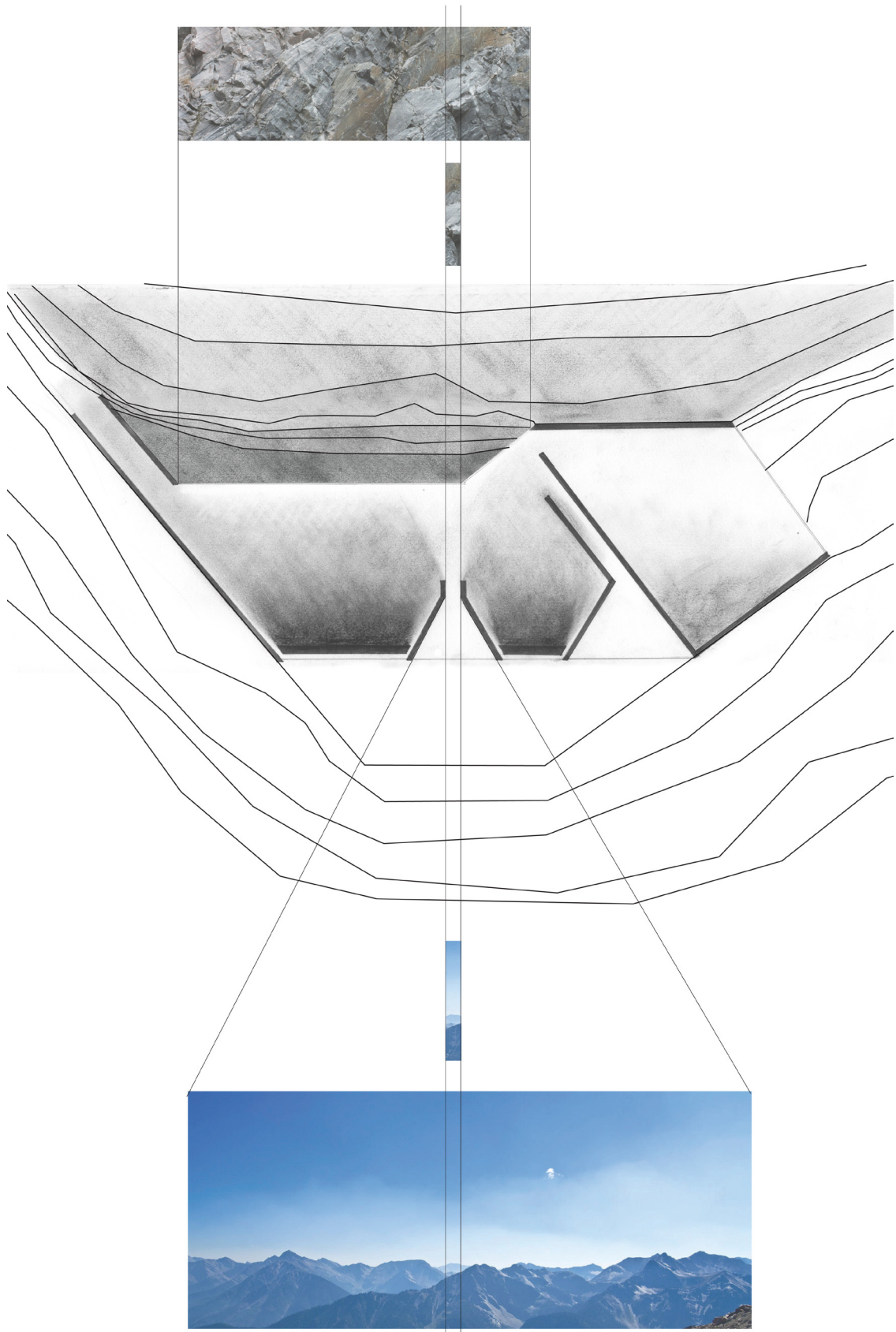


Model of stone saw in action

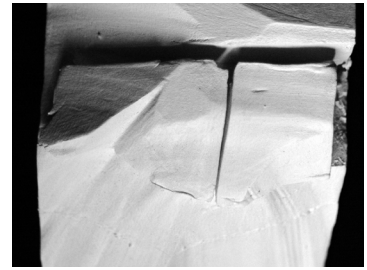
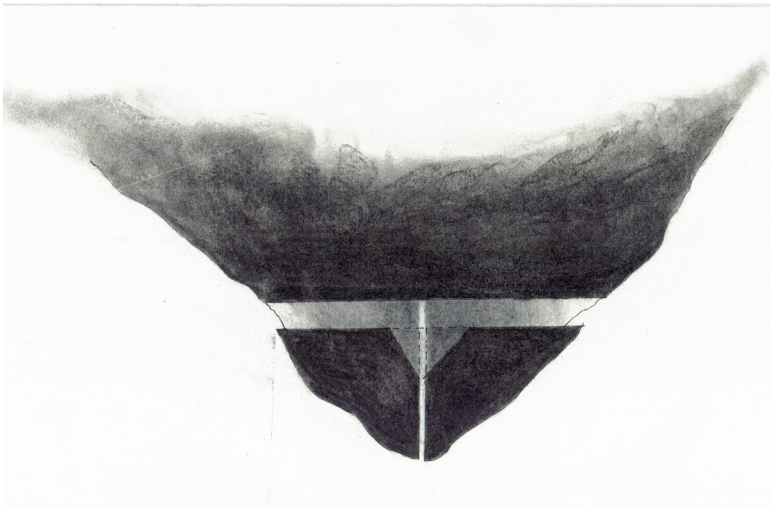


A narrative describing the creation process

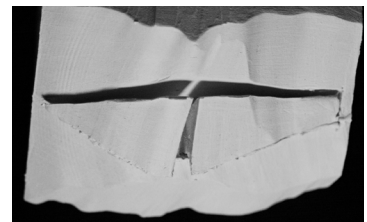
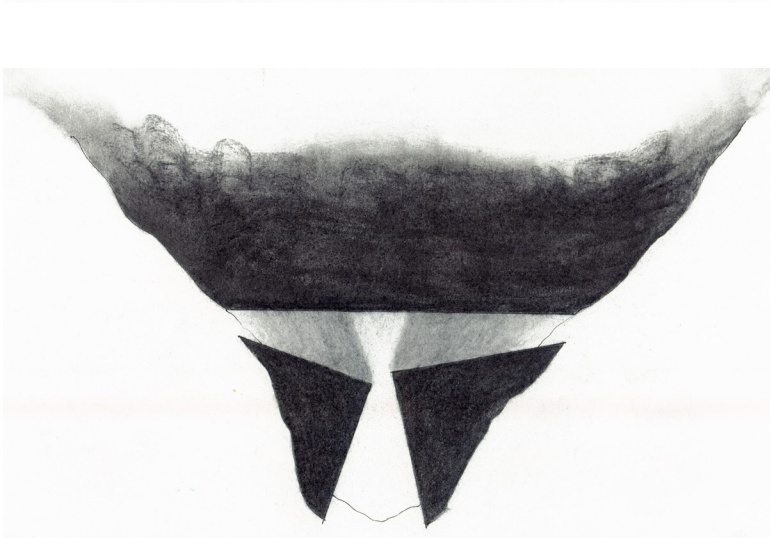




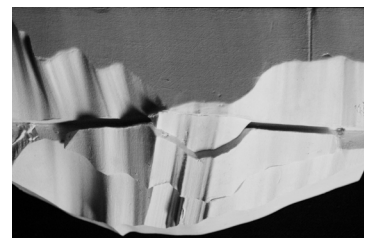
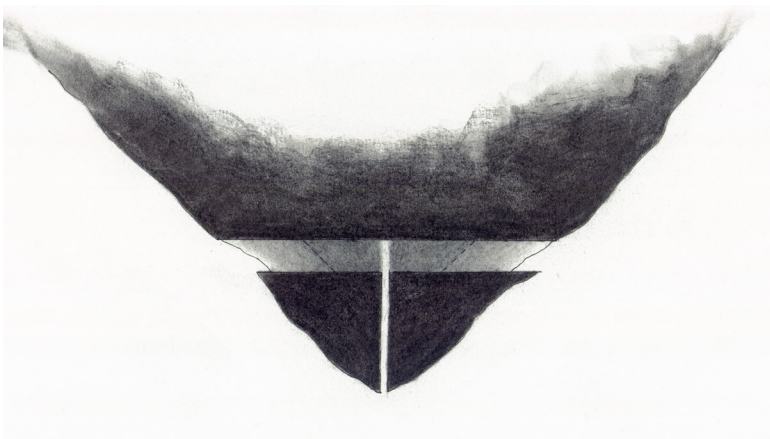
Initial ideas for spatial and experiential qualities of the peak refuge.



Modeled Chamber with inner room

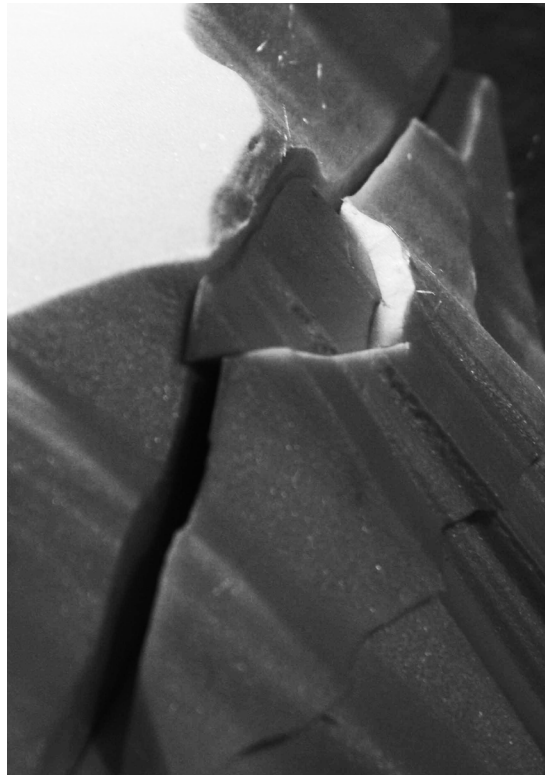


Modeled Chamber with outer room



Modeled Chamber with roof

Three plan section variations of the chamber



Modeled chamber with roof, showing the cut path through the stone.

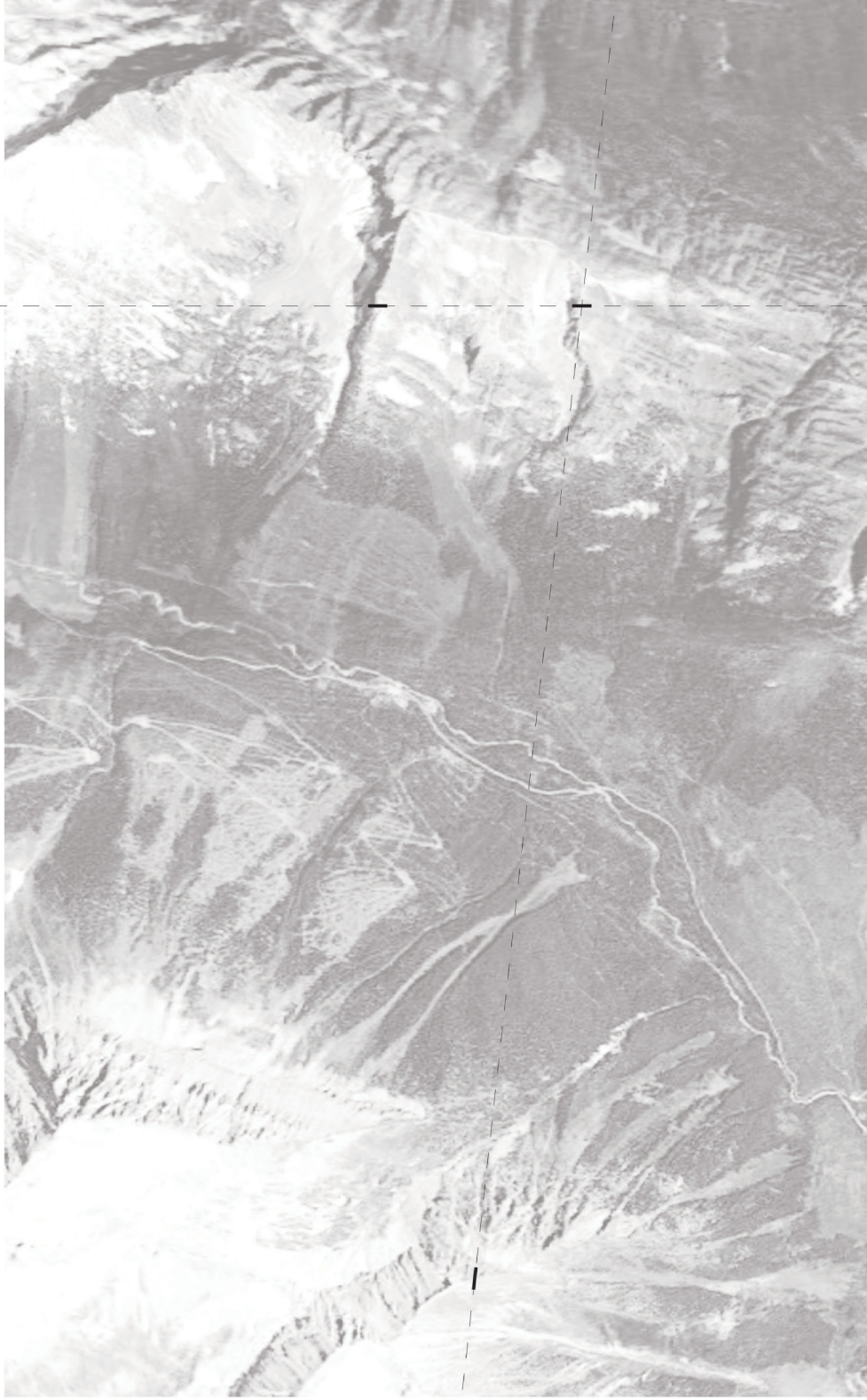




Model of the chamber cut from a plaster mass cast from stone



A view showing scale



Hypothetical siting of the chambers. Base map from Google Maps.

Stone is hard and reflective, and emits a sense of permanence. It tells a story of time that dates back before the existence of man.

Located within the rock, the experience is of the sky; the incorporeal.

During the day the sky is always different, the clouds taking on different shapes, filtering the sun in different ways.

At night the sky reveals to us a universe of expansive magnitude. Unlike the daytime sky, the nighttime sky reveals distant stars that are unchanging. We can depend on seeing the Milky Way, and all the constellations. These things are as dependable as the rising and setting of the sun. We can look to the stars to locate ourselves within the greater context of the universe. The peak speaks to the existential and metaphysical, drawing from its close contact with the cosmos: the expanse beyond earth.

### ***On Transformation***

The sun has a cyclical pattern that effects the seasons, the course of the day, and determines the cycles of all living organisms. The quality of space within the chamber is largely dependant on light and shadow, so it is important that it is oriented and calibrated to the sun. In this way, the chamber will define itself differently throughout the seasons.

Outside of the chamber, the snow is in constant motion at the peak because of the unrelenting wind and the absence of trees and vegetation. Snow is both deposited and swept away by the wind. A small intervention such as a thicket fence can have an enormous effect on how the snow takes shape. This principle can be used to define the path leading to each chamber.





The mountain is the meeting point between the sky and the earth. Although the sky is not as physically perceivable as the earth, it is an equally complex and diverse landscape. Its definition is largely left up to your imagination.

## Chapter 3: Conclusion

In difficult moments, you'll often surprise yourself talking to the mountain, sometimes flattering it, sometimes insulting it, sometimes promising, sometimes threatening. And you'll imagine that the mountain answers, as if you had said the right words by speaking gently, by humbling yourself. Don't despise yourself for this, don't feel ashamed of behaving like those men our social scientists call primitives and animals. Just keep in mind when you recall these moments later that your dialogue with nature was only the outward image of a dialogue with yourself. (Daumal 2004,107).

The mountain is a landscape that is as varied and complex as the human psyche. It allows us to see how the elements that define the physical world are also tied to our consciousness, which in turn is revealed to us through our sensual faculties. I have discovered that the act of ascending a mountain is as much an inward, mental journey as it is an outward, physical one. Within it are moments of extreme isolation, but also moments of deep connection with the life that surrounds us. There are moments of clarity, but also moments of confusion.

For me this thesis was a great journey, an act of searching for a deeper sense of connection with a landscape that has always resonated with me. It began with a very analytical methodology, which offered insights that allowed me to delve into the deeper meanings embedded in nature as it transforms up the vertical plane of the mountain. What I have emerged with are the beginnings of an architectural language that attempts to address the complex relationship shared between nature and us as humans.

The bridge allowed me to explore how the human body and the river mirror each others dynamism. With the design of the hut, I explored what it means to dwell within nature, to

understand it as a provider. The chamber allowed me to explore how the human spirit can be both amplified and humbled by a space. I must emphasize the word “explore” because I feel that I may spend my entire life seeking the truth of these matters...

Having journeyed all the way to the peak, the descent now offers a chance to reflect. Gravity tugs me and revelations found up high begin to fade as the green creeps up to surround me once more. I find my way down like the water of the spring thaw. In the valley the bridge waits for me, a gateway back to civilization, to the realm of mortals. I pause for a moment, trying to call to mind something stored in my very bones – then I cross, beginning the journey that ends when I return again.

There is an art to finding your way in the lower regions by the memory of what you have seen when you were higher up. When you can no longer see, you can at least still know... (Daumal 1992, 105-106).



Mount Kidd, Kananaskis Country, Alberta.



## References

- Adams, Ansel. 2007. *Ansel Adams :400 photographs*, ed. Andrea G. Stillman. New York: Little Brown.
- Ads by Dee. 1942 Banff tourism advertisement. <http://www.tias.com/stores/adsbydee/origpics/15550a.jpg>
- Bachelard, Gaston. 1994. *The Poetics of Space*. Boston: Beacon Press.
- Beaumont Enterprise. Entrance to tomb (photograph). <http://www.beaumontenterprise.com/mediaManager/?controllerName=image&action=get&id=579608&width=628&height=471>
- Birnbaum, Daniel. 2001. *James Turrell: The Other Horizon*. Ostfildern-Ruit: Hatje Cantz Verlag.
- Blaycock, Jeff. Yosemite National Park (photograph). <http://www.jeffblaylock.com/window/photos/0299.jpg>
- Campbell, Joseph. 1968. *The Hero with a Thousand Faces*. Princeton and Oxford: Princeton University Press.
- Canada Tourism. Banff Springs Hotel (photograph). [http://www.canadatourism.travel/provinces/images/Alberta\\_Banff\\_Springs\\_Hotel.jpg](http://www.canadatourism.travel/provinces/images/Alberta_Banff_Springs_Hotel.jpg)
- Chaucer, Geoffrey. 2005. *The Canterbury Tales in Modern Verse*. Indianapolis: Hackett Publishing Company.
- Clark, A. Douglas, and D. Scott Slocombe. "Respect for Grizzly Bears: an Aboriginal Approach for Co-existence and Resilience." *Ecology and Society* 14(1), no. 42 (2009). <http://www.ecologyandsociety.org/vol14/iss1/art42/> (accessed June 15 2011).
- Columbia Valley Hut Society. Jumbo pass cabin (photograph). <http://www.cvhsinfo.org/images/JumboPassCabin.jpg>
- Daumal, René. 2004. *Mount Analogue: A Tale of Non-Euclidian and Symbolically Authentic Mountaineering Adventures*. Woodstock: Overlook Press.
- Dorward, Sherry. 1990. *Design for Mountain Communities: A Landscape and Architectural Guide*. New York: Van Nostrand Reinhold.
- Dozafar. Sharda village pilgrimage map (illustration). <http://www.flickr.com/photos/12438325@N07/5438518048/>
- Frampton, Kenneth. 1995. *Studies in tectonic culture: the poetics of construction in nineteenth and twentieth century architecture*. Cambridge: MIT Press.
- GeoBC. Invermere, British Columbia (geographic map). <http://geobc.gov.bc.ca/>

- Google Maps. Invermere, British Columbia (map). <http://maps.google.ca/maps>.
- Jumbo Glacier Resort. Proposed resort style (illustration). <http://www.jumboglacierresort.com/outline/images/resort3.jpg>
- Jumbo Glacier Resort. Proposed resort scheme (map). <http://www.jumboglacierresort.com/outline/images/resort2i.jpg>
- Jumbo Wild. Jumbo Pass (photograph). <http://www.keepitwild.ca/sites/keepitwild.ca/files/images/Jumbo%20Village%20Site.jpg>
- Ktunaxa Nation. Ktunaxa riders in the Kootenay mountains (photograph). [http://www.ktunaxa.org/images/photobar\\_who\\_index.jpg](http://www.ktunaxa.org/images/photobar_who_index.jpg)
- Laugier, Marc-Antoine. 1977. *An Essay on Architecture*. Los Angeles: Hennessey and Ingalls, Inc.
- Mackinlay, Ian, and W. E. Willis. *Snow Country Design*. NEA Grant no. A 70-1-15. n.d.
- Macy, Christine, and Sarah Bonnemaison. 2003. *Architecture and Nature: Creating the American Landscape*. New York: Routledge.
- Margolies, Luise. 1980. *Inca Architecture*. Bloomington and London: Indiana University Press.
- Mason, David A. 1999. *Spirit of the Mountains*. Elizabeth: Hollynn International Corp.
- Matus, Vladimir. 1988. *Design for Northern Climates*. New York: Van Nostrand Reinhold.
- McHarg, Ian. 1992. *Design with Nature*. New York: John Wiley and Sons.
- Naik, Anshuman. The Hanle Observatory (photograph). [http://farm4.static.flickr.com/3290/2606752884\\_9d0946d2f7\\_z.jpg?zz=1](http://farm4.static.flickr.com/3290/2606752884_9d0946d2f7_z.jpg?zz=1)
- Oxford English Dictionary*, second edition. 1989. Online version June 2011. <http://www.oed.com/view/Entry/229003>
- Pallasmaa, Juhani. 2005. *The Eyes of the Skin: Architecture and the Senses*. Chichester: Wiley-Academy.
- Panorama Resort. Accommodations (photograph). [http://www.panoramaresort.com/sites/all/assets/images/banner/accommodations/accom\\_Rbanner.jpg](http://www.panoramaresort.com/sites/all/assets/images/banner/accommodations/accom_Rbanner.jpg)
- Price, Larry W. 1981. *Mountains and Man*. Los Angeles: University of California Press.
- Saito, Hidetoshi, and Nobuko Inaba. 1996. *The Historic Villages of Shirakawa-go and Gokayama*. np.
- Schama, Simon. 1995. *Landscape and Memory*. New York: Alfred A. Knopf.

Schattschneider, Ellen. 2003. *Immortal Wishes*. London: Duke University Press.

Semper, Gottfried. 1989. *The Four Elements of Architecture and Other Writings*. Cambridge: Cambridge University Press.

SGA Art History. Throncrown Chapel (photograph). [http://1.bp.blogspot.com/\\_NVd7bFD2hiw/S2EJiOndQNI/AAAAAAAAAXs/kKrNNEFwPWc/s320/throncrown.jpg](http://1.bp.blogspot.com/_NVd7bFD2hiw/S2EJiOndQNI/AAAAAAAAAXs/kKrNNEFwPWc/s320/throncrown.jpg)

Skyscraper City. Hanle Monastery (photograph). [http://i561.photobucket.com/albums/ss55/rammanpandu2/135538631\\_0eb3b9c1d4\\_b.jpg?t=1235126904](http://i561.photobucket.com/albums/ss55/rammanpandu2/135538631_0eb3b9c1d4_b.jpg?t=1235126904)

Sullivan, Michael. 1962. *The Birth of Landscape Painting in China*. Berkeley: University of California Press.

Turrell, James. 1998. *James Turrell : Spirit and Light / Essays by Lynn M. Herbert, John H. Lienhard, J. Pittman McGehee, Terence Riley*. Houston: Contemporary Arts Museum.

Turrell, James. 1993. *Air Mass*. London: Southbank Centre.

Wilhelm, Hellmut. 2010. *The I Ching or Book of Changes*. Princeton: Princeton University Press.

Zumthor, Peter. 2006. *Thinking Architecture*. Basel: Birkhauser.