A Church for Cange, Haiti

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ABSTRACT

Architecture is a functional art with numerous competing requirements. What are the roles for limitations in architecture? Is it enough to simply make a “good building”? Can architecture spring solely from that which is required, or is more necessary?
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Introduction

At the beginning of our second year of study in the School of Architecture at Virginia Tech, we were asked a simple question, “What is an architect?” Without much reflection, I remember responding “A person who takes advantage of opportunities.” It was not until several years later, while looking back upon my previous work, that I realized that not only do I believe that architecture is the exploitation of opportunities, but my work is a record of that belief. The challenge of this Thesis is to understand that process; the act of making architecture out of the existent.

Architecture does not begin with a tabula rasa, a blank slate; it is full of innate potential from the outset. Every project begins with a litany of pre-existent and sometimes contradictory requirements and limitations:

- Budget (or lack of sufficient funding)
- Building codes
- Accessibility
- Structural issues (gravity, shear forces)
- Climatic factors (rain, wind, the regular path of the sun)
- Materials
- Methods of construction
- Site (both natural and built environment)
- Zoning
- Mechanical systems
- Programmatic concerns
- Tradition
- Function
- Ritual

What is architecture? Architecture, like printmaking and fashion design, has an expectation of some basic level of functional consideration. Just as a model on the runway does not want to be left inappropriately exposed, building occupants have a long list of expectations concerning their building’s performance. It is easy to become so ensnared with those functional considerations that a building falls short of crossing the threshold over to architecture. Likewise, it is probable that if the practical elements are ignored in a quest to make architecture; the designer will fall short of even making a good building. I believe that at a basic level, architecture, with few exceptions, must first be good building. It is the intent of this Thesis to probe that transformation: from opportunities, through building, to architecture.

Robert Kronenberg in his book, Spirit of the Machine, describes three possible relationships between architecture and structural elements. Structural elements and architecture can be synonymous, separate, or structure can be ignored as unimportant. These same three relationships can be extrapolated to all of the various building components and requirements. The various requirements of a modern structure can be thoughtfully designed synonymous participants in the architecture, separate actors, or merely treated as not important.

What is architecture? Architecture does not manifest itself in only one way. Architecture is about bringing order to elements; and various architects find different approaches to bring that about. Even in engineering there are numerous correct options. It is the architect’s job to select the option that best meets the needs of the project. There is a sketch in my first year studio notebook that describes the divergent ways in which Frank Lloyd Wright and Le Corbusier understood the relationship between the site and architecture. Wright places his buildings in a site while Corbusier places his buildings on a site. The site is only one of the pre-existing conditions that an architect must mitigate. It is the architect’s responsibility to meet this endless list of requirements and yet make architecture.

Limits provide a threshold, but not absolute definition. It is this variety that leaves room for the work of the architectural imagination. Sculpture can be divided into additive and subtractive processes. An important subcategory of sculptural additive works is “found objects”. My approach to architecture is similar to the found object in sculpture. It is the elements and how they are put to work that make architecture. The limitations and requirements become my pallet.

Architecture is specific, but the specifics vary. So, what are the specifics in Cange, Haiti?

Haiti is attempting to recover from a recent earthquake, so seismic design considerations are paramount.

Decades of poor agricultural practices make the use of wood, even on the scale of furniture, problematic.

Much of Haiti is defined by scarcity, but rubble and local stone are abundant.

Skilled labor is scarce, but manual laborers are plentiful.

Heavy equipment is almost nonexistent.

The following pages explore the opportunities found within the scarcity of an island nation to make a church for the people of Cange, Haiti.
Frank Lloyd Wright on the nature of Organic Architecture:

“An architecture that develops from within, outward in harmony with the conditions of its being, as distinguished from one that is applied from without.”
### Wind Square
**Port au Prince, Haiti**

<table>
<thead>
<tr>
<th>Time</th>
<th>Wind Direction</th>
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<tbody>
<tr>
<td>12 mid</td>
<td></td>
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<tr>
<td>3:00 Am</td>
<td></td>
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<tr>
<td>6:00 Am</td>
<td></td>
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<tr>
<td>9:00 Am</td>
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<tr>
<td>noon</td>
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<tr>
<td>3:00 PM</td>
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<tr>
<td>6:00 PM</td>
<td></td>
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<tr>
<td>9:00 PM</td>
<td></td>
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<tr>
<td>12 mid</td>
<td></td>
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<tr>
<td>ALL</td>
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### Wind Speed vs. Wind Direction

<table>
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<th>Wind Speed</th>
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<th>Wind Direction</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>3-6 mph</td>
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<td>→</td>
</tr>
<tr>
<td>6-9 mph</td>
<td>North</td>
<td>↓</td>
</tr>
<tr>
<td>9-12 mph</td>
<td>South</td>
<td>↑</td>
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</tbody>
</table>
Excavation at Cange, Haiti
Board-Formed Poured Concrete
Gabion Cage w/ Local Stone Infill
Stacked Concrete Culvert Extension Rings
Corrugated Steel Roofing
Gabion Cage w/ Local Stone Infill
Section Looking South

- Corrugated Steel Roofing
- Stacked Concrete Culvert Extension Rings
- Gabion Cage w/ Local Stone Infill
- Fabric Duct over Metal Frame
- Restraining Frame – Poured Concrete
- Gabion Cage w/ Local Stone Infill
Section Looking North

- Corrugated Steel Roofing
- Stacked Concrete Culvert Extension Rings
- Gabion Cage w/ Local Stone Infill
- Cistern
- Fabric Duct over Metal Frame
- Restraining Frame – Poured Concrete
- Gabion Cage w/ Local Stone Infill
West Elevation

1. Corrugated Steel Roofing
2. Gabion Cage w/ Local Stone Infill
3. Board-Formed Poured Concrete
4. Restraining Frame - Poured Concrete
5. Gabion Cage w/ Local Stone Infill
6. Fabric Duct over Metal Frame
Corrugated Steel Roofing

Steel Pipe Column

Gabion Cage w/ Local Stone Infill

Gabion Cage w/ Local Stone Infill

Board-Formed Poured Concrete
South Elevation

- Fabric Duct over Metal Frame
- Restraining Frame – Poured Concrete
- Gabion Cage w/ Local Stone Infill
- Corrugated Steel Roofing
- Gabion Cage w/ Local Stone Infill
Three Rooms
Terraced Hillside
Progression – Wind Catcher
Progression – Roof Assembly
Composite Bar-Joist Girder - Exploded View
Detail: Outer Roof Assembly

Section: Outer Roof Assembly

- Corrugated Steel Roofing
- Tack Weld
- Steel Bar Joist
- Bracket – Beyond – Bolt to Bar Joist
- Clevis
- Steel Bar Joist
- Tension Rod
BIBLIOGRAPHY


