

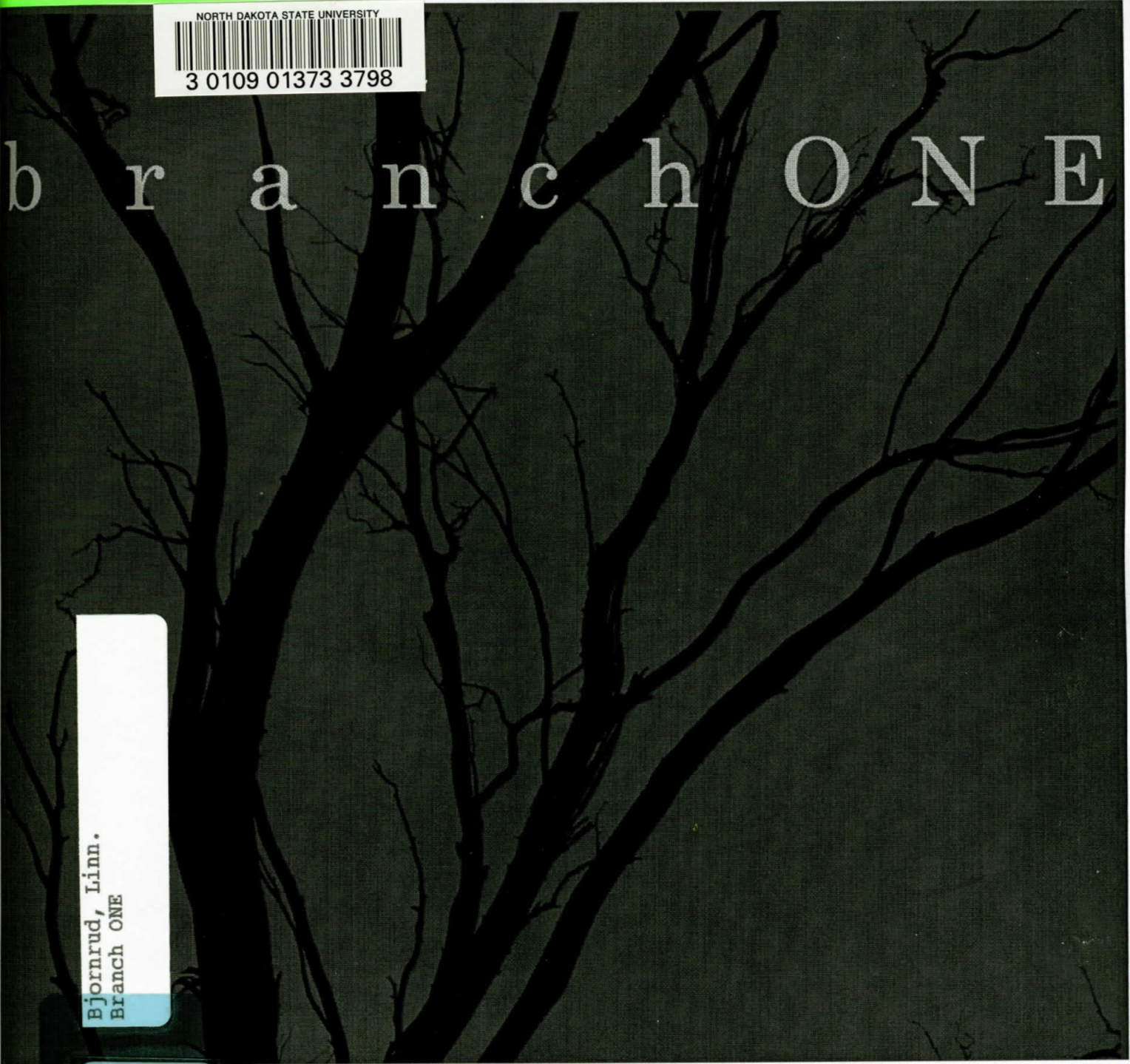
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b r a n c h O N E



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Branch ONE

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2005
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ROCK RIDGE ELY, MN 2004-2005

treetop retreat
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Branch ONE
A Treehouse Retreat

AN UNDERGRADUATE THESIS SUBMITTED TO
THE DEPARTMENT OF ARCHITECTURE AND LANDSCAPE ARCHITECTURE
NORTH DAKOTA STATE UNIVERSITY

By

Linn Bjornrud

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
BACHELOR OF ARCHITECTURE

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SUBMITTED AND APPROVED MAY, 2005

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“Make no little plans.”

-Daniel Burnham



project INTRODUCTION



As a child growing up in rural north-eastern Minnesota, fun was something that we made. My fondest memories consist of very little resources and loads of imagination. We had a beautiful landscape right outside our front door, and even though we didn't view it in that way, we experienced it with more integrity and appreciation than may be possible for me now. We climbed trees, built forts, and pretended to be heroes and villains, animals and aliens and everything else. In short, we lived!

Childhood carries with it a wildness and passion for adventure, and every once in a while we are fortunate enough to experience something that reminds us of our days of innocence. The treehouse is a concept that causes everyone to smile and remember. Age does not seem to have hindered the sense of wonder that the treehouse evokes in us. Realizing this has given me the desire to create a place for children and adults alike, to experience the wildness of youth again. A place that is free from the

burdens and responsibilities of everyday life, where one can enjoy some of the pure pleasures that nature provides us.

I wanted the site for this project to include the landscape that I experienced and was enriched by as a child. When discussing my ideas with a family friend, my mother stumbled upon the site that provides the perfect opportunity for this project. Rock Ridge is a camp located on Little Long Lake, which is just outside Ely, Mn. The friend that my mother spoke to responded with excitement about the possibilities of incorporating the camp that she had revived some seven years ago. The camp is situated around a bay of the lake, and has yet to utilize the full potential of one side of the bay. Rock Ridge is looking to add to its offerings by developing this site. They place a strong emphasis on the landscape and preserving the resources that the land offers. I have personally experienced this site and felt compelled to create a master plan for the forest,



project INTRODUCTION

focus on a retreat for revitalization of the soul, and emphasize creating a sustainable solution driven by its natural surroundings.

Designing a space that captures all of these aspects demands a solution that is unobtrusive to the natural environment. An “honest” solution will involve enhancing the landscape rather than destroying it. This is a challenge that I feel will reap great rewards to me personally and to those who may experience the “treetop retreat.” I am also very confident that the education that I have received at North Dakota State University has provided me with the skills and knowledge that I will need to take this project to the next level, one that seeks depth and an understanding beyond what I have experienced thus far. I would like this project to serve as inspiration to live life and appreciate pure joys. Hopefully, this will transfer beyond the retreat, to enrich lives in the homes and workplaces of those who feel burdened by the routines of everyday life.





project INTRODUCTION



"I think that I shall never see a poem as lovely as a tree."

-Joyce Kilmer



"...In wildness is the preservation of the world."

-Henry David Thoreau



project JUSTIFICATION



How does one justify his endeavor? Is it with convincing argument, so that everyone will agree? Or perhaps justification is achieved by persuading just those who oppose? Or is it neither? I propose that the only one who requires justification is the self. If one can convince himself that the journey is worthy, that it is edifying both morally and spiritually, mentally and physically, then justification has been rendered. So search within, confront your deepest core, then can you receive a convincing verdict.

I have presented my ideas and aspirations to many people in the short weeks and months that I have been experiencing this project. I feel that I can with a clear conscience lump the responses into two distinct groups. The first and most enjoyable is a very positive one. It begins by seeing excitement in their eyes, almost getting a glimpse of memories that are flooding in from personal experiences with a particular treehouse or treehouses. This is typically followed by a rousing conversation about those memories. The second type of response is a rather smug furling of the brow, followed by questions of why? Why treehouses? Why this site? Why would anyone but kids enjoy

this? To the last question, author and treehouse builder Peter Nelson agrees that a treehouse is merely a place for children. He then goes on to say that "A lot of kids in their 20s and 30s, and some in their 70s, are interested."

Even though I don't feel I need to convince everyone, that doesn't mean I won't try. So without further ado I will refer to the man who helped in the convincing of myself. For his words are clearly more eloquent and refined than my own. Henry David Thoreau was a great appreciator of nature and of life. There are two writings of his in particular that I will present as food for thought.





project JUSTIFICATION

The first is an essay called Walking. These are just a few of the phrases and paragraphs that inspired me.

I WISH TO SPEAK a word for nature, for absolute Freedom and Wildness.... I have met with but one or two persons in the course of my life who understood the art of Walking, that is, of taking walks, who had a genius, so to speak, for sauntering; which word is beautifully derived "from idle people who roved about the country, in the middle ages, and asked charity, under pretence of going à la sainte terre"—to the holy land, till the children exclaimed, "There goes a sainte-terror", a saunterer—a holy-lander.... Some, however, would derive the word from sans terre, without land or a home, which, therefore, in the good sense, will mean, having no particular home, but equally at home everywhere. For this is the secret of successful sauntering. He who sits still in a house all the time may be the greatest vagrant of all, but the Saunterer, in the good sense, is no more vagrant than the meandering river,

which is all the while sedulously seeking the shortest course to the sea.... It is true, we are but faint hearted crusaders, even the walkers, now-a-days, who undertake no persevering never ending enterprises. Our expeditions are but tours and come round again at evening to the old hearth side from which we set out. Half the walk is but retracing our steps. We should go forth on the shortest walk, perchance, in the spirit of undying adventure, never to return.... If you are ready to leave father and mother, and brother and sister, and wife and child and friends, and never see them again; if you have paid your debts, and made your will, and settled all your affairs, and are a free man; then you are ready for a walk.... But the walking of which I speak has nothing in it akin to taking exercise, as it is called, as the sick take medicine at stated hours—as the swinging of dumb-bells or chairs; but is itself the enterprise and adventure of the day. If you would get exercise go in search of the springs of life. Think of a man's swinging dumb-bells for his health, when those springs are



project JUSTIFICATION



bubbling up in far off pastures unsought by him.... When a traveller asked Wordsworth's servant to show him her master's study, she answered "Here is his library, but his study is out of doors."

As for Walden, there simply is far too much to cover in this document. Instead I will explain a few of the reasons for the inspiration it provided me. A few of the obvious, and surface reasons have to do with how he lived and enjoyed the landscape. He built his home with only the materials available in the immediate surroundings. He did cut down trees, but only what he needed. Most of the lumber he used came from driftwood and fallen trees. His food supply came from the earth as well. Basically the reason he lived in the woods describes my connection or appreciation. Henry Thoreau is very clear about this, in "Where I Lived, & What I Lived for"...

I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover that I had not lived.

Thoreau wanted to get the most from his life by determining what was really important, and he did that by removing himself somewhat from the normal life of Concord, Massachusetts in the 1840's. He reduced his material needs by living simply, so that he would not have to spend much time supporting a lifestyle that he did not need or care about.

So in conclusion I say.....Precisely.



picture of Walden Pond





h i s t o r y o f S I T E

Each rock, each tree, and each blade of grass has a story. The wind carries a whisper of emotion across the very spot where you stand.





h i s t o r y o f S I T E

Camp Rock Ridge was not the first camp to use this site. In fact, nearly all of the buildings in use by Rock Ridge were there prior to the birth of the camp. A boys camp called Camp Easton is responsible for the masterplan of the site and the buildings that stand today. Camp Easton was closed and the site was unused for several years. It was then that a local family purchased and donated the camp to Shamineau Ministries.

Long before Rock Ridge, this site was part of a grander scheme. During the time of Camp Easton this place was neighbor to great wilderness author Sigurd Olson. He wrote often and famously about this landscape.

Before Sigurd this land was part of an immigration boom. Settlers from Scandi-

navia were gathering to this area to start new lives. Along with this was the great adventures had by the Voyageurs. They were great traders that would paddle down from Canada to make trades and deliver goods. These were rough and tough men that worked themselves harder than most could imagine. They were an elite club of explorers that perfected the art of living off the land. They were envied by many and feared by some.



h i s t o r y o f S I T E



Kids enjoy the plunge at Rock Rldge





project GOALS

Goal of Master Plan of Forest:

To responsibly adapt the design of the retreat to find a solution that works with the natural surroundings. The goal is to enrich the land, not to harm it.

Goal of Rock Ridge Branch One:

To create an environment in which personal growth can be experienced through the appreciation of nature and the inner-child.

Key Objectives:

One emphasis of this design is to explore the possibilities of a relatively rare approach to building. To not be restricted by vertical placement will be challenging and full of adventure.

This project provides an ideal opportunity to think and design sustainably. This will aid in the goal of reaching an honest, ethical, design solution that celebrates the surrounding landscape.

Physical fitness will also be encouraged through this design. Climbing, pulling, swinging, and various other physical challenges will serve as a defiance of the laziness that many everyday conveniences instill in us.

I also want to focus on designing in a minimalist manner. In this design, less is more. Impact the environment in the least amount possible. From an aesthetic point of view as well, my vision for this retreat is very basic and functional.





project DESCRIPTION



Conceptual underpinnings include a response to the site that will drive the form of the spaces. Strong emphasis on layers, designing in three dimensions, and in the connections of the spaces.

Major project elements include sleeping cabins, personal reflection perches, community spaces, each space unique in experience due to the diverse arrangement and quality. Connections include ladders, stairs, rope bridges, and anything that the imagination can create. There is even a manual elevator in the works courtesy of my good friend Peter Jackson, an engineer in Winona, MN.

Inspirations taken from the fantasy of the Swiss Family Robinson treehouse, and the ewok village from Star Wars Return of the Jedi. These could be said to be responsible for planting seeds in my brain at a young age.

My goal with the forms of this project is to not have separate spaces that happen to be connected, but instead

I hope to create a system of connected spaces that work together to complete the form of the entire retreat. I envision the forms to be analogous to the systems that exist in nature, all interconnected and reliant on the rest of the process.





u s e r / c l i e n t D E S C R I P T I O N



The users in this case would be those who attend Rock Ridge camp. This retreat would not be for everyone, however. Only those who come to Rock Ridge specifically for the Branch One camping session would be allowed access to the retreat.

There are a number of requirements, and reasons for them, in reference to this retreat, one being an age requirement both minimum and maximum. Obviously, this requirement is in direct response to the fact that a certain physical capability is required to be able to handle the climbing, etc.

Another reason for restricted use is due to the issue of liability. Anyone who uses the facility must sign a waiver assuming responsibility in case of injury. These requirements would be much the same as that of a rock climbing wall or site. Legal details and code issues to be finalized after special considerations have been factored.

Besides safety and liability factors, Branch One is accessible for anyone who pursues it. Facilities will be available for personal reservations for reunions, retreats, and get togethers.

Branch One will also serve as an outfitter/base camp for Boundary Waters camping adventures. Adventurers may choose to spend a few days in the trees before they release themselves into the wild. And more importantly, they may want to spend a few days at Branch One after the camping trip is completed. This will provide the opportunity to share stories and relax after long hours of paddling.



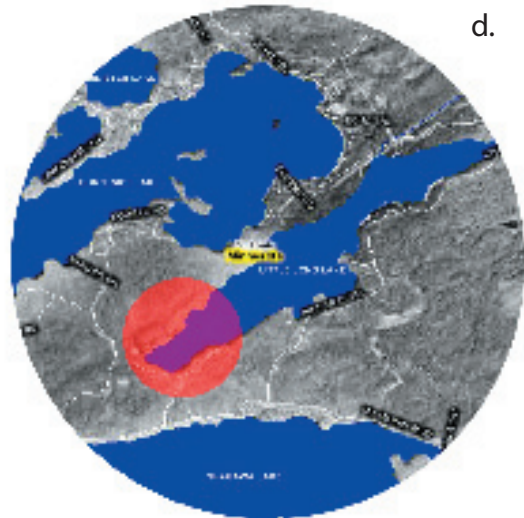
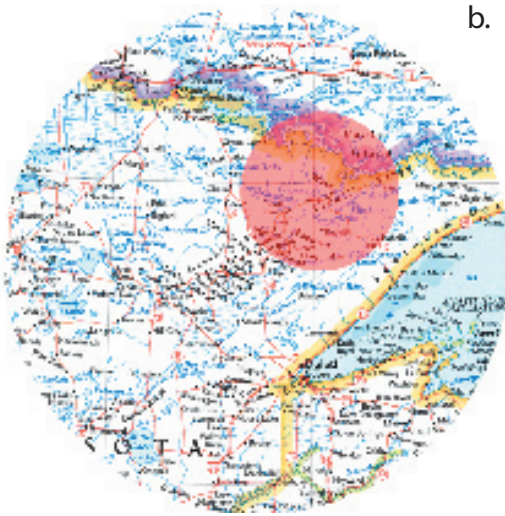
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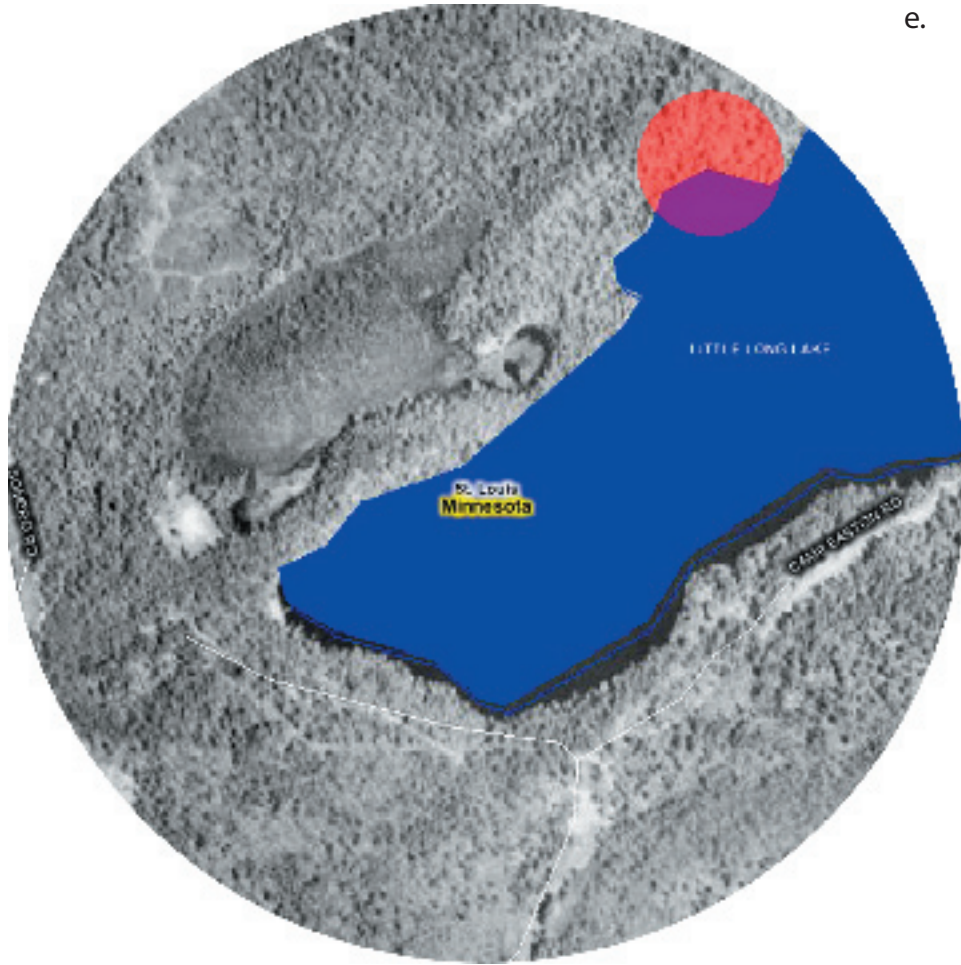


a.



● each red circle indicates the boundaries of the following map.

site ANALYSIS



Proposed site of Branch One Resort



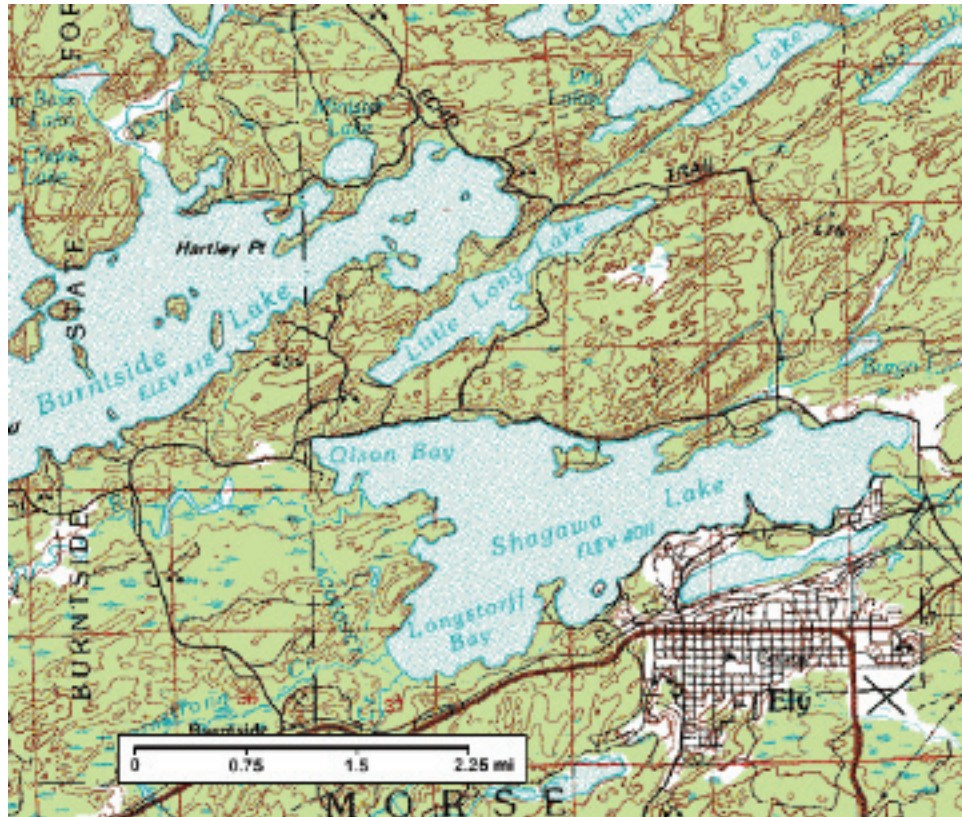
site ANALYSIS

Temperature by: Fahrenheit / Centigrade

International Falls Temperature	Jun	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg. Temperature	1.0	7.7	22.1	39.0	52.1	61.4	66.7	63.7	53.4	42.4	24.9	7.2	36.8
Avg. Max Temperature	11.9	19.3	32.8	50.1	64.6	73.4	78.8	75.6	64.3	51.8	32.8	16.6	47.7
Avg. Min Temperature	-10.0	-4.0	11.4	27.8	39.6	49.5	54.6	51.7	42.5	32.9	17.0	-2.2	25.9
Days with Max Temp of 90 F or Higher	0.0	0.0	0.0	< 0.5	< 0.5	1.0	2.0	1.0	< 0.5	0.0	0.0	0.0	4.0
Days with Min Temp Below Freezing	31.0	23.0	30.0	22.0	7.0	< 0.5	0.0	< 0.5	4.0	16.0	28.0	31.0	197
International Falls Heating and Cooling	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Heating Degree Days	1984	1604	1330	780	418	156	55.0	116	348	701	1203	1792	10487
Cooling Degree Days	0.0	0.0	0.0	0.0	18.0	48.0	107	76.0	0.0	0.0	0.0	0.0	249
International Falls Precipitation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Precipitation (inches)	0.9	0.6	1.1	1.6	2.5	3.9	3.6	3.1	3.1	2.0	1.1	0.8	24.4
Days with Precipitation 0.01 inch or More	12.0	9.0	10.0	9.0	11.0	13.0	12.0	11.0	12.0	10.0	11.0	12.0	152
Monthly Snowfall (inches)	13.0	9.4	9.5	6.1	0.8	0.0	< 0.05	< 0.05	0.1	1.9	12.5	12.4	65.7
Other International Falls Weather Indicators	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Wind Speed	8.9	8.8	9.4	9.9	9.4	8.5	7.7	7.5	8.6	9.3	9.4	8.8	8.9

Climate data for northeastern Minnesota town of International Falls. I-falls is located north of Ely and will have comparable climate data.

site ANALYSIS

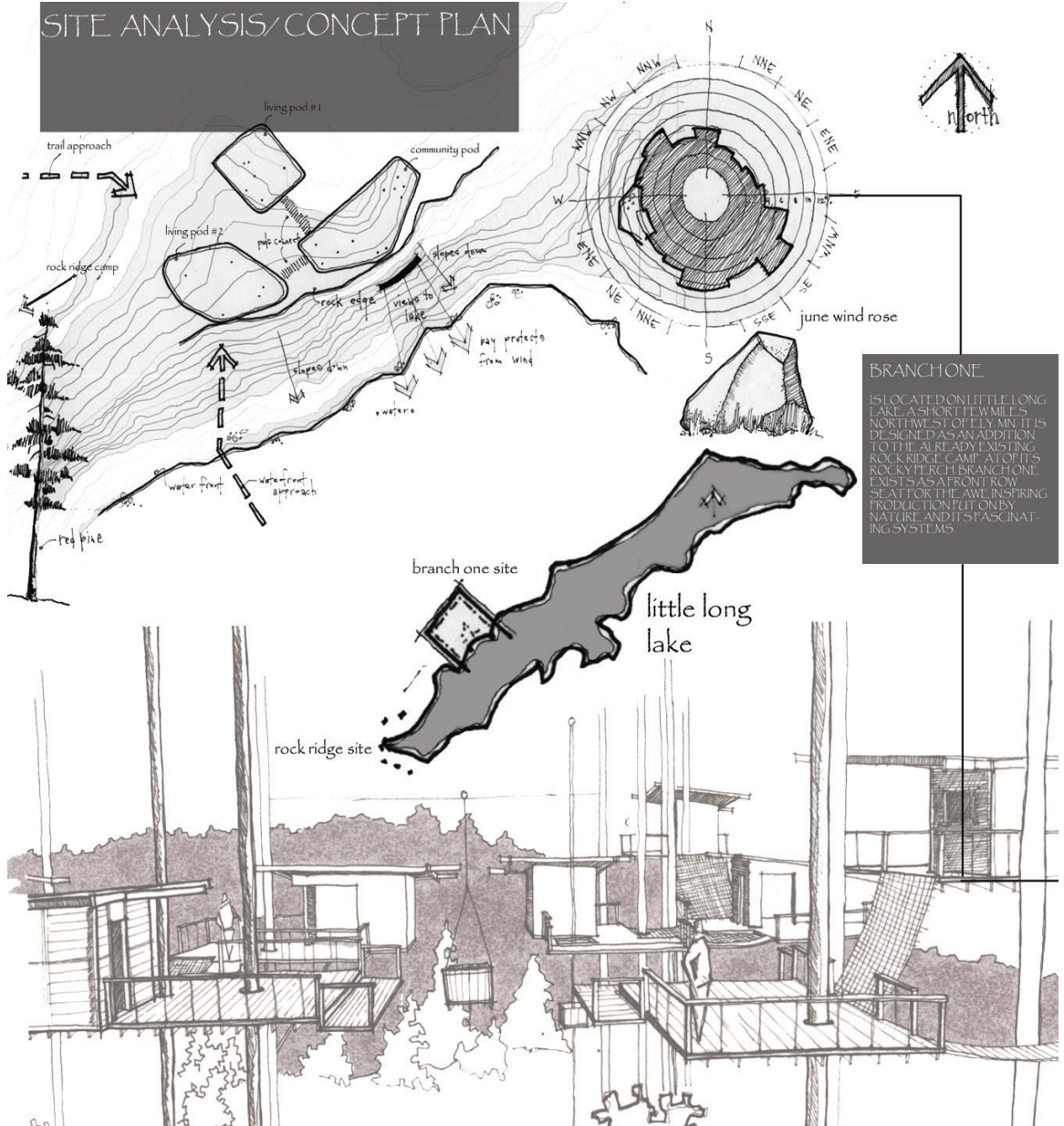


Topographic map of surrounding areas. Also shows relationship of site to Ely, Mn.



site ANALYSIS

SITE ANALYSIS/CONCEPT PLAN



BRANCH ONE

IS LOCATED ON LITTLE LONG LAKE, A SHORT FEW MILES NORTHWEST OF ELY, MN. IT IS DESIGNED AS AN ADDITION TO THE ALREADY EXISTING ROCK RIDGE CAMP. AT OPIT'S ROCKY TERCH BRANCH ONE EXISTS AS A FRONT ROW SEAT FOR THE AWESOME INSPIRING PRODUCTION FROM BY NATURE AND IT'S FASCINATING SYSTEMS.





The view that bid me farewell after my adventure in the woods.

siteIMAGERY



site IMAGERY



Pictures taken at site as the sun fell and the moon rose in late November. Middle left photo shows the stone sauna that ramps directly into to lake. Above, the old outhouse stands and still is quite handy.



siteIMAGERY



Shown above is a shot of the stove that powers the sauna. I have taken a sauna here and it is one of my favorites that I have been in, right down to running right out into the lake.



siteIMAGERY





s i t e I M A G E R Y



Pictures taken January 24, 2005 by Linn Bjornrud



history of TREEHOUSES





h i s t o r y o f T R E E H O U S E S

from Peter Nelson's Treehouses

What is it about a treehouse that causes almost everyone who sees it to pause, take a closer look, and smile? Our affection for treehouses may be inborn, for our ancestors lived in trees, and perhaps in some primal memory we still think of them as home. Or the smile may be evoked by more immediate memories: a treehouse built in childhood, or one read about in a favorite book—Swiss Family Robinson, Tarzan, Winnie the Pooh. Or a treehouse may represent escape: from adults or adulthood, from duties and responsibilities, from an earthbound perspective. If we can't fly with the birds, at least we can nest with them.

Whatever the reason, people have long built houses in trees, sometimes for protection from enemies or floods, but more often simply for pleasure. The Roman Emperor Caligula held banquets in the branches of an enormous plane tree, and during the Italian Renaissance the

Medici vied to see who could build the grandest treehouse. Cosimo furnished his treehouse at Villa Castello with a marble table and plumbing, but his son Francesco trumped him with a treehouse that had not only a marble table but marble benches, a fountain, and two staircases. Built in the boughs of a Holm oak, like his father's house, Francesco's treehouse was called La Fonte delle Rovere, or "the fountain of oak."

The Medici treehouses are mentioned by many travelers, including Montaigne, who visited them in 1580, and are illustrated in engravings of the time. Treehouses often appear in European art of the 1500s and 1600s, particularly the works of Hieronymus Bosch and Pieter Brueghel, suggesting the popularity of treehouses in the Netherlands then. In Tudor England treehouses were also common, and one of the most remarkable was a three-story house at Cobham Hall in Kent. It was built in an enormous linden tree, which the branches bent downward to create three enclosed



h i s t o r y o f T R E E H O U S E S



arbors eight feet high, one on top of the other. The mikkle arbor, which served as banquet hall, could hold over 50 people, and Queen Elizabeth I once attended dinner there.

The Medici and Cobham Hall treehouses are long gone, but two notable early European treehouses still survive. One is the 16th-century treehouse at Pitchford Hall. The other is not actually a house at all, but a tree church that has been in continuous use for over 800 years. Located in the town of Allouville-Bellefosse, Normandy, it consists of two chapels, one above the other, in the hollow center of a great oak. The lower chapel, decorated with ornate wood carvings of the Madonna, can hold only a few people but is the focal point of village celebrations. The upper chapel, even smaller, is reached by a circular wooden staircase. A sign from above the entrance to the lower chapel reads: "Be warned that is is forgbidden, under the pain of fine, to remove the bark or branches of the oak, or the leaves. Civil action will

be taken against those who do so." Still, the tree has detriorated with age. Its main branches have been reinforced with cables, and large cracks have been covered with roofs to keep the water out. The little roofs make the tree look as if it is inhabited by elves.



h i s t o r y o f T R E E H O U S E S

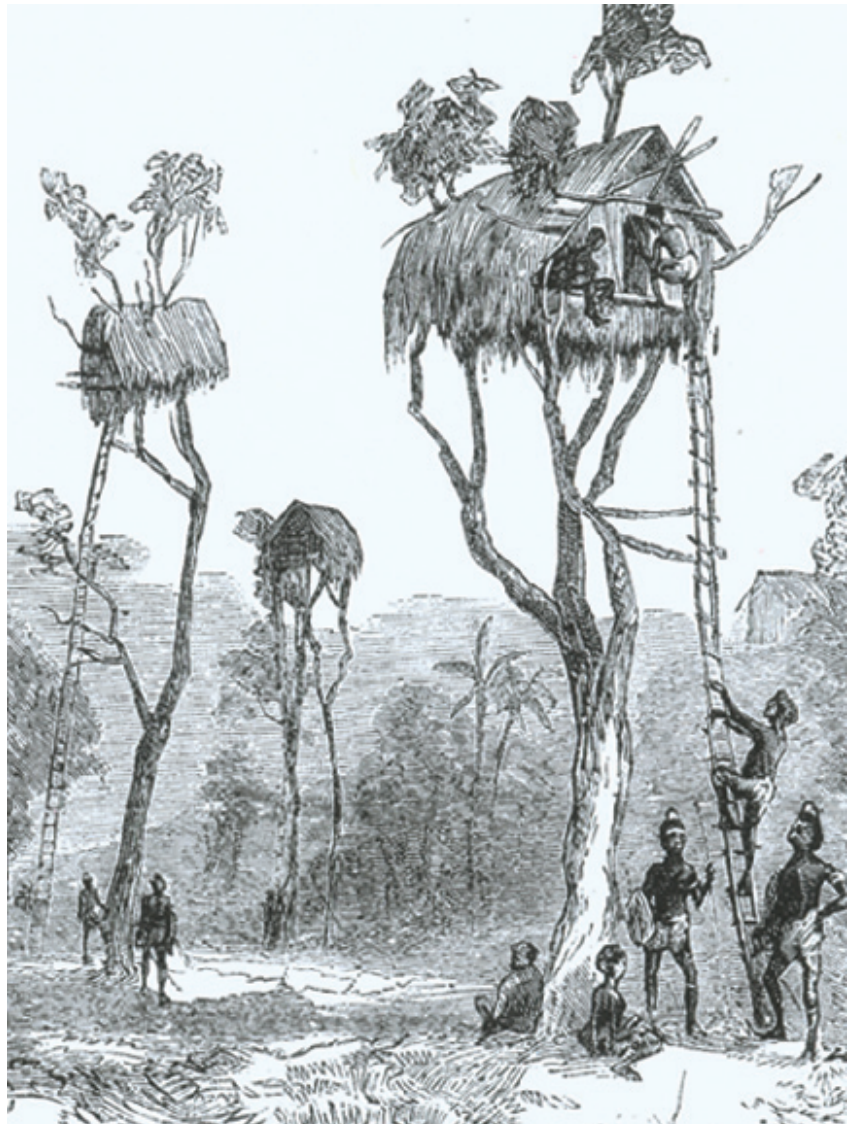
Historically, treehouses seem to have been most common in the South Pacific and Southeast Asia. When Captain Cook sailed into Tasmania in the late 1700s, he discovered the inhabitants living in the treetops, and some South Pacific Islanders lived in thatched nests in the trees, transporting themselves up and down in large baskets. The etching at right shows a treehouse observation post in the Malay archipelago.

In inland New Guinea, treehouses called *dobbos* were used as fortresses (next page). When a village was under attack, the people would climb into the treehouses and pull the ladders up behind them. If the attackers attempted to chop down the tree, they would be pelted with stones and spears from above. Treehouses were also built as resting places for the dead in New Guinea.





history of TREEHOUSES



ROCK RIDGE
ELY, MN

branch ONE

history of TREEHOUSES



This 1879 Etching shows treehouses and pole houses built on the banks of a river on the island of Mindanao in the Philippines, presumably to avoid flooding.



history of TREEHOUSES





“I believe we can accomplish great and profitable things within a new conceptual framework—one that values our legacy, honors diversity, and feeds ecosystems and societies . . . It is time for designs that are creative, abundant, prosperous, and intelligent from the start.”

-William McDonough





i s s u e s i n S U S T A I N A B I L I T Y

This project presents endless options for sustainability. The first issue to deal with is power. My goal is to completely eliminate the need for power to be run to the site. Completely self sufficient is how I envision the retreat. This will most likely call for solar panels to power the lights and natural systems to control the climate. Since the village will only be used in the summer, minimal to zero heating systems will be used. What little is needed will be completely passive in nature.

Some initial sustainable design considerations will include daylighting and absorption of sun energy. If it is structurally possible, this might include stone masses above the ground that will absorb sunlight during the day and radiate the heat during the night.

A heat source at night will be tree-top campfires. This will take careful consideration in the design for safety reasons, but will bring great rewards.

I will also explore the possibility of plant-

ing grass on the roof tops where sunlight is available to pursue a living building material. This will insulate and absorb any moisture that the leaves of the trees do not consume. This will also preserve a natural aesthetic to the design.

Another decision is the materials that will be used. Besides the hardware, all materials will be reused from salvage yards, demolition sites, etc., all of which will be local.

I also am going to pursue the option of planting gardens on the ground and in the trees. This will aid in the food requirements that the users require. Food will also be provided by fishing the lake that the site overlooks.



i s s u e s i n S U S T A I N A B I L I T Y



There are countless sources that I could reference for information on sustainability, but the book that I will mention is called *Biomimicry*, by Janine Benyus. It just seems to be the one whom the jacket fits, to borrow a reference from the forementioned *Walden*. The book is an elaboration of the concept of biomimicry, which is the practice of modeling systems and processes after those found in nature. Or more simply put, the imitation of life, using nature as a model, a measure, and a mentor. You see, what occurs in nature is far more efficient in every way than what we as the human species attempt to do. These concepts can be directly related to our lives however. For instance, the tendons found in our bodies are unbelievably strong. The reason for this is a system of hierarchy in the twisting fibers that make up the tendon. Now we use a similar process in the cables that hold up the worlds largest buildings. Nature provides the models in these cases as well: solar cells copied from leaves, steely fibers woven spider-style, shatter proof ceramics drawn from mother of pearl, and even cancer cures compliments of chimpanzees. With the technology that we have now, we can study nature closer than we ever

could before. By doing this we find that every process we have come up with has already been accomplished by nature in a much more efficient and respectful way. Our most clever architectural structures already found in bamboo and lily stems. Our central heating and air-conditioning second best to the constant 86 degrees F in a termites tower. Humbling also are the processes that we are only able to dream about at this point. For instance, arctic fish and frogs freeze solid and then spring back to life, having their organs protected from ice damage. Polar bears keep themselves warm in the winter with a coat of transparent hollow hairs, which act like the panes of a green house. Chameleons hide without moving, and the list goes on. Nature's laws, strategies, and principles seem to operate under the following list, and so I too will endeavor to do the same as best as I can in this project:

*Nature runs on sunlight
Nature uses only the energy it needs
Nature fits form to function
Nature recycles everything
Nature rewards cooperation
Nature banks on diversity
Nature demands local expertise
Nature curbs excesses from within
Nature taps the power of limits*



design METHODOLOGY



design METHODOLOGY

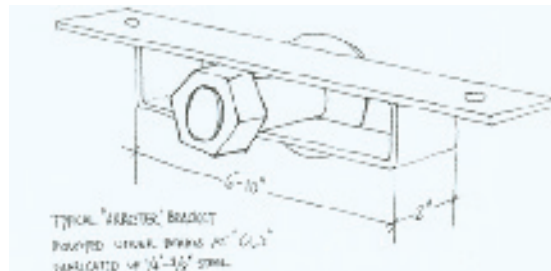
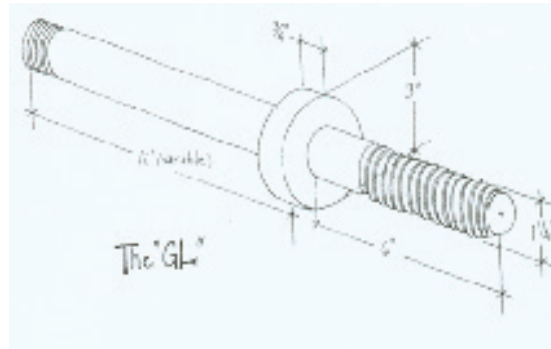


Materials

Finding materials should prove to be a very enjoyable experience. There are no rules, so options are endless. Here is a chance to really use my imagination. I plan to seek out material from fallen buildings, scrap yards, etc. My intentions are to complete this project with almost 100% reclaimed materials.

Some requirements do exist, such as making sure that the material is sturdy, especially for the floor joists and platform. I will also avoid timber with a large number of knots. Beyond that, it will be the material that is found which will help to drive the form of the design.

The "GL" and the "arrester" bracket are two pieces of hardware that have come about solely for the purpose of treehouses. These will be a necessity. The "GL" is a bolt that is designed to stick out of the tree providing a peg that carries enormous loads that are put on it. Just one GL has the poten-





d e s i g n M E T H O D O L O G Y



tial to support the weight of a pickup truck.

The arrester bracket is designed to attach to a support beam and rest

on the GL. The arrester is attached firmly to the beam but is held in place on the GL by a nut which allows the tree to sway without compromising the strength of the connection.



d e s i g n M E T H O D O L O G Y



Design

The start of the design entails figuring out what the space is going to be. Is it a sleeping area, a deck, a reflection perch, or even a connection between spaces?

First establish the floor area. How far off the ground is it? Then measure the distance between the trunk and the branches. Figure out the rough floor area, and rough shape of the trunk or branches.

Transfer the the idea to tracing paper and hone the floor joists and support beams. Next we need to compare the design ideas to the actual trees. How does it fit? Is it the desired size or scale? Exact the space and then continue to increase the layers of tracing paper until we have reached a simple design for the supports and floor area.

Once we have established this, we can start thinking vertically. Figure out some rough elevations of the design



and commit them to paper. Consider climate factors and decide what each space should be. How does the sun reach each space, is it an area that we want the sun to shine on or not?

We also need to determine the entrance to a space. Make sure that it is accessible and appropriate. Next figure out the floor plans and transition spaces to make sure that they are where we want them. After this we can figure out window placement and other details. Maybe a rough model is called for to determine how the space will come together.



d e s i g n M E T H O D O L O G Y



Arboriculture

It is important to look into tree care before you attempt to build a tree-house. The last thing we want is to harm the trees or build in unsteady trees. Here are some important guidelines to follow

Roots

Inspect the roots. They should look like a trumpet set upright on its bell.

Do not regrade the soil under the tree, for this can suffocate the roots.

Shallow roots can be harmed by heavy traffic. Create elevated pathways or lay down wood chips to prevent this.

If you suspect trouble with a tree's roots, dig down a few inches and scuff the roots lightly with a chisel. A healthy root will be bright pink to red, or green.

Trunk and Canopy

Many large trees have rotted cores. In general, anything less than 8 inches of strong wood remaining in the trunk should be stayed from.

Exercise caution when building near a section of a tree where two trunks join together in a sharp angle. Check the bark below the connection area to be sure it is not coming apart.

Inspect the canopy. If the needles or leaves are dry and it isn't autumn, this could be a sign of trouble.

Inspect the base of the trunk for insect infestation.

Preventative Medicine

Keep your trees healthy by doing the following.

Clear all competing vegetation at the base of tree out to an area the circumference of the branches above. Then cover the area with four to six





design METHODOLOGY

inches of wood chips. You can even add some tree fertilizer.

Remove any dead wood or snagged branches that are in the tree.

Pruning is good.

Trim branches just beyond the collar where it joins the trunk or parent branch. Do not seal the cuts of with any type of wound dressing.

Types of Trees Best Suited for Treehouse Construction

Apple: Easy, low access. Strong.

Ash: Beautiful when healthy, but watch for disease

Banyan: Grows very fast. Will intertwine with treehouse within five years

Fir: Great treehouse tree. Long life span

Hickory: Extremely hard wood. Very durable.

Madrona: Very hard wood. Sensitive to disease

Maple: Durable and fast growing. Requires careful thinning. Can be susceptible to storm damage

Oak: Very durable, but sensitive to soil compaction and grade changes. The white oak is a great treehouse tree.

Pine: Grows fast and straight. Moderately durable. Caution: Don't pee on it-it's salt intolerant

Spruce: Medium density soft wood, susceptible to insect infestation. Shallow roots. Go with multiple tree designs for added support.



d e s i g n M E T H O D O L O G Y



Trees to Avoid

Alder: Brittle branches, short life span, and prone to infections

Black walnut: Brittle

Cottonwood: Weak wood, messy seed pods.

Elm: Prone to many pests and diseases.

Sycamore: Brittle



s p a t i a l R E Q U I R E M E N T S





s p a t i a l R E Q U I R E M E N T S

Spatial requirements for this design are driven by context and function. Square footage is determined by arrangement of trees and how they will support the structures. This entire design relies on function and simplicity. The design process is one of adaption and problem solving. The beauty of it is its unpredictable yet obvious, complex, yet extremely simple forms.



s p a t i a l R E Q U I R E M E N T S



Space definitions:

Cabins/ sleeping quarters

Campfire area

Community spaces

Outhouses

Personal perches

Supply house

Decks/ balconies

Gardens

Transition spaces

Food preparation

- bridges
- ladders
- swings
- elevators
- cargo nets
- stairs
- and more.....





case STUDIES



This photo appeared in National Geographic. It is from Irian Jaya, Papua New Guinea, where an entire culture lived in the trees. This aerial view shows one of their creations, which hovers more than 150 feet off the ground.

c a s e S T U D I E S



boo's treehouse seattle, washington

Built in the summer of 2002 on a steep hillside in one of Seattle's older neighborhoods, this treehouse stands only seven feet off the ground in the back. The front, however, towers thirty-five feet up.

tree typology
Diadora cedar tree

A hoistable ladder provides the option for visitors or privacy. Re-milled cedar 2x12s serve both as siding and as interior paneling.

The floor is solid fir 3" x 5" car decking. It spans four feet between joists.

Old windows are used and add some brilliant character.



case STUDIES



ROCK RIDGE
ELY, MN

branch ONE

case STUDIES



redmond treehouse redmond, washington

Steve Rondel has been working on this magnificent treehouse for over twenty years. Peter Nelson refers to this treehouse as a "buried treasure"

tree typology
Broad leaf maple tree

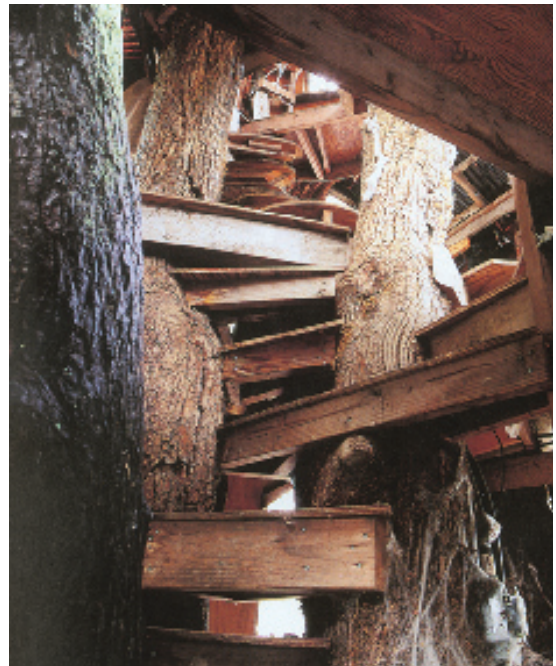


case STUDIES

This treehouse is made primarily of plywood. Some of the features that strike me include the organic stairs that weave their way through the system of branches.

I also appreciate the detail of the windows that were designed with plywood and a scroll saw.

Notice the levels of the outdoor spaces as well as the indoor. This serves as a great example of how I will achieve spatial agreement through levels both horizontally and vertically.



case STUDIES

the nest yelm, washington

This treehouse has a very organic feel and that is what drew me to it originally. The builder, Roderick Romero, describes the design process perfectly when he says that the tree tells you where to move and what your boundaries are, where you can stress things, and what direction you can go. Let the emotion drive the design.

tree typology
Maple tree

I was excited to see the cargo net style rope ladder. It is made of giant manilla rope and resembles a spider web. It apparently is very easy to climb and feels quite safe.





case STUDIES



case STUDIES



ewok treehouse oxfordshire, england

Made by John Harris of The Treehouse Company, this design was obviously modeled after the famous Ewok village from the Star Wars installment Return of the Jedi.



I particularly enjoy this design because the Ewok village was a huge part of my inspiration in choosing this particular thesis project.

Notice the suspended bridge that connects the platform to the treehouse. You can almost imagine walking carefully across while it swings underneath your feet.



case STUDIES

robinson treehouses paris, france

For well over half a century, starting in 1848, the hip place to go outside of Paris on the weekends was the town of Robinson. Joseph Gueusquin started a trend by building a small restaurant in the boughs of one of the area's enormous chestnut trees. Word spread and soon others built treehouse restaurants.

The popularity of treehouses seemed to be brought on by the publication of Swiss Family Robinson by Johann David Wyss in 1812-1813.

And you guessed it, the town changed its name to promote the attractions.





case STUDIES

korowai treehouse irian jaya, indonesia

The Korowai people of Irian Jaya, Papua New Guinea, actually live in treehouses. These pictures from National Geographic were not easy to come by for the photographer. He said that he felt lucky to return with his life.

Tribes in this area are constantly warring, which makes it a very dangerous place to be. This is one of the main reasons they choose to live in the trees, self protection.

These treehouses serve as a perfect example of organic architecture. All of the materials used are taken from the immediate surroundings.



case STUDIES



More case studies will be available after further research and travels.



final DESIGN



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ELY, MN

branch ONE

f i n a l D E S I G N



The final presentation boards were arranged by a theme. Presentation consisted of three rows, each telling a different story. The top row has thick black frames like the restricted view through a camera. This row was designed to introduce the project and use vivid imagery to “set the mood” if you will. The second row has no borders. The muralesque layout flows to the very edge of the paper. This row shows the final project in graphic form. Perspectives, plan, wall section detail, and even a text box that acts as an advertisement for the final product. The bottom and final row has medium frames around it and consists of much text and diagrams. This row serves as the informative and detailed row. It explains and diagrams the many systems involved with the design. This row also periodically shows process models that were used in the design phase of the project.

These boards needed to do many things. One, they needed to explain the project fully. Two, they needed to subtly carry themes and underlying concepts of the project. Examples of this include the importance of poetry. This project needed

to be very poetic in nature. This is in response to the beauty of the the site, the emphasis on sharing stories, and also the words of wilderness author, Sigurd Olson. Finally, the boards needed to be simple, like the design itself, functional, like the design, and efficient, like the design.



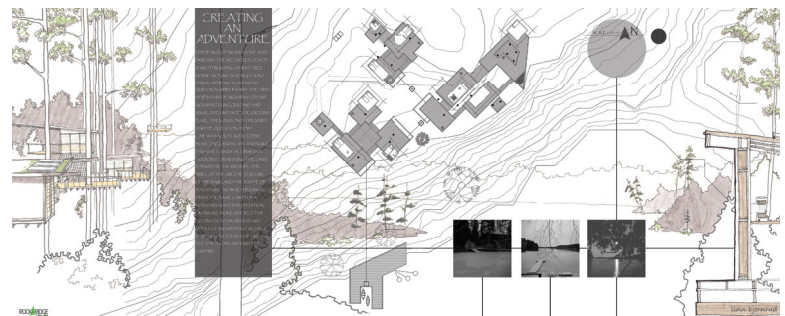
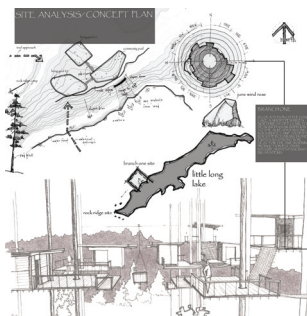
final DESIGN

branchONE theology

DESCRIPTION
 The design of this building is based on the concept of a tree. The building is designed to be a living organism, growing and changing over time. The building is designed to be a part of the landscape, not just a structure on it. The building is designed to be a place where people can connect with nature and each other.

APPLICATION
 The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other.

DETAILS
 The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other.



SUSTAINABILITY THEORY

ACKNOWLEDGE
 The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other.

EFFICIENCY
 The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other.

MINIMIZE THE FOOTPRINT
 The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other.

MAXIMIZE SPACE
 The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other.

CONSIDER THE COMMUNITY
 The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other.

RESPONSIBLE USE
 The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other.

ENVIRONMENTAL LIGHTING
 The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other.

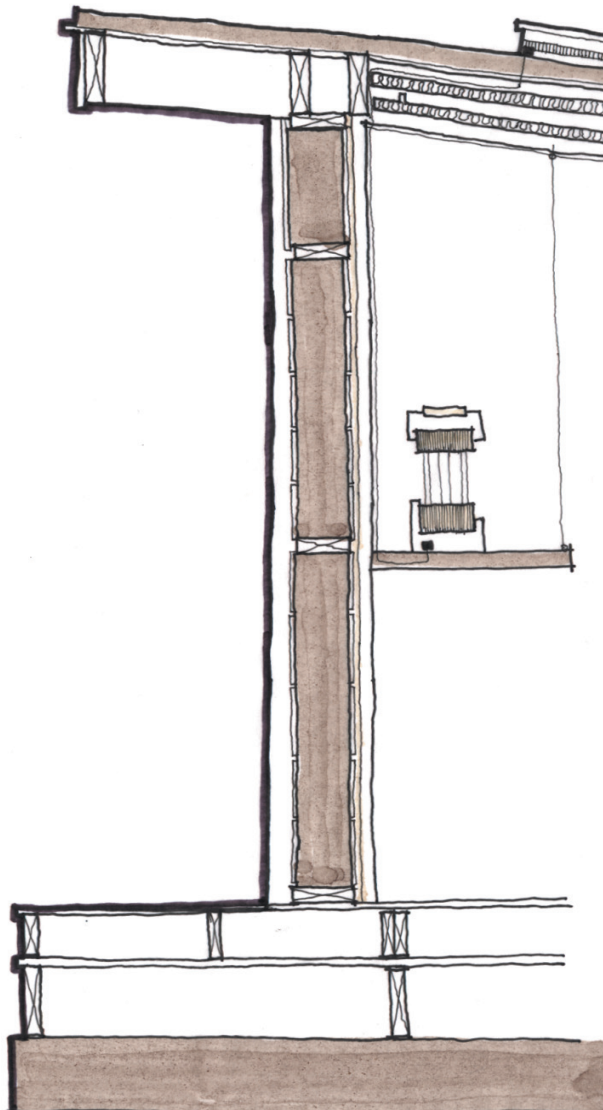
WASTEWATER TREATMENT
 The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other.

SCENERY
 The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other.

MATERIALS
 The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other.

HYDROLOGIC THEORY
 The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other. The building is designed to be a place where people can connect with nature and each other.

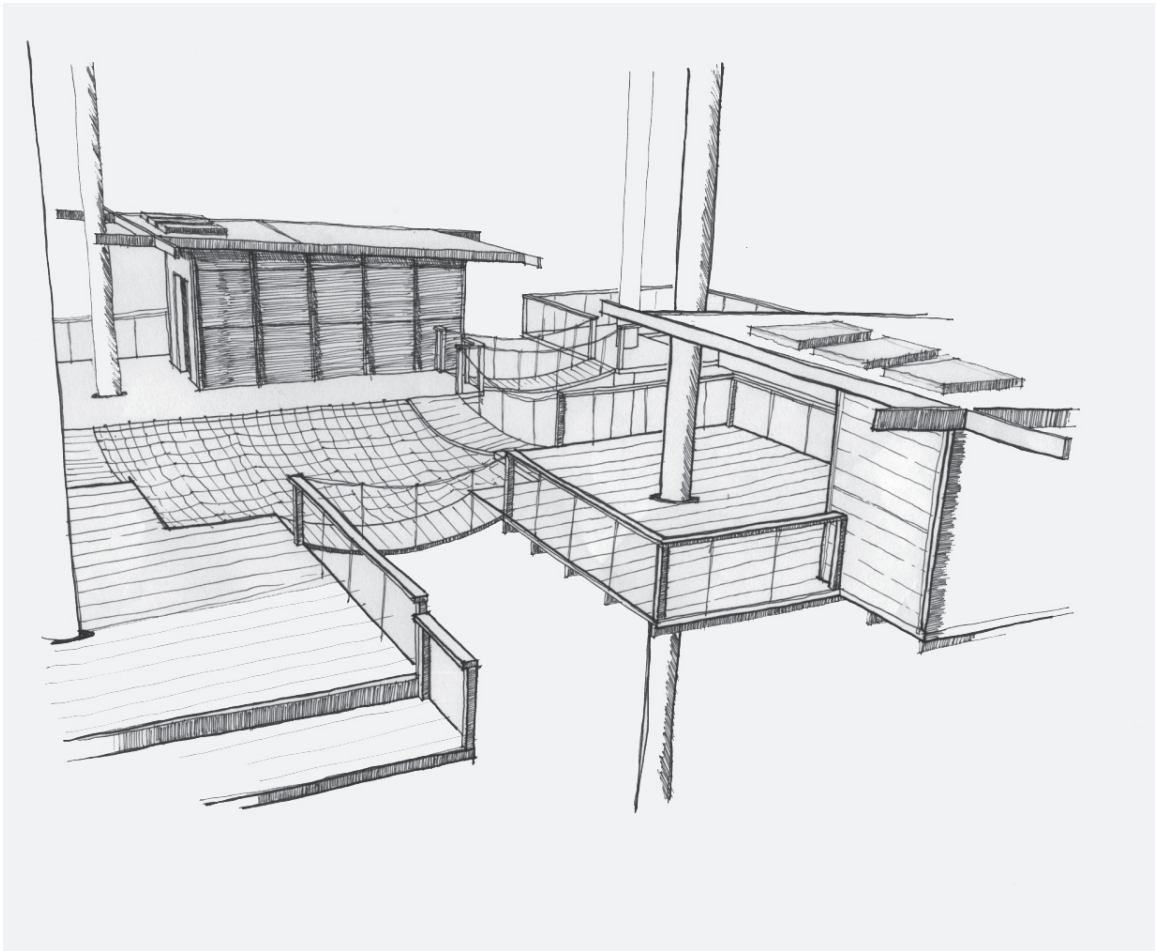




Wall section detail shows the use of pallets in the decking and wall design. This drawing also shows the moveable roof panels and the LED camp lantern that is powered by rooftop photovoltaic panels.



final DESIGN

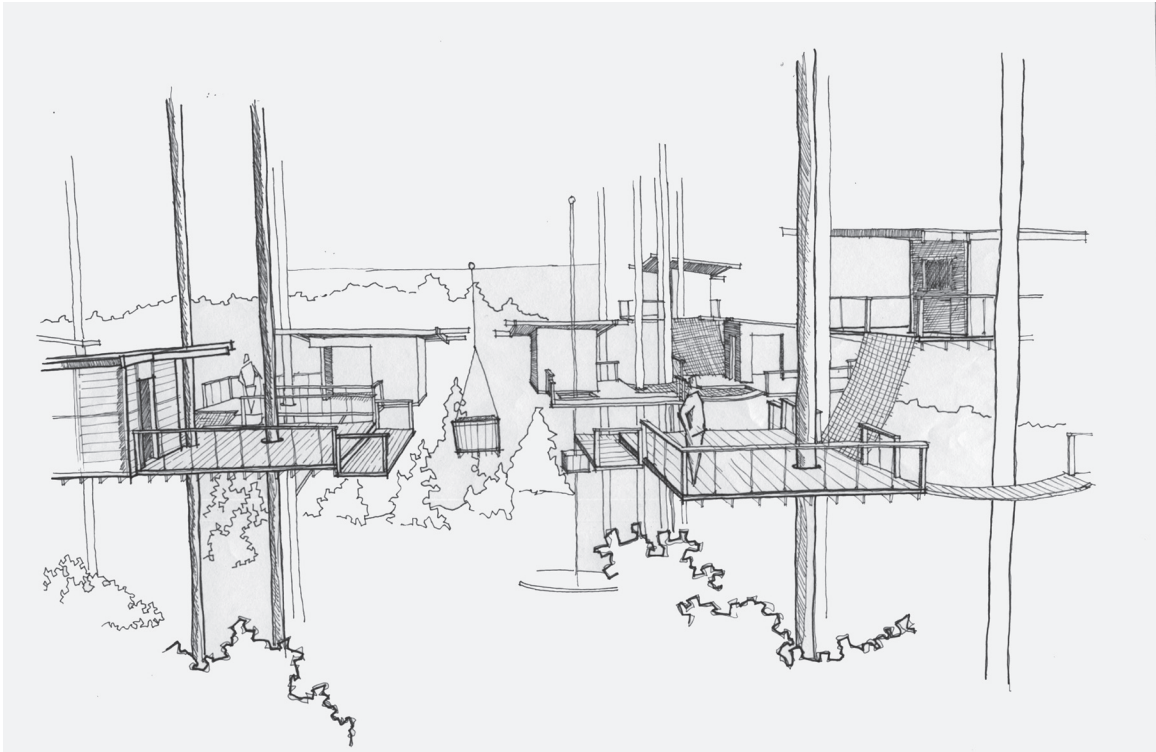


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branch ONE

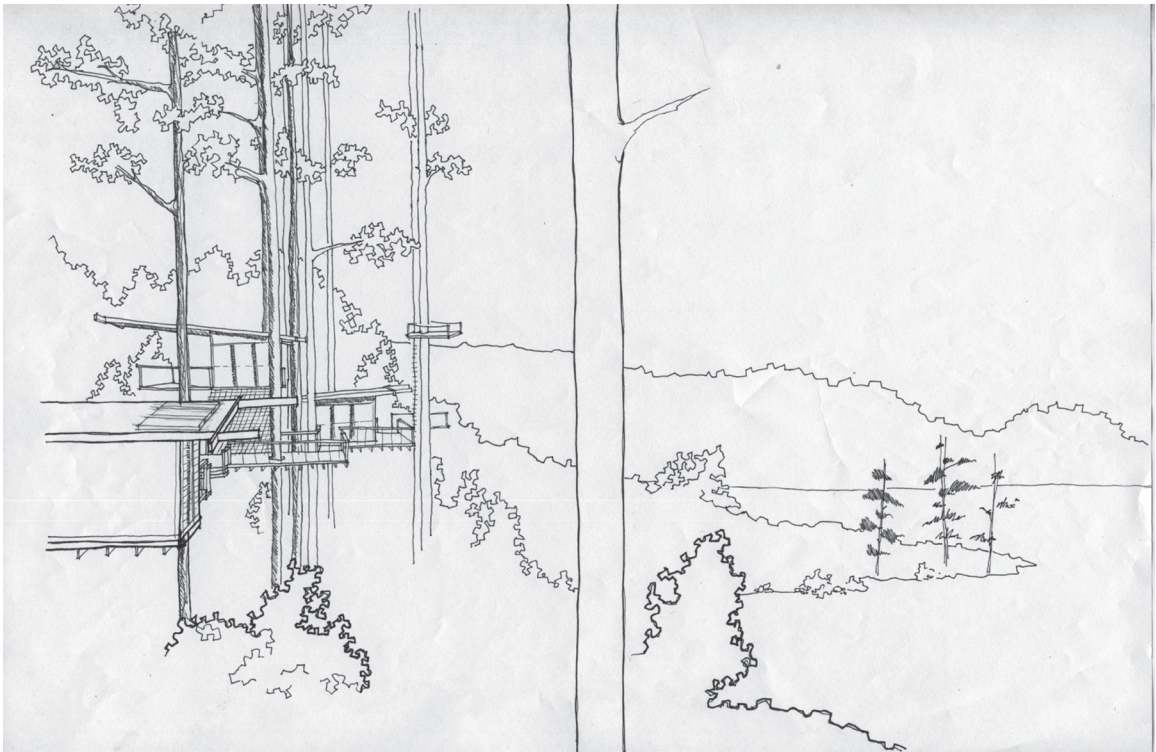
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final DESIGN

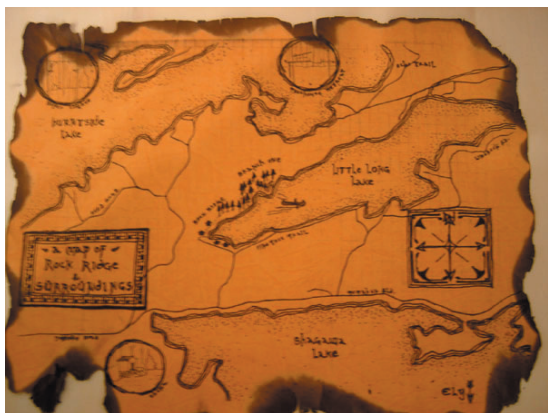
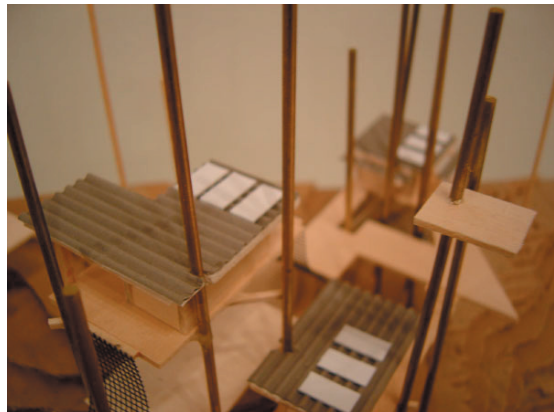
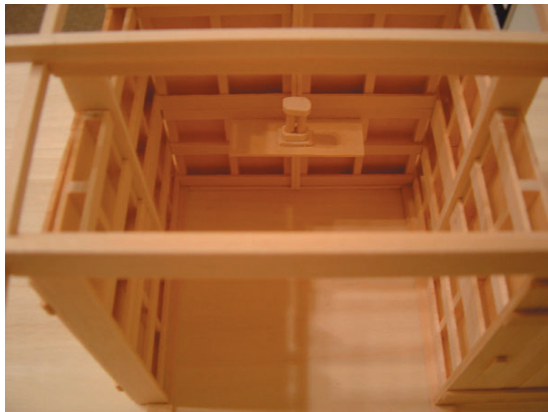


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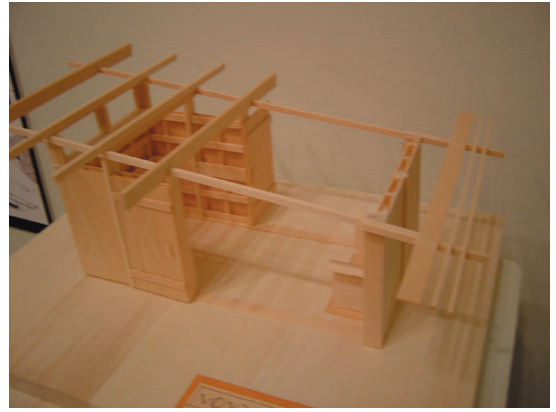
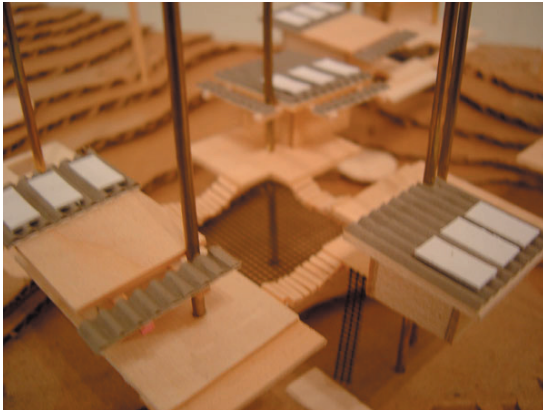
branch ONE

final DESIGN





final DESIGN

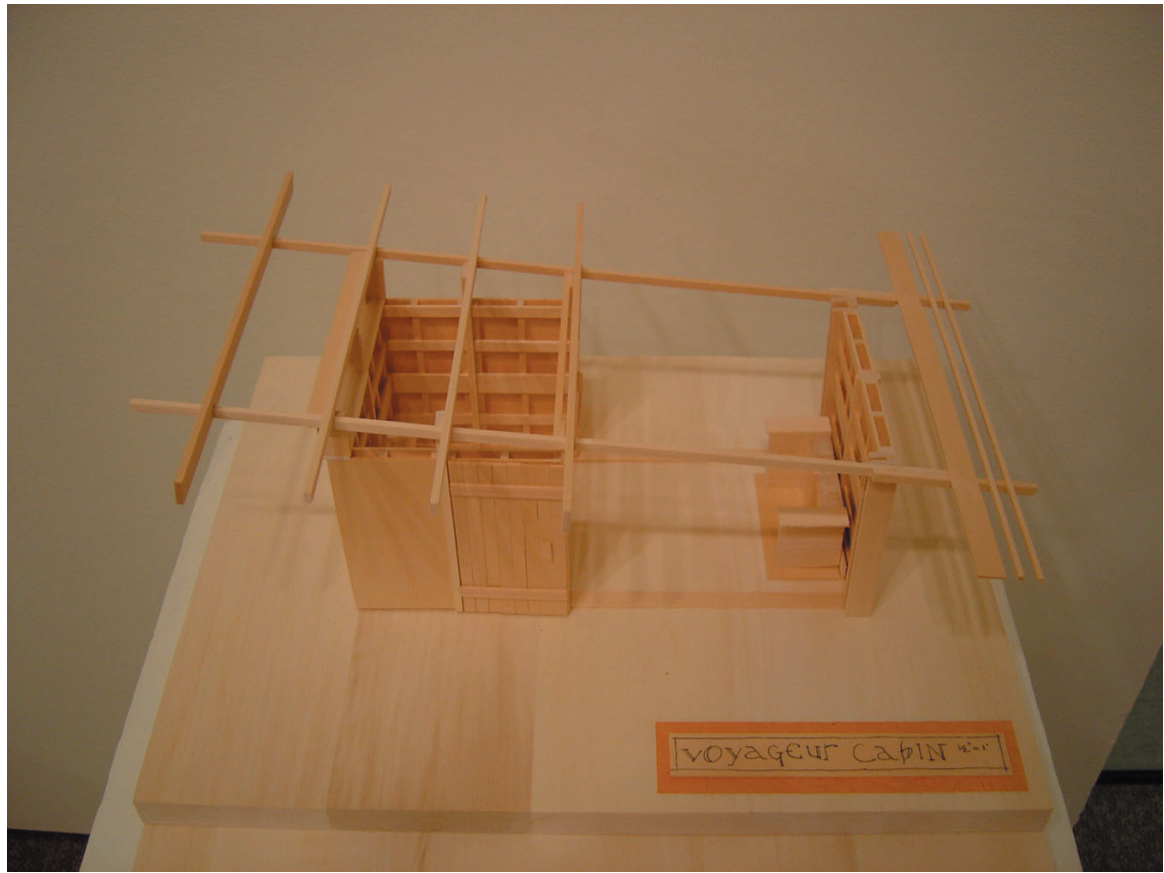


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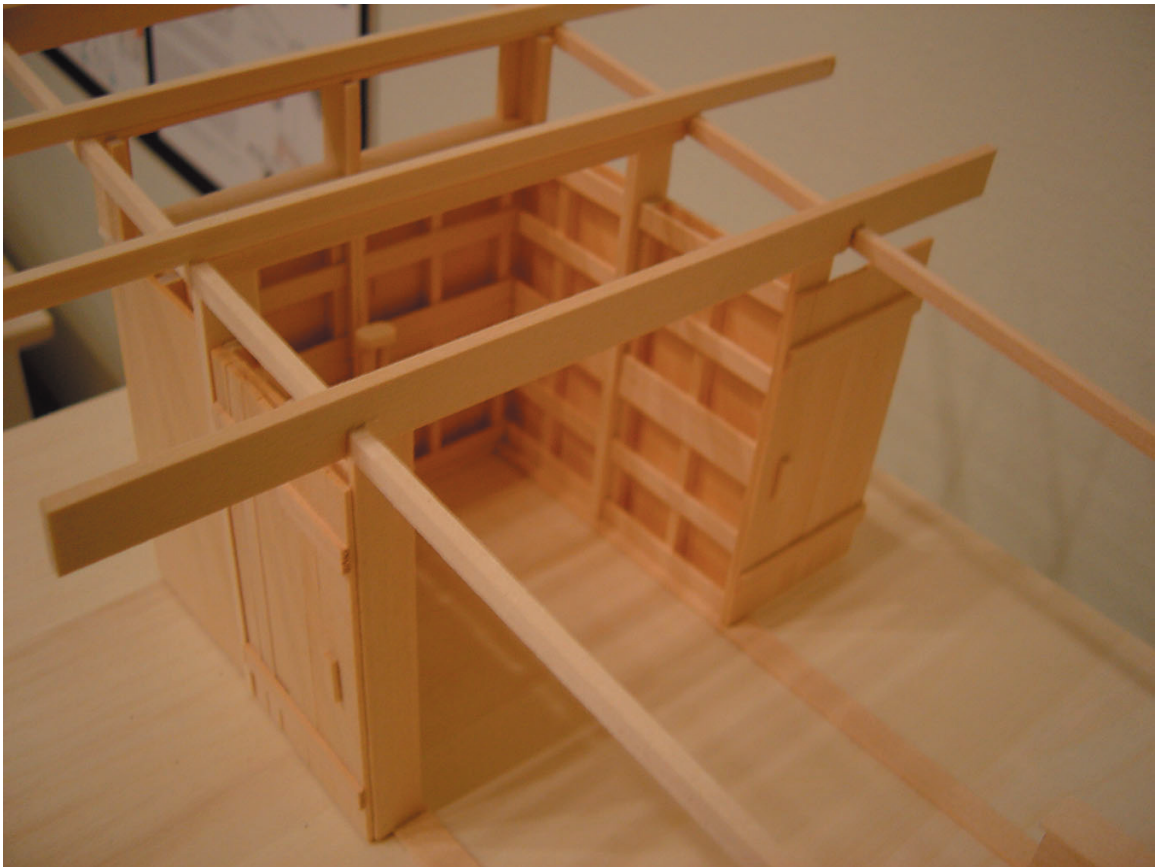
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final DESIGN



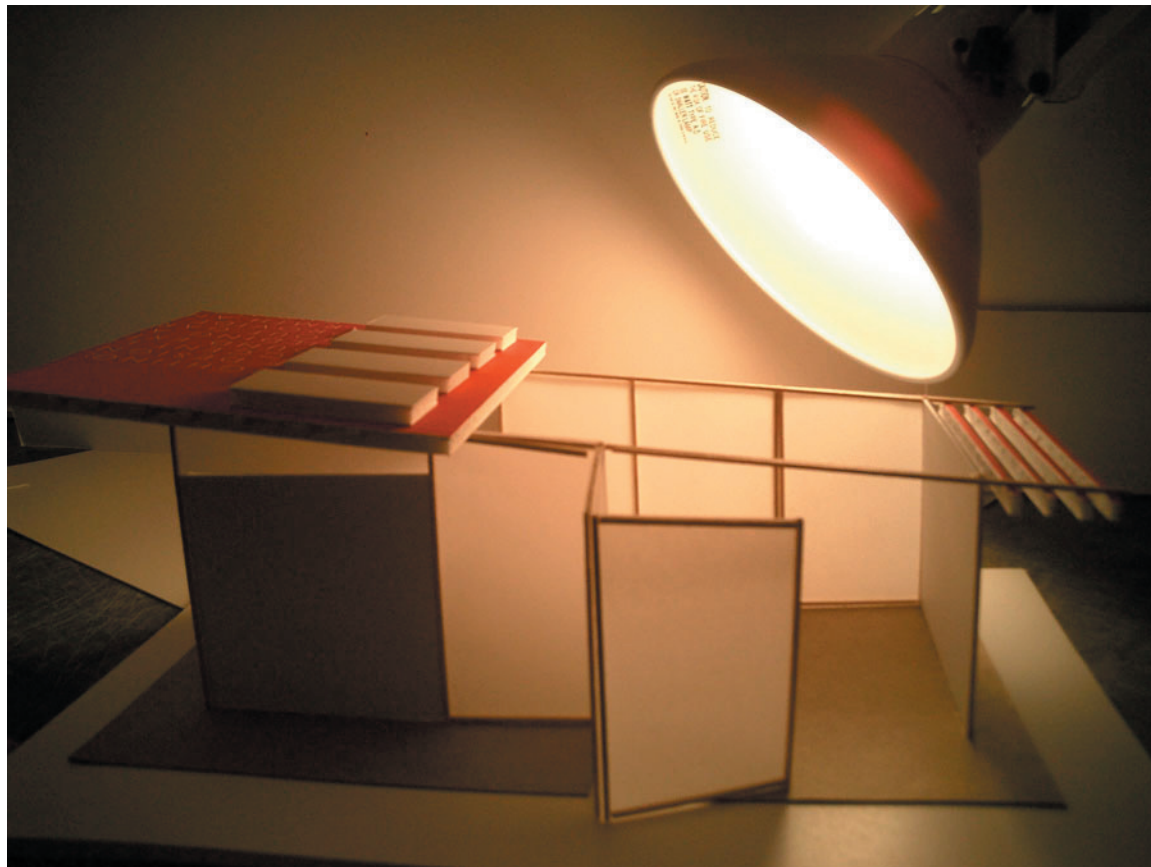
ROCK RIDGE
ELY, MN

branch ONE

f i n a l D E S I G N

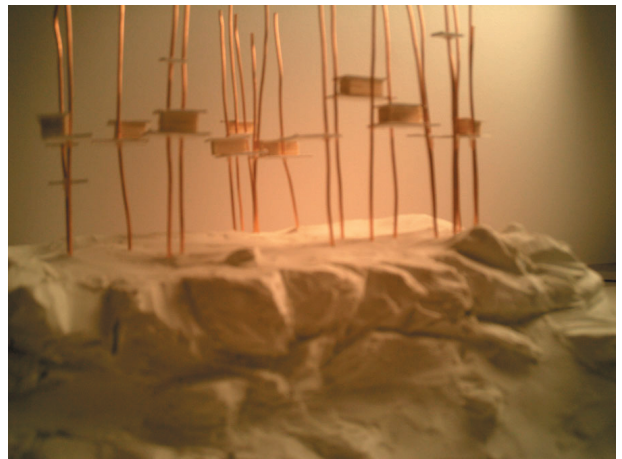
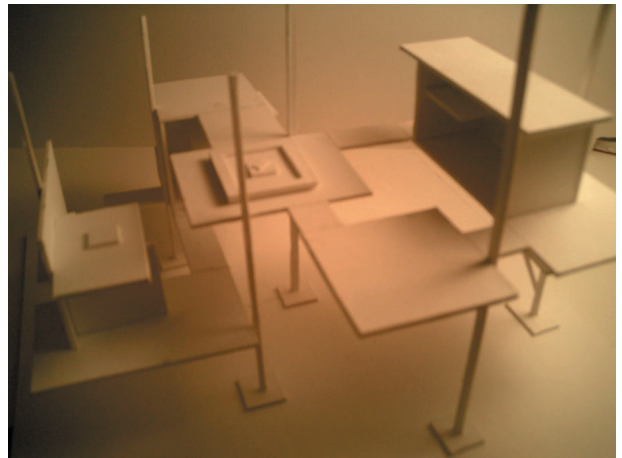


My design process involved sketching and many exploratory models. They provided the perfect type of inspiration and response to the context and goals for the forms.





final DESIGN



ROCK RIDGE
ELY, MN

branch ONE



RESOURCES

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APPENDICES



A P P E N D I X

Linn Bjornrud

Statement of Intent

Rock Ridge Treetop Retreat

In the search for health and wellness, it is crucial to consider the natural environment as well as one's personal well being. Quality of life is directly connected to the quality of the environment in which we live. As inhabitants of this earth, we have the privilege and responsibility to preserve and responsibly take advantage of what nature provides us. In this way, a balanced relationship is maintained.

Also vital to well being is an obvious, yet too often forgotten, part of life, happiness. Happiness is the quickest path to good health and wellness. Our society consists of busy, stressed, and burdened individuals. The design will encourage visitors to once again pursue happiness in their lives without the technological generators of laziness that claim to improve life.

My intentions are to design a revitalization

retreat that satisfies all of these needs and considerations. It is to be located 12 miles northwest of Ely, Minnesota at a camp called Rock Ridge. The camp is located on Little Long Lake and wishes to add to its offerings. An unused point reaches out onto the lake and provides the perfect location for the retreat. That, however, is not where the description ends. This retreat will be located above the ground in the branches of the trees that carpet the northeastern Minnesota landscape. The concept of a tree house is directly linked to a simpler period in most people's lives. Reconnecting with the carefree child in each of us can be a valuable method in which an appreciation of life can be rediscovered. Henry David Thoreau refers to a "wildness" that we should all discover in ourselves in reaction to being inhabitants of nature. This, is a perfect example of what this design strives for.

Materials and building methods for this project will promote sustainability and preservation of the beautiful landscape being used. Climbing, jumping, swinging, swimming, and relaxing are a few of the elements of the treetop retreat that





A P P E N D I X

encourage healthy, happy living. And lastly, this resort will provide a venue for individuals to get away from the stress and worries of everyday life. The need to escape this stress can be a powerful and unique generator of architectural form. By reducing life to its simplest terms, we have the opportunity to observe and appreciate the natural economy around us.



A P P E N D I X



design INTENTIONS

my intention for this process of discovery and design is to create a sanctuary in the trees that is wild, natural, brave, respectful, adventurous, simple, spiritual, and functional.

[w i l d]

this space should evoke a carefree and 'Thoreau like' spirit

[n a t u r a l]

this sustainable design will use local materials, and will be as organic as possible

[b r a v e]

this design will pursue what most will not

[r e s p e c t f u l]

this design needs to work with and not against nature and its processes

[a d v e n t u r o u s]

this design and its users must be willing to step outside the front door and live

[s i m p l e]

the spaces and forms do not need to be complicated, but creative, and elegant

[s p i r i t u a l]

this design will promote an appreciation of wilderness and the source of its wonder

[f u n c t i o n a l]

the spaces and forms will be driven by their function

this design will serve as a rustic retreat that will include sleeping cabins, community spaces, decks, ladders, ropes, nets, pulleys, baskets, gardens, campfires, and anything else that has no business being off the ground.



A P P E N D I X

Linn Bjornrud

Abstract

Rock Ridge Treetop Retreat

My intentions are to design a revitalization retreat that satisfies the need to connect with the freedom of childhood. It is to be located 12 miles northwest of Ely, Minnesota at a camp called Rock Ridge. The camp is located on Little Long Lake and wishes to add to its offerings. An unused point reaches out onto the lake and provides the perfect location for the retreat. That, however, is not where the description ends. This retreat will be located above the ground in the branches of the trees that carpet the northeastern Minnesota landscape.

Materials and building methods for this project will promote sustainability and preservation of the beautiful landscape being used. Climbing, jumping, swinging, swimming, and relaxing are a few of the elements of the treetop retreat that

encourage healthy, happy living. And lastly, this resort will provide a venue for individuals to get away from the stress and worries of everyday life. The need to escape this stress can be a powerful and unique generator of architectural form. By reducing life to its simplest terms, we have the opportunity to observe and appreciate the natural economy around us.



b r a n c h O N E



A P P E N D I X

Treehouse Memories Jeannine Bjornrud

In our small town of 195 people (if you counted all the cats and dogs), it was a hay day for kids. The main population of adults was in their prime child bearing years, so the town streets were filled with bikes and horses in the summer, and sleds and skates in the winter.

I was right in the middle of five kids in our family , born in the '50's. I had an older brother and a sister that was always on the hunt for an adventure, and a younger sister and brother.

In the winter we built snow forts and had great snowball wars. In the summer we scrounged up any old boards and nails we could find, loaded them in the radio flyer and headed for our spot in the woods that we had claimed for our tree house.

My sister Cheryl and I teamed up with two other sisters the Johnson girls , Molly and

Suzanne. There was a nice woods, right in town, near the Johnson girls house. The land belonged to Ma Peterson, but as far as we were concerned the woods belonged to everyone. We would work for days and weeks in the summer hauling our great lumber finds to the edge of the woods and then carrying it in. We had no particular design ideas, just put boards that would fit between the branches until we had some sort of structure. After it was finished , we took up daytime residence there and packed meals and just spent our days away up in our tree house.

We did not have the only tree house, scattered throughout the woods of town there were an assortment of "secret" hide-outs. Some of the older boys in town, had a treehouse hideout back in the woods by my grandparents. We were forbidden to find it, and if we ever did, warned we should never ever enter. That was more of a challenge than my sister could handle. So we took off searching the woods until we found the forbidden hide out. I had a healthy respect for those boys , so I trembled in fear that they would find us there, for my sister , it just meant she



A P P E N D I X

needed to face the challenge and enter their tree house. So she did, I always thought that somehow they would find out, and well I don't think I ever knew what might happen.

One day we showed up at our tree house and it had been damaged, boards ripped off and it was all undone. We figured we knew who had done it , I don't know how we thought we knew, but we sought revenge. I guess we figured it must have been Danny Holcomb , because he had confronted us about building in his grandma's woods. We found Danny's tree house located in the same woods as ours. He had a nice camp fire sight and a coffee pot, and a tin of coffee out there. To pay him back we dumped the coffee all over the ground and destroyed his camp sight. So there Danny Holcomb,

The summers of treehouses were many and full of imagination. We would leave home in the morning after our chores and stay out at the treehouse until somehow we knew it was time to go home and eat. It seems our mother never worried about us, she didn't know where our

tree house was , but in our town that was just how life was, kids footloose and fancy free making their own adventures. I have come to find in my adult years , that a childhood like mine was as one friend told me, something that others dreamed about and didn't know it could really be like that , except in books.

So now having my own son planning and dreaming and designing a tree house retreat center , reaches right to my heart and fills me with memories and joy. So I dream right along with him and imagine the smells and sounds and feel the wind off the lake, and imagine that it would be the most wonderful retreat of all





A P P E N D I X

Memories of Tera Tora Linn Bjornrud

There were plenty of kids in my rural neighborhood, and even though our ages were scattered, we always seemed to stick together. We had plenty of climbing trees and forts over the years, but one in particular was the greatest of them all. We called it TERATORA.

The woods out our back doors were not the typical forest that one would think. From the outside it may have looked that way, but we explorers knew the truth. We knew that these woods were not for the inexperienced.

You see, under the canopy of the tree's branches, was a swampy terrain that would take a leg from you if you weren't careful. The ground was lumpy and covered with thick green moss that seemed like old carpet that had been left in the rain. It was soft and moist, and the round lumps were scattered around like stepping stones. Between the lumps of earth

were infinitely deep holes that were big enough around to swallow one of us up, if not just a leg. Each hole was filled with water so dark, that you couldn't see past the surface. Now and again, someone would slip and stick their foot into one, but fortunately we never lost more than a shoe.

TERATORA was our encampment, and we routinely peeled up sections of fresh moss to carpet our territory for the day. We built a perch between two trees with any materials that we could sneak away from our garages or find in the woods. Of course for comfort's sake we had to lay down a moss carpet on this as well.

For sustenance, we picked blueberries and washed them down with fresh coffee that we made over our miniature wood stove that we bought from an older kid. (He had crafted it in woodshop class.) After this we would pick wintergreen leaves to chew on so that the coffee breath didn't overwhelm us.

Later we would show off by jumping over the nearby creek (and occasionally taking



A P P E N D I X

a drink of the water). Once we were tired we would make the trek home, being just as careful not to step into the inky water. I don't ever remember letting the adults see our hideout in the forest, or giving us permission to light a stove in the woods for that matter. We lived, however, and I mean lived.





A P P E N D I X

LHB COMPETITION

Design for Sustainability
Linn Bjornrud

Design for a Sustainable World

My eyes open, it can't be much later than seven a.m. The morning rays splashing across my face will be the only alarm clock I need on this day. As I eagerly get dressed and stumble out of the tent, a flock of geese honk excitedly as they fly over the campsite. The air is crisp and fresh, and I can not think of a better morning had by anyone in the history of the world. This type of experience is just one of the many reasons for my passion for sustainability. Wilderness author, Sigurd Olson, knew exactly what that felt like. In his years in the same north woods that I grew up in, he experienced life at its fullest. One summer evening in the early 1920's, camped on an island in Robinson Lake, Olson got into his canoe after dinner and paddled to the nearby eastern shore of the lake. Here was a peak with

a gorgeous view of the wilderness to the west. Sigurd climbed to the top in time to watch the sunset, but the experience proved more than an aesthetic appreciation of a glowing red sky. He recalled it in his journal in 1930:

"The sun, a round red ball on the horizon, was separated from me by leagues and leagues of primitive wilderness. It hung suspended, swelling, glowing, palpitating with energy. For a brief moment I experienced the sensation of feeling the earth move away from the sun. Nothing akin to it had I ever felt. Here I was, an atom of life on the rim of the world, watching it turn. Never before had I experienced anything which placed me so in harmony with the infinite."

There is something special about experiencing the natural world and all its wonders. From the tallest mountain in view to the wildflower that grows at your feet, lessons about life, and oh yes, architecture, are found in this place. When pondering over how to make this world a better place, this is where my mind travels.

Nature is what we are trying to protect and keep sacred. Nature provides



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us pleasure and more importantly, nourishment. We must realize that this earth we live on is full of life. Thomas Saunders addresses this in his book *The Boiled Frog Syndrome*. He claims that we have not only lost respect for the earth, He claims that we treat the earth as an “inert, lifeless mass of rock and soil.” I feel that our challenge as designers, and as humans, is to not only build responsibly, but to change the way people think. In the following pages, I will discuss some of the many problems, solutions, dilemmas, and uncertainties that exist in the road to wellness for us and the world we live in.

When reading William McDonough’s *Cradle to Cradle*, I found myself thinking, “Here we go again, another book full of bleak facts about the ways in which we are destroying ourselves.” McDonough talks about all of the harmful things we do and think nothing of. The sad part is the ways in which we think we are fixing our problems. When we try to be responsible and attempt to release ourselves and loved ones from the dangers that we shovel into our lives, we only discover that we have not improved at all. Good

intentions do not grant us the luxury of good results. No matter what I change, I am able to analyze my life and realize that ninety percent of the choices I make every day contradict the battle that I want to fight. Being “less bad” only creates a false sense of self-assurance. It also opens my eyes to the endless contradictions that cling to good intentions. *Cradle to Cradle* begins by prying open the eyelids of those who choose to handle its pages. More lists of chemicals and harmful effects of items we think are safe, items that we even urge our young ones to play with, even chew on. Ignorance is bliss and we exist in a culture that must be bubbling with bliss. Our attempts to recycle turn out to be just a gimmick. These attempts only delay the inevitable and paint a pretty picture so that suburbia can sleep with a clear conscience. So what are we to do?

The most evident and painful solution attacks the way we have been taught to live. “More” has been the anthem of the western world for centuries and has been most evident since the industrial revolution. That is why the answer is like a neck tie squeezed too tightly; we need to actu-





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ally make sacrifices. Once the initial shock of this subsides, one can understand the relevance of that statement. The way we hoard and strive to possess more than the next person has even become the way in which we measure success, but if we continue to live with this mindset we can never achieve what we need to. The world of excess that we have become accustomed to has quickly depleted the natural resources that we are so dependant on. So it is true that we need to stop being so materialistic, so greedy. We do need to limit our consumption, but don't be discouraged because there is a positive side. It is possible to live a fulfilled life and still make the necessary changes. What we need to do is to start with a different approach than most think of in terms of sustainability. We need to adjust the way we think from striving to eliminate and limit waste, to eliminating the concept of waste. Let us pursue lifestyles that celebrate our imagination, creativity, culture, and productivity. If we can reach a point where we are no longer simply limiting the bad, we can begin to focus on increasing the good!

The first course of action that we

need to take is to lose our pride. McDonough and Braungart have hit the nail on the head when they say that we try to work by our own rules even though they contradict those of nature. I am convinced that the sense of accomplishment and reward will be far greater if we coincide with nature instead of attempting to conquer it. The perfect example of this mentioned in the text, is the Titanic. We made the invincible, only to be humbled by nature. Working with nature is an intriguing concept to me. I was first really exposed to this concept when reading *Biomimicry*, by Janine Benyus. Since then, I have enjoyed learning about processes and systems that exist in the natural world. That is why the "consider the cherry tree" analogy found in *Cradle to Cradle* speaks so loudly to me. The cherry tree litters the ground with thousands of blossoms in the hopes that one pit will take root and grow. Is this a waste? Absolutely not, and no one would ever consider it to be. This is because the blossoms decompose and break down into nutrients that nourish the soil, organisms, insects and animals. So even though the cherry tree produces more product than is needed,



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it nourishes and encourages life. This is inspiring to me as a designer and as an individual (the separation between the two merely a rubbed out line in my eyes). Can you imagine designing a building that does not create waste, but instead creates nourishment? This is how we can start winning the battle.

We must demand growth. Growth comes in two forms, that which is seen as good, or positive, and that which is seen as bad, or negative. The former would include the growth of humans, the growth of nature, the growth of understanding and responsibility. The latter would be referred to as a cancer. Industrial growth and urban growth are often found in this category. McDonough states that what we need to do is grow these negative things in a positive way. This seems confusing, but what he is saying is that we need to design industries and systems to get bigger and better, in a way that restores and replenishes the rest of the world. This demands diversity for success. It will take numerous systems and processes and considerations, in short, every aspect of design must be included. In the same way, we must remember the

Titanic, and not try to achieve this by our own terms. If we work with nature, we have a chance at success. The systems and processes need to be woven into the systems and processes that nature already has in motion.

The concept of a "life cycle" is one of these processes found in nature, but it has been tainted. Look at the literal definition of the words. "Life" and "cycle" are two very positive terms, yet one may refer to the life cycle of an automobile engine that was made brand new and lays at rest in a junk yard in the end. It seems to me that this scenario includes very little "life" and absolutely no "cycle." A true life cycle would obviously seem to be one that continues without beginning or end. The way in which the cherry tree does not die before it has nourished and reproduced, the way in which even we as humans do the same. This is a goal we must attain.

Before I get any further I want to address the fact that it may seem as if I have not yet talked about sustainability within the realm of architecture. The reason for this is that true sustainable design does not end with the insertion of some PV panels and perhaps some passive con-



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trol systems. It is an issue that is deeply rooted. A superficial solution is tempting, and sadly common. Technology does provide some brilliant possibilities, but we must first understand the problem at its source. We can not afford to “sweep the dirt underneath the rug.” In order to make real progress, we as designers must grasp the responsibility that is set before us.

This is where McDonough’s “The Hannover Principles” can and will serve as a valuable tool. They lay a framework that we can build upon. Each decision that we make should be in harmony with these nine principles. They note the importance of co-existence, interdependence, and very importantly, consequences. These principles also present a challenge to change the way we think about waste and a spiritual connection to design. Finally, the importance of improvement through the sharing of knowledge is listed. These principles may be general, but the spirit of the message is right on.

Another set of principles comes from Benyus’s Biomimicry. This list, however, does not refer directly to designing. Instead, it is a list of statements which describe how

nature’s laws and strategies operate. This is a list that I think does what I have referred to as, “finding the source,” of the sustainable approach. These principles are:

- Nature runs on sunlight
- Nature uses only the energy it needs
- Nature fits form to function
- Nature recycles everything
- Nature rewards cooperation
- Nature banks on diversity
- Nature demands local expertise
- Nature curbs excesses from within
- Nature taps the power of limits

Biomimicry, the imitation of life, may just be the greatest design tool to date. What occurs in nature is far more efficient in every way than what we as the human species attempt to do. If we use nature as a model, a measure, and a mentor, than we can begin to design honest buildings. Take for example the tendons found in our bodies. They are extremely strong due to the system of hierarchy in the twisting fibers that they are composed of. Now we use a similar process in the cables that hold up the worlds largest buildings. Or how about the design



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of solar cells copied from leaves, steely fibers woven spider-style, shatter proof ceramics drawn from mother of pearl, and even cancer cures compliments of chimpanzees. With the technology that we have now, we can study nature closer than we ever could before. By doing this we find that every process we have come up with has already been accomplished by nature in a much more efficient and respectful way. Our most clever architectural structures already found in bamboo and lily stems. Our central heating and air-conditioning second best to the constant 86 degrees F in a termites' tower. Humbling also are the processes that we still are only dreaming of matching. For instance, arctic fish and frogs freeze solid and then spring back to life, having their organs protected from ice damage. Polar bears keep themselves warm with a coat of transparent hollow hairs, which act like the panes of a green house. Chameleons hide without moving, and the list goes on. These are my teachers, and nature is my textbook.

Henry David Thoreau wrote that, "In wilderness is the preservation of the world." Never has that held more meaning to me

than it does now. The way in which he experienced life and nature is a shining example of what we are to do. He wished to live deliberately, to front the essential facts of life, and see if he could not learn what it had to teach. He held this so high because he felt that when he came to die, he did not want to discover that he had not lived. So as a designer, where do I start? After all of this preaching, how do I begin to turn the wheels of change? I don't fully know the answer to this. What I am sure of is that the change needs to start with me. So my first word of advice to anyone who feels challenged is to put down the pencil for now. Take off work for a day, a week even. Find your favorite patch of wilderness and take a walk. But do not take this walk before reading the instruction manual for such an event. Pick up a copy of Thoreau's, "Walking," and experience a walk that may change your life.

"When a traveler asked Wordsworth's servant to show him her master's study, she answered, "Here is his library, but his study is out of doors."

-Henry David Thoreau, "Walking"



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References

“Olson’s Wilderness Theology” Sigurd Olson Website

www.uwm.edu/Dept/JMC/Olson/theology.htm

Cradle to Cradle, William McDonough and Michael Braungart

Biomimicry, Janine Benyus

The Boiled Frog Syndrome, Thomas Saunders

Walden, Henry David Thoreau

“The Hannover Principles” William McDonough

“Walking” Henry David Thoreau



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Theology of Branch One:

"In some men, the need of unbroken country, primitive conditions and intimate contact with the earth is a deeply rooted cancer gnawing forever at the illusion of contentment with things as they are. For months or years this hidden longing may go unnoticed and then, without warning, flare forth in an all consuming passion that will not bear denial. Perhaps it is the passing of a flock of wild geese in the spring, perhaps the sound of running water, or the smell of thawing earth that brings the transformation. Whatever it is, the need is more than can be borne with fortitude, and for the good of their families and friends, and their own particular restless souls, they head toward the last frontiers and escape."

-Sigurd Olson

Perhaps no one has ever known or appreciated the outdoors and particularly the

northeastern Minnesota landscape better than Sigurd. For whatever the reason, we as inhabitants of this world are tied to those things in this world that are beyond invention. Tied spiritually, emotionally, and as researchers are discovering, physically to nature and its awe inspiring sights, smells, textures, and lessons. Anyone who has enjoyed experiences in the wild, whether camping, canoeing, hiking, climbing, etc. can relate to this need to escape from the urban wilderness and seek its predecessor. Once there, we can see sunsets more beautiful than any canvas could hold, breath damp morning air that tastes better than the finest sweets, and simplify life to its most vital needs.

This design is intended to provide inspiration to pursue such things as this. It is intended to pry memories and stories of childhood tree houses and adventures from the mind and transform them to the reality of taking new journeys and creating fresh memories and stories to tell around the crackling flames of the campfire.



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Design Thesis Proposal
Linn Bjornrud
Rock Ridge Branch Out Retreat

A. Title:

The Rock Ridge Branch Out Retreat near Ely, Mn

B. Building Typology:

The typology of this retreat is one that consists of structures and paths that connect spaces both horizontally and vertically. This retreat will be a series of tree houses connected by various ladders, ropes, and swings, etc. These spaces will be built using the resources that are found locally. Outside materials, and technology that cannot be made by local resources will be limited to nonexistent. This retreat has a demographic that focuses on those who are physically capable, and eager to experience a vacation and an adventure while celebrating the surrounding nature.

C. Conceptual Basis or Unifying Idea:

As a child, the approach to life is far from

that of an adult. As we grow old and mature, there is a mold that society forces us into. We must get jobs, pay bills, act responsibly, and possibly start a family. These are not negative goals by any means, but must we completely lay down the wildness and wonder that we possessed as children? I am confident that the innocence of childhood serves as a great lesson in the art of living life. A common question for reflection asks what we will remember of our lives when the day comes when we are nearing death. I propose the assumption that nearly one hundred percent of the time, the memories that are stirred are those that include the very same wildness and wonder mentioned earlier. "Wildness" is a term that literary hero Henry David Thoreau uses to describe the way in which we should live and experience nature. This is a concept that will echo throughout the realization of this retreat. Even if its visitors are only able to taste their youth for a few short days, my hope is that the discovery that is experienced will last (and affect) a lifetime.



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D. Project Justification:

The tree house is a concept that puts excitement into the eyes and hearts of children everywhere. What is unique is that the same affect is had on many adults when asked about it. This is due to the fact that nearly every child either experiences or entertains the idea of what fun could be had with a tree house. The need to enjoy life is one that cannot be lost in the responsibilities and routines of everyday living. Instead we must celebrate the simple and honest pleasures that exist around us. The goal of this retreat is to provide a link to some of these pleasures.

E. Emphasis:

One emphasis of this design is to explore the possibilities of a relatively rare approach to building. To not be restricted by vertical placement will be challenging and full of adventure.

This project provides an ideal opportunity to think and design sustainably. This will aid in the goal of reaching an honest, ethical, design solution that celebrates

the surrounding landscape.

Physical fitness will also be encouraged through this design. Climbing, pulling, swinging, and various other physical challenges will serve as a defiance of the laziness that many everyday conveniences instill in us.

F. Site Information:

Rock Ridge is a camp that is located 12 miles northwest of Ely, Mn. As of now the camp offers many different experiences and adventures. A few of these include rustic experiences in cabins, tents, canoeing into the boundary waters, learning survival techniques, and ropes courses, among other offerings. When the idea of this tree house retreat was introduced to members of the Rock Ridge board of trustees, much interest was received. Rock Ridge is looking to add to its offerings, and has available land to do so. The camp is located on Little Long Lake, and has yet to find use for the point that forms one side of the bay that it sits on. The landscape is blanketed with trees that look down upon the water, providing an

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ideal location for the tree house village.

G. Major Project Elements:

- Cabins
- Community Spaces
- Personal reflection perches
- Ladders
- Walkways
- Swings
- Campfire areas
- Outhouses

H. User/Client Description:

The user in this case would be those who attend Rock Ridge camp. This retreat would not be for everyone, however. Only those who come to Rock Ridge specifically for the Branch Out camping session would be allowed access to the retreat. There are a number of requirements and reasons for them in reference to this retreat, one being an age requirement both minimum and maximum. Obviously, this requirement is in direct response to the fact that a certain physical capability is required to be able to handle the climbing, etc. Another reason

for restricted use is due to the issue of liability. Anyone who uses the facility must sign a waiver assuming responsibility in case of injury. These requirements would be much the same as that of a rock climbing wall or site.

The client for this retreat will be Rock Ridge camp. They have shown interest in the project and would be financially responsible for the realization of the design.

I. Design Methodology:

Much of the research for this project will consist of case studies. Case Studies will vary from tree houses, to other structures built above ground, to retreats, to outdoor recreation sites. Much research will focus on local materials, and methods that will be helpful in keeping the solution sustainable. Another focus will be on the connections of spaces. These will include ladders, ropes, bridges, and perhaps even more advanced primitive modes of transportation such as a manual elevator run by a pulley system. Methods of construction will also need to be heav-



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ily researched. It is yet to be determined to what level these structures can be attached to the trees without causing damage to them or losing sturdiness.

J. Realization of the Design Method in the Design Process:

Through the research and examples found in it, the design can begin to take shape. This is a project in which the context demands the responsibility of forming the structures that are to be designed. All decisions and placement of elements will be determined by the terrain and character of the trees. Envision the design problem as a puzzle with half of the pieces already in place, now I must finish the picture.



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L. Documentation of the Design Process:

Documentation of research will be organized into a binder for reference during the design process. Documentation of the design including sketches and drawings will be dated and kept in a binder. All other evidence of the design process will be documented and stored. The idea behind all of this is to keep everything organized and available during the process.

M. Bibliography:

Periodicals:

Internet sites:

Books:

“Swiss Family Robinson”

Other:

“Return of the Jedi”

N. Previous Studio Experience:

2nd year

fall: Phillipe D’Anjou

+ Skull of Lucy Display

+ Bozeman Retreat

+ Copenhagen Design School

spring: Vince Hatlan

+ Pocket Park/Coffee Shop



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- + Prairie Green Sustainable Home
- + NDSU School of Business

3rd year

- fall: Steve Martens
- + Abercrombie Museum
 - + Grand Rapids Airport

spring: Carol Prafcke

- + Children's Museum
- + Unitarian Church (Masonry Competition)

4th year

- fall: Mark Barnhouse, Cindy Urness, Josh Walter
- + Fargo Downtown Redevelopment

spring: Frank Kratke

- + Medium Density Housing (Marvin Windows Competition)

Darryl Booker

- + San Francisco High Rise (Flad Competition)

5th year

- fall: Vince Hatlen
- + NDSU Downtown Addition



Linn Bjornrud



Special thanks to Darryl Booker for sharing his knowledge and passion for design. Without his direction this project would not be what it is.

“There are no problems, only solutions”

To all else, the key to success is creativity. Never stop imagining.

