The Nature of Materials
AN ORGANIC EXPRESSION

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THE NATURE OF MATERIALS: An Organic Expression

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Dedication
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I would like to dedicate this book to those who dare to ask why and are still able to answer what if?
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Architects rarely comment on the expressive role of building components in their work. Since it is often difficult to recognize a clear and consistent relationship between a building's materials as entities and the goals of the designer, I propose to develop an architectural strategy for materials as form determinants. I will establish a clearly defined association between various components that are indigenous to the building site that will afford an opportunity to realize the building form stemming from the organic structure of the site. A building's compatibility with the nature of its materials can be evaluated by observing the degree to which the massing and detailing can accommodate the characteristics of each material. This developed plan will be applied to my thesis vehicle, a retreat facility for Dr. Royda Crose. The project will involve a diverse range of building types and design considerations. In order to establish a starting point for discussion there will be several assumptions that must be presented. The properties of a material are the logical basis for designing its nature since the role of opinion is thus minimized, at least in regard to their quantitative aspects. Although relevant, traditional considerations of components are minimized because some traditional practices are rooted in defunct principles and can have only a tentative grip on the spirit of the material essence. Economy of a material's nature is only relevant if it reflects a sense of connection between the material's properties and its detailing. Properties manifest themselves in built form by virtue of the technology available for processing the raw materials and the assemblages of the components. Through extensive research and individual exploration of the assorted components I will arrive at a design solution for the intended project. Through this exploration I hope to bring greater awareness to the nature of materials and their varied applications into my personal practice of organic architecture. Through the exploration of material usage I intend to create an environment for Dr. Royda Crose's clients that will allow them to achieve their goal of personal relaxation and emotional enlightenment.
Physical Context

The site for this endeavor is located on Mechanicsburg Road in the Northwest corner of Henry County, Indiana. It is approximately 130 acres in size, with a small creek named Fall Creek running diagonally through it on a southerly course. The northwest edge of the property is framed by a strand of heavy timber that sits atop a knoll overlooking the creek and existing farmland. The farmland on the east side of the creek will continue to be rented to a local farmer for additional income. The site features gently rolling hills that all taper down to Fall Creek. The site is rural in nature so that clients will be able to immerse themselves in the holistic healing process without the distractions of major urban populations.

The diagonal slice of the site will act as a border that will buffer the site from the lightly traveled Mechanicsburg Road which acts to heighten the sense of isolation/seclusion. The northwest edge of the property is heavily forested and will become the area for the structural development. The forested area acts as shelter in two ways. First, in the physical sense it shelters the structures from the prevailing northwesterly winter winds, while framing a vista to the southeast that features Fall Creek. Secondly, in a conceptual/spiritual sense it will act as a haven from the outside world that one might enter to escape the pressures of their lives. One might walk among the trees and seek a personal form of solitude. The site was chosen for its’ overall character and ability to contain such a facility without impacting the environment adversely either through a heavy footprint or increased traffic.

The site was chosen for its proximity to the interstate highway system so that it would be accessible to major urban areas such as Chicago, Cleveland, Cincinnati, Louisville and Indianapolis. The location is central to most of these areas and will provide a sense of seclusion and retreat from the activity of the city environment. The proximity to Ball State University and its resources was also a contributing factor. The site will be treated as a material in its master plan and design implementation.
Cultural Context

Fall Creek Retreat Center will be home to programs, workshops and gatherings designed to help people reach high level wellness in their personal and professional lives. A wide range of offerings will include:

- staff training retreats for effective communication and teamwork.
- intensive therapy workshops for psychological growth and healing.
- creative family reunions with activities for meaningful connection.
- educational seminars on holistic health and wellness.

The facility will provide inner spaces that are warm, comfortable, supportive and secure for intensive psychotherapy work as well as open, bright and spacious areas connected to the environment for creative and exploratory growth experiences. Lodging and delicious vegetarian meals will be available for weekend and week-long programs.

The facility will be staffed by professional psychologists and health educators. Complementary healthcare specialists will be available to design and facilitate learning experiences and treatment opportunities. The staff will be able to accommodate treatment opportunities for a wide variety of groups with either broad or specific goals for growth, healing, self-actualization, rest and relaxation.
The most driving influence I had on this thesis was the treatment of the site and how I could create a harmony between the built forms and nature. I studied the various aspects of the site in great detail and was able to derive a strong tie to the site. The retreat center takes a circular form as it in itself offers the degree of comfort and security the program called for while still allowing me to penetrate within its confines to allow the participants to interact with the natural environment.

**The Earth**

To often as architects we seek out the picture perfect site to use as a canvas for our designs. Instead of clearing the site to make room for my buildings I choose to bring nature into the design as much as possible. This was accomplished by tucking the building into the hillside so that I might use earth sheltering on the north walls of the structure and allow the southern side be exposed to the sun, wind and light. The idea of interior nature was reinforced by the use of thick natural stone walls for the entire building.

**The Trees**

Those magnificent structures. A tree with an exposed root system by the creek was the inspiration for my structural system of the building. A tree has three levels of interior structure. The first being the roots that intermingie with the soil holding the entire mass above to the earth. Then the trunk that offers a base for the limbs and branches to spring forth from, and finally the branches. They float with the wind, absorb the sunlight and over shelter. The structure of the building works in the same manner. The laminated timbers anchor the wooden members to the concrete columns, the trusses provide the strength and openness of the branches and finally the tongue and groove roof decking that reflects the light and offers shelter for the participants.
About a year ago Dr. Crose approached me about designing a retreat facility for her. I welcomed the opportunity not only because I was developing a thesis but I also wanted to test myself. Throughout my studies here at Ball State all the projects that we have attempted have been hypothetical and theoretical. Finally, I would get a chance to test my design skills with a real life client.

From the start Dr. Crose was never able to definitively describe the spaces or context of what she had in mind. Through our conversations I was able to discern the meaning and context of her envisioned facility. There were several clues that I used as a basis for the start of the project. First we both agreed the facility would have to be conscious of the environmental impact. The facility should incorporate alternative energy sources and be able to be built as economically as possible.

Knowing the financial constraints and the aforementioned generalizations I set out to create a master plan for the facility that would allow for expansion in the future as the monetary means were available. The main emphasis of the facility being the actual retreat center where her therapy sessions would take place. The plan also called for a common area for registration, dining and socializing. Then there were to be accommodations for the guests during their stay at the facility. About the property there were to be areas for individual reflection to include sweat lodges and smaller shelters.

I accepted the challenge to create this facility because it offered a chance to further enhance my personal beliefs in the design of organic architecture. I allowed me a chance to create an environment that was not on the land, but rather was of the land. So with these general ideas in mind I set off on the adventure of design.
Design Criteria

The Womb

This is the space where the intensive therapy will take place. It is able to visually and acoustically sealed from the rest of the building to offer a warm, sensual containment that will enhance the participants ability to further delve into their therapy sessions.

This central meeting space also provides the opportunity to be opened to allow natural light into the space. The hallway around the room can be partitioned off to accommodate a stage area. The backdrop for the stage would be the glass panel wall that would offer a view through the treetops in the background.
**Retreat Center**

**Design Criteria**

**The Breakout Areas**

These breakout areas support the main meeting room and therefore are adjacent to them. They are of the same construction as the main room and are less confining than the central room, thus allowing the participants an opportunity to come down from the intensive introspective sessions that take place in the central ‘womb’. These areas are to promote the translation of the learned holistic healing techniques by encouraging communication between the participants. A direct release to site was vital in order to offer a chance to interact with nature either directly or indirectly depending upon the users choice.
Design Criteria

The Gathering Area

The gathering area was added to the design to allow the client the flexibility to provide an area for receptions and large gatherings. The program called for a spillover area that could accommodate up to 100 people for excessively large user groups. The space could also be rented out for gatherings to offer an additional source of income for the owner. The area opens directly to the site to allow the participants the opportunity to interact with nature by either wandering around the site or enjoying the vista towards Fall Creek.
Retreat Center

Design Criteria

The Column Detail

This is a scaled model of the column detail used throughout the design. It is representative of the expression of material usage. The concrete is allowed to act in compression, as it wants too naturally. The size and mass of the concrete play a vital role in the design scheme. The concrete offers a felt sense of security, while within the structure a body is well protected from the all external harm. The stone walls of the built site are inviting to the touch and allow participants to interact with them at their own leisure or whim. The stones also symbolize continuity, while the dynamic structure of the project expresses vitality. The wood members stretching overhead serves to tie the structure to the surrounding forest. It acts much like the branches of the trees that offer a comfortable shelter to the environmental inhabitants. The steel is a smaller aspect of the design by proportion though it represents a great amount of the inherent strength of the project.
GUEST ACCOMMODATIONS

Design Criteria

The Guest Housing

The guest accommodations are individual structures that can be built as the monetary funds become available. They are designed to facilitate 12-15 persons from a wide range of client user types. The rooms can be configured in many ways as the interior walls are non-load bearing so they may be shifted to accommodate various groups of participants. All the rooms have a personal entrance from the site so that the building can offer greater flexibility for the owner in that she may operate the number of rooms that are necessary instead of the entire building. The communal living and dining areas reinforce the holistic healing process by encouraging communication among the users.

Guest Housing Modules
This thesis endeavor has taught many lessons on several levels. It is an experience that I welcomed and enjoyed. There were many trying times throughout the process but overall I would not condemn the effort.

The vehicle for my thesis offered an opportunity for me to reinforce the ideas and beliefs that had been formulated throughout my stay here at Ball State. I proved to myself that I had the talent to take some generalized discussionary thoughts from a client and produce a structure that was welcomed as a design solution. Though the final details are still to be worked out the ideas of the design process have emerged to manifest itself into the thesis.

_The Nature of Materials: an Organic Expression_

I encourage everyone, whether they be a designer or not, to become more aware of our impact upon the Earth as humans, as builders as inhabitants.
Form, Function and Design
Elements of Architecture
Climatic Building Design
Architektur + Wohnwelt
Architektur und Wohnform
Home Owners' Catalogs
Materials of Construction
Basic Camp Management
Buildings for Hospitality
*Inland Architect*

*AIA Journal*
Architectural Graphic Standards
Ramsey / Sleeper

Handbook of Architectural Technology
Henry J. Cowman

Twentieth Century Building Materials
George M. Bleekman

Materials and Components of Interior Architecture
J. Rosemary Biggs

Frank Lloyd Wright and the Meaning of Materials
Terry L. Patterson

S. Loken, R. Miner, T. Mumma