Nature’s Manifestation: How Architecture Can Entice Exploration of the American Landscape

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Abstract

Thesis

Design inspires simplified understandings of complex phenomenon and manifests, through spatial experiences, external loci for exploration of the natural world.

Assertion

While the early Americans utilized “Manifest Destiny” for their own conquests, the manifestation of these architectural elements alludes to the buildings propensity to instill a sense of wonder in the observer. This building strives to present a new Manifest Destiny, where there is not an indomitable expansion of land but rather the expansion of what many Americans know of the American landscape. Four regional interpretations of the exterior landscape develop a similar vernacular for a populace that resides in the built environment more than they do outdoors, per an NHAPS study. (Klepeis, Nelson, Ott, Robinson, Tsang, & Switzer, 2001) Ultimately, the museum will present a reasonable facsimile of the natural landscape and inspire the public’s exploration into the American landscape.

Research for this thesis stems from my personal exploration and experiences while traveling across America. Reasonable facsimiles of the landscape developed from the quintessence of each regions overall gesture, my interpretation of what I experienced through my travels, and my ethereal perception. The thesis of each region has a hierarchy of primary, secondary, and tertiary ideals that have inspired the design, from east to west:

Appalachian - Passage, Barrier, Sliding
Plains - Vast, Horizon, Fluid
Grand Canyon (Canyons) - Erosion, Depth, Vertical
Redwoods - Solitude of Silence, Solitude of Isolation, Massive

A theoretical investigation of the spatial quality of this museum yields a juxtaposition between perception and affordance. Affordance is a term that James J. Gibson coined that denotes the ability of an environment to be utilized differently through a multitude of dimensions including time (as age or time of day), need (present to the person at that moment), and ability (physical). Affordance defines the static nature of the environment and the observer’s requirements and the environment’s ultimate fulfillment of those needs (Gibson, 1987). This is to demonstrate that a person experiences space differently and specifically to themselves according to their needs.

To present a building that is of my own experiences, while diluted to its pure elements, is not demonstrative of the actual experience. It is something that can never be captured, the phenomenology of the landscape and how someone may feel in that space. Thus, leading to my thesis exploration, having the observer delve into spaces, experiences, and feelings set forth in the project. Then, inspiring the observer to explore the natural phenomenon of the American landscape.

Dedication

I would like to dedicate this book to my parents Kathi and Jim, to my sister Alex, and to my grandparents John and Judy. I would not have been able to complete these six years without their guidance and encouragement. Thank you for giving me the drive to complete this process. I especially want to thank my grandfather for believing in me early in my career and for starting the legacy.
The initial concept of design came from a section cut of the United States starting in Delaware and ending in California. The creation of the spine came from establishing the distance of each state across the cross section and taking the median altitude of the state. Then I connected the median points between states (seen in the image on the next page). These idea for the project was built around the principle of a spine for the circulation of the building with a progression through history from east to west. Initially, it was designed with historic rooms built off of the spine and joints denoting the significance of the rooms.

While using the cross section of the United States it became clear that the work was leaning more toward the natural landscape of the United States and not the history. From there I was able to work out the project that I wanted to produce. I took the four major elevation changes on the spine and decided which of the four regions would be denoted.

I took into account the major regions within these changes and chose the most notable natural features in each. These came out as first, the Appalachian for the first rise in elevation, the barrier of the east. Next came the Great Plains and their vast expanse across a great portion of the country. Next, the Grand Canyon (along with iterations of all canyons of the area including Antelope Canyon) and its eroded aspects both wind and water related. Lastly, the Redwood Forest was taken from the western portion of the country, denoting unique trees to the United States and the serene beauty of forests. These four regions were established as quintessential places within the United States that, along with almost every other terrain known, defined the scenic landscape.

These places are my interpretation of the most important features in each region and I have distilled essence of each region to define architectural gestures. While these are my interpretations of the four regions I believe they capture what most others experience in the regions and I want to present the viewer an image of what I see. The juxtaposition of affordance and perception is especially interesting in this building. The perception of one persons interpretation of each region will vary from person to person while the affordance is the static nature of what is built to apply to a person during that time and according to their need.

The final product of the building will be the American Landscape Museum that will present quintessential American landscapes unique to our country. The museum aims to pull people through the building on a central corridor that was built on the idea of the spine and to allow for the exploration per the visitors desire. The materiality is involved in the design to allow people to get a feel for the actual natural construction of these spaces.
01 - Preliminary Design

The initial design of the project was created as a museum of American history that was built on the concept of a spine for horizontal circulation. The image below denotes the measurements of the section cut (spine) per each state. The spine is based on the median height, the highest points, and the lowest points of each state with a line connecting directly to each of these points. The historic concepts applied are 7 major points in American history that shaped the country over a 200 year period. This points of history were spaces that were built off of the spine and had joints between the rooms and spine that denote the experience of each visitor to each event.

The original intent of the project was the historic context through American history which, when applied to the spine, worked as a movement from east to west and from 1776 to 1969. These historic were chosen based on their importance to shaping the nation, both good and bad, and these events were: the Revolutionary War (Entrance), the Civil War, the Louisiana Purchase, the Gold Rush, the Great Depression, Martin Luther King Assassination, and the Moon landing. The spaces were aligned on the spine so that they could look back on history and see which events shaped them while only allowing glimpses of future events. These events dictated how country was shaped and the shape of the spine was the linear progression of time and the event were moments of pause.
I believe in God, only I spell it Nature
- Frank Lloyd Wright

The Redwood Forest
One of the most unique forests in the world. This iconic feature defines the western region with its larger than life trees.

The Grand Canyon
A canyon shaped by the powerful Rio Grande became a pivotal point in American landscape not only because of the vast nature of it, but for its energy opportunities through dams.

The Great Plains
To me, the plains are the most iconic image of American landscape, taking up nearly 50% of the country’s terrain including the Mississippi River.

Study nature, love nature, stay close to nature. It will never fail you
- Frank Lloyd Wright

The Appalachian Mountains
These Mountains defined the early settlements boundaries and provide the barrier to the west.
A first attempt at detailing the spine. This was taken from the cross section and applied with vertical circulation. This was designed to address the exit and the view to the Rocky Mountains. It begins to add massing to the spine and how a visitor would traverse the museum.
This diagram starts to address the regions and their essence. Each region begins to work at answering what shape the region would suggest at a basic level so that anyone who has not seen the natural event themselves can have a greater understanding. The regions span great distances (averaging about 175’ per region) matching the distances that they cover in the overall true map. The diagrams to the right denote simplified version of the Great Plains and the Appalachian Mountains. These diagrams show how the basics of each region progressed into their overall form.
02 - Overall Building Drawings
02 - Elevations

East Elevation - Not To Scale

West Elevation - Not To Scale
South Elevation - Not To Scale
You ask me why I dwell in the green mountain;
I smile and make no reply for my heart is free of care.
As the peach-blossom flows down stream and is gone into the unknown,
I have a world apart that is not among men.

- Li Bai
Study 1 works on the central movement path that cuts all regions. The central geometry is set up for viewing by the visitor to denote their path. As the move closer other avenues open to them, allowing them to explore on their own. The push outward was a facsimile of the mountains and how a pathway can open up as the mountains pull away.

Study 2 mimics the first study with the central node of travel. The movement of the masses from outside in was to symbolize the mountain range that steps up until it reaches Mount Mitchell. The push inward of the facsimile was to highlight the central node. This enhances the stepping up of the masses and propels the visitor to the center in a different but similar approach as study 1.

Study 3 mimics the mountains expansive quality from north to south. The stretch allows for a more gradual stepping up of the mountains. The central node is shaped more of a valley so that there are pillars between the passage. With more openings on the eastern side (through the push and pull of the masses and their extended walls), there are more ways for a visitor to explore and pass through the mountains. This is more symbolic of the true condition.
Taking all the studies of the previous iterations, the mountains finalized into this sliding movement between each space. There is an idea of linear mountains sliding past each other and splitting apart for the passage. The movement of the mountains applies a scarring of the ground and shows the natural movement of mountain creation. The separation of the mountains for the passage is the central travel path and the masses create voids mimicking the caves of the Appalachians.

With the movement from model to a finalized product, the structure was created to span the distances of the masses. With these intrusion, they established the opening in the roof and the qualities of the higher points in this region. Moving to a finalized model the materiality of stone and wood provided scale of the masses. There was also more movement established from east to west with views that allude to the movement north to south. The sliding is even more pronounced in the center of the path looking up at the mountains. The scale of the mountains is comparative to the rest of the building, not reaching as high as the western portions as this range is significantly smaller than the Rocky Mountains. The scale is still surmountable for a visitor, providing the affordance based on its nature.
Longitude Section Perspective Appalachian -
The ascending movement over the mountains from east to west. Cave systems mimicked in the cut and excavation of the mountains.
Cross-Section Perspective Appalachian Mountains -

The sloped walls provide context to the views that a visitor would receive in nature. They also help provide context for the material of the mountains. The wood and stone provide the basis of the foundation for the mountains and the wood provides the canopy context.
These are the gardens of the Desert, these
The unshorn fields, boundless and beautiful,
For which the speech of England has no name—
The Prairies. I behold them for the first,
And my heart swells, while the dilated sight
Takes in the encircling vastness. Lo! They stretch,
In airy undulations, far away,
As if the ocean, in his gentlest swell,
Stood still, with all his rounded billows fixed,
And motionless forever. —Motionless?—
No—they are all unchained again. The clouds
Sweep over with their shadows, and, beneath,
The surface rolls and fluctuates to the eye;
Dark hollows seem to glide along and chase
The sunny ridges. Breezes of the South!
Who toss the golden and the flame-like flowers,
And pass the prairie-hawk that, poised on high,
Flaps his broad wings, yet moves not— ...

- William Cullen Bryant
Longitude Section Perspective Great Plains -
The long horizontal lines mimic the horizon supplementing the natural horizon with a built one. This bleeds into the natural once in the central view area. With sweeping forms, the glass mimics the fluid prairie grass in the wind.
Cross Section Perspective Great Plains -

The depressions allow the visitor to move down and use the window sill as a built horizon line. They also work to mimic the slight rolling hills of the plains. The water cuts through the region north to south moving more toward the east, much as the Mississippi River does naturally.
Wonderful land of the Rockies,  
Land of the Titans and genii,  
Mute as the dawn of creation,  
Under the same high and blue sky:  
Stretching away in the distance,  
Like the dreams of a happy young heart,  
Tinted with morning's bright colors.  
O picture of exquisite art!

Grand, magnificent Canyon,  
Where flows that wild, matchless stream,  
That races its way through the mountains,  
Where earth in its making is seen:  
Where temple, cathedral, and castle,  
Minaret, steeple, and dome,  
Were carved by the mighty world builders,  
From mountains on mountains of stone.

Their architecture was perfect,  
Their painters were not amateurs,  
Their beauty, men never have equaled,  
Their work, through the ages, endures.  
Angelo, Phidias and Reubens,  
Goethe, Melanchton, and Gray,  
And thousands of men in all ages,  
Were masters of men, in their day;  
But their work will fade—it will crumble,  
And men will forget all the Past,  
But this art in the heart of the Rockies,  
Is carved from the granite that lasts.  
Millenniums may pass o'er our planet,  
Our maps and our world will be changed,  
But the Canyon, out in the wild moun-
tains,  
O Lord, let it ever remain!

There men see the earth in its making—  
So mighty, majestic and solemn;  
Its massive, eternal foundations—  
Facade, and turret, and column.  
'Tis building through all the long ages,  
Unfinished; completed, it seems,  
The masterpiece 'mong earth's great won-
ders  
Of canyon, and mountain, and stream.

The genius of God is unfolding  
Just now as in ages gone.  
Dissolving, revolving, evolving,  
Unmaking, and making, our home.  
Shall the architrave of this planet,  
Be surpassed in the ages to come?

- William Wendell Riley
The vertical nature of the canyon dictated the initial design. The push and pull of the central vertice mimics the movement of the canyon walls and river’s path. It also denotes the upward movement of the canyon walls.

The path that the river carved into the canyon was simplified to allow for a more gentle curve.

The opening within the plates was a design option to open the walls from being monolithic. This moved away from the idea of the canyon being an eroded force from the rivers might. Moving away from this decision was toward a more monolithic idea.

Maintaining the true curve of the Grand Canyon allowed for more design in the walls and lessened the worry on how the path progressed through the canyon. The monolithic idea was created from the earth and its density as an eroded entity. The walls seem almost inescapable in this configuration.

Taking the monolithic idea to a more imposing sheer wall was the next step with walls that were insurmountable. The larger geometry and the separation of these elements alluded to the minarets of the canyon.

Having multiple levels starts to demonstrate the stepping of both the colorations (stratification of silt) and the erosion levels and intensities. The steps that the river took to erode were both in the width (size of the river) and the depth (intensity of the flow).

The last option is the closest to the final product. This process took the section of the true Grand Canyon into account and the intensity of the river at different intervals to create a terraced approach. This becomes more accessible for movement vertical, which alludes to the hikes up the side of the canyon walls.
05 - Models
The stacking of the rammed earth mimics the erosion at different intensities and widths. The tapering erosion is representative of the slower progress of the river after damming. The levels mimic the progression down through the canyon.
Cross Section Perspective Grand Canyon

The river cuts through the canyon at the ground floor pushing against one wall and pulling away from the other. The parabola section of the canyon promotes the expressive nature of water over soil. The rammed earth mimics the sediment levels.
05 - Plans

Level 01 - Grand Canyon

Level 02 - Grand Canyon

Scale 1/8" = 1'-0"
05 - Sections

LEVEL 1
0' - 0"

GC Roof
48' - 0"

LEVEL 2
12' - 0"

LEVEL 3
24' - 0"

LEVEL 4
36' - 0"

AP Roof
35' - 0"

FOUNTAIN
-3' - 0"

Scale 1/8" = 1'-0"
LEVEL 1
0' - 0"

GC Roof
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LEVEL 3
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LEVEL 4
36' - 0"

AP Roof
35' - 0"

FOUNTAIN
-3' - 0"

Scale 1/8" = 1'-0"
Whose woods these are I think I know.  
His house is in the village though;  
He will not see me stopping here  
To watch his woods fill up with snow.

My little horse must think it queer  
To stop without a farmhouse near  
Between the woods and frozen lake  
The darkest evening of the year.

He gives his harness bells a shake  
To ask if there is some mistake.  
The only other sound’s the sweep  
Of easy wind and downy flake.

The woods are lovely, dark and deep,  
But I have promises to keep,  
And miles to go before I sleep,  
And miles to go before I sleep.

- Robert Frost

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

A tree whose hungry mouth is prest  
Against the earth’s sweet flowing breast;

A tree that looks at God all day,  
And lifts her leafy arms to pray;

A tree that may in Summer wear  
A nest of robins in her hair;  
Upon whose bosom snow has lain;  
Who intimately lives with rain.

Poems are made by fools like me,  
But only God can make a tree.

- Joyce Kilmer
Longitude Section Perspective Redwood Forest -

The Multitude of faux columns mimic the massive trees. The path/river cut through the forest as points of view. The openings allow visual of other visitors and points of interest, building on the solitude of isolation through lack of physical presence but through sensory presence.
The cross section helps elaborate on the branch structure of the column. The columns are built to mimic the massive supportive nature of the canopy and the red hue of the wood. The columns mimic the different heights of the trees and how they form a canopy.
Level 01 - Redwood Forest