THAT WHICH IS NOT DRAWN IS UNKNOWN TO THE HAND.
THAT WHICH IS NOT SEEN IS UNKNOWN TO THE EYE.
THAT WHICH IS NOT TOUCHED IS UNKNOWN TO THE HEART.
“If no joy can be had in the making thereof,
How can any joy be had the using thereof?”

Shoji Hamada, Japanese Living National Treasure
Abstract

This thesis is a personal exploration about the making of architecture, not just through the exploration of a particular idea, but as a synthesis of many ideas within the imagination of the architect. Beyond the investigations of space, shadow, light, building, drawing, and contemplation of what Architecture is and can be, there exists the underlying effort to create a personal architecture that reflects the values and ideas of the person who created it.

The aim was to create Architecture that has a meaningful depth to it beyond the façade and that reflects both a sense of poetics and pragmatism. But within that experience was an attempt to investigate the realm that exists between the poetic and the pragmatic, the creating of that in-between realm through materiality that reflects the poetics of pragmatism. In the end that exploration came through the process of exploring the idea of the hand-made and the fabricated. In essence, this thesis presents a dialogue between the hand-made (poetic) material and the fabricated (pragmatic) material as an expression of the Architecture.
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INTRODUCTION:

Thesis research began with the initial idea of exploring regional responses to local environmental conditions - contextually and bioclimatically - and the idea of a breathable building. The start of this research inevitably involved creating a reason to seek out other locales that would offer levels of precedence but also as counter-points to Washington, D.C.’s climate. My first step was traveling to Spain and choosing a broad spectrum of cities that ranged from high arid plains, to more humid Mediterranean coastal conditions, and to interior mountainous regions as well.

Trips to Madrid, Barcelona, Granada and Sevilla allowed me to both physically understand each city but also to document the subtle but distinct regional responses to climate conditions. During these trips to each city, I cycled and walked allowing me opportunity to contemplate and explore with a different perspective each day either by foot or by bicycle. Sketching and photography were my primary modes of documentation but also observing how people interacted with certain built spaces, plazas and crowds. The other important aspect was being able to experience specific areas again at different times of the day ranging from early morning, midday, dusk, and late evening.

As I had the chance to spend several days in each city I was finding myself documenting the material application and qualities of the buildings and also how those divergent materials met and related to each other at varying scales. Another aspect of this documentation that was slowly evolving from my first proposal was how materials were used to address a functional response to the climate but also how that material was used in an expressive manner to create an aesthetic presentation of texture, shadow, reflection, transparency, opacity, depth and decoration.

After spending 3 weeks studying Spain’s regional responses to climate and context, the last phase of research was looking at Berlin’s urban fabric at the micro-scale. Observing how buildings fit into the existing and evolving Berlin context and how those buildings functioned in their context and lastly, what were the individual building responses to the climate conditions of Berlin.

As with any initial investigative understanding and the resulting self-generated questions about Architecture, what can start out as basic assumptions and presuppositions about formal responses to certain environmental and contextual issues can swiftly change and evolve over time about how those formal responses came into existence and how one responds and interprets those responses on a personal level.

In both Spain and Germany, I found myself drawn to the courtyard elements of the many urban spaces I visited and experienced that seem not only the most successful in their realization, but also in their use as a public space and creating a volume for which a sense of enclosed urbanity can succeed. In essence, the courtyard begins to create a microcosm of life within the city and a microclimate with its own identity, vibrancy, perceived and felt environment. Each courtyard space creates its own wind, sun and shade patterns based on how the individual buildings interact and relate to each other both horizontally and vertically. Within that courtyard space are the vegetative elements that add another dimensional layer to the space with planters, trees, even the accidental growth of obtrusive trees, vines, flowers, and weeds.

The documentation of the environmental response became second nature as I began to notice the fine layering of building materials that read differently from one’s optic proximity to the building and the haptic response to those materials of that building. Within the courtyard space one has the opportunity for a thorough reading of materiality and a realization of how much the haptic and ocular textures of material affect one’s reading of a building’s construction but also of one’s emotional response to that building and the process of its making.

For example, the courtyard space of the Museu d’Art Contemporani de Barcelona (MACBA) is both contained by its perceived enclosure by the museum itself but also the adjacent buildings that act as counterpoints to the MACBA. The MACBA is clad in Meier’s signature enamel metal panels and white painted concrete finishes which present an optic flatness relying on shadow and volume to create texture and a reading of surface, yet by it’s very nature of being able to understand the materials optically, there is no imbued sense of desire to understand the materials in a haptic manner. Adjacent to the MACBA is an unobtrusive academic building that fronts the alleyway with a long wall faced with various materials of honed stone tiles and ceramic tiles that complement the existing base of rusticated stone and brick. Initially the materials read as a unified plane but upon closer inspection the material juxtaposition and texture become immediately apparent lending a tactile quality to the façade. In addition to this interplay of natural stone and clay-fired finishes is a copper mesh that is used as both a second layer of texture but also as a shading device along the north-west alley. It was at this point that the realization of the thesis became clear. Beyond the initial desire to design a formal and tectonic solution to a building program not yet conceived, it was after the realization within the MACBA courtyard that regardless of program, the underlying premise of the thesis was to derive an integrated formal and environmental response to the site and program.
That the premise of the formal response be derived from an understanding of the immediate microcosm created by the program interacting with the site was essential but it was also important to explore the very nature of making that microcosm through materiality on visual and tactile levels. By exploring the materiality through an integrated process, it was hoped that an architecture could be created that one responded to as a visual pleasure and also encouraged one to physically understand the building, its immediate microclimate, and its making by touching the very materials that enclosed and defined the spaces.

“Life-enhancing Architecture has to address all the senses simultaneously and fuse our image of self with our experience of the world.”
Juhani Pallasmaa

The means in which I chose to explore the ideas above was through the exploration and exploitation of materiality and the tactile qualities to create an architecture that could be experienced through vision, touch and the thermal response of the building to its immediate climate. The underlying threads of these explorations in material expression where further woven together with my interests in reconciling the idea of architecture as a profession and as an art of craftsmanship through a contemporary expression of materials as they are and how the materials chosen perform more than one technical task or aesthetic function. The thesis tries to express the moment of architecture that celebrates both the qualities of the hand-made material and the manufactured certainty of the fabricated system as these two ways of building resolve the demands of the program, structural, material aesthetics, sustainability aspects and climatic responsiveness.

This proposal of an architecture that is a celebration of the art of workmanship and the qualities of craftsmanship in the hand-made as counterpoint to the fabricated would find me exploring many paths to find not a solution or resolution to the question that I posed to myself but instead to find a point of time that finds balance between the ideals of craftsmanship and fabrication. Through the process and exploration of making this moment of architecture, I found myself in moments of clarity and confusion as to how this thesis would progress.

Through the process of design, research, critique, contemplation, building, making, remaking, drawing, erasure, and redrawing, I found an understanding that an Architecture of meaning and quality expresses both its soul and flesh through the means of making. The soul of space and place making and the flesh of the material through which the architecture expresses itself are intertwined. Meaningful Architecture to the individual is highly subjective and yet I found that the architecture I was most drawn to and highly respective of was not simply the Architecture of the formal idea but the Architecture of material and craft in which the Architecture of Ideal was expressed and made.

“Our environment in its visible aspect owes far more to workmanship than we realize. There is in the man-made world a whole domain of quality which is not the result of design and owes little to the designer. On the contrary, indeed, the designer is deep in its debt, for every card in his hand was put there originally by the workman. No architect could specify ashlar until a mason had perfected it and shown him that it could be done.”  

David Pye³

³. Pye, David, *The Nature and Art of Workmanship*  
The blank slate. The blank site.

The empty lot represented as much of a blank canvas to the mind as the blank piece of paper does to the architect. But the site presents a more frightening side to the architect beyond the unknown of emptiness.

The site presents a past history and a present-ness to which an architect may respond. The context and climate of the site bear upon the formal response to program as an unwaivering weight of certainty. Without the site, the place of making, architecture exists only on paper.

Context, existing conditions, hidden conditions, weather patterns, micro-climates, water patterns, traffic and pedestrian patterns inform and provide identity to the earth of the site. With the site’s boundaries, conditions, and perceived histories known, the process of designing with and for the site begins.

At this stage, I had an understanding of what I wanted my thesis to be about but what it’s true program would be was still nebulous. Evaluating and documenting the site in traditional and non-traditional means provided a way to develop a thesis program that responded to what I was trying to investigate. The site analysis helped to grounded the proposal so that the project became part of the neighborhood and the site for which it was designed.

I decided to design an art academy loosely modeled on the American Academy in Rome where master artists would take up residence and instruct students with classes and workshops. In addition to community workshops and public exhibitions, the art academy would also contain administration, artist residences, and exhibition spaces designed around a courtyard space that also acted as a micro-climate for the facilities, outdoor work space and pervious surfaces for ground water recharge.

The site is located at the northwest corner of the intersection of 14th St. NW and Florida Avenue NW. The site was a vacant lot containing a single centrally located tree, several perimeter trees and a site slope of 15 feet from the northwest to the southeast corner of the site. Surrounded by multi-family housing to the west and east, light commercial and retail to the north and south, a car repair facility to the southwest and the Booker T. Washington Trades School to the east offered a diverse mix of uses in close proximity to the proposed site. Occupying this in-between space the project would have to respond and construct a dialogue between the residential uses and mixed commercial uses surrounding the site. The project and site itself act as an intervention and dialogue between the private and public which became reinforced in the deliberate organization of the site and also in the way the facade of the project mediated the point between public and private.
A site mapping of place is developed upon the rigidity of the CAD site drawing. The sense of place is revealed through collage by drawing, painting, photography and application of texture. Capturing the character of place: its textures, built up layers of urban life, the ongoing transformation of each individual building and the neighborhood as a whole. Deriving from that a point of departure in which the proposed project finds its roots. Anchoring the proposal to the site and context, not through mimicry or derivitive form, but by creating a place for the architectural moment that one senses at this particular place and site.
Site investigations lead to initial massing of typologies upon the site. As much of a precursor of what could be there as it is a recognition of the “court yard” typology that I was interested in investigating as one of many organizing elements. Intuitive responses to the site and what would facilitate the creation of a micro-climate, and direct response to the immediate environment of the site. Water flows, wind roses, thumbnail diagrams, sketch models all feed into the initial understanding and potential for the site.

The series of sketches & mass sketch models illustrate within three to four moves, the basic typologies and formal representations of a courtyard response. Between these few proposals exist an infinite variety of solutions. But the initial exercise was to test basic premises of what I thought specific extremes could be. As if each sketch were a bookend marking a starting or ending point but never determining the middle.
The Hearth

This phase of the thesis exploration tracked simultaneously with the site analysis but also started to focus on developing the programmatic elements of the thesis and what exactly a Center for Making entailed.

I began to explore a starting point from which the project could evolve from. In essence it was determining the center of the site and balancing the existing tree and Center’s hearth which would be the metaphorical and operative focal point of the Center for Making. The idea of the hearth came from the synthesis of the courtyard building, a Center for Making, the preservation of the single tree on the site and finally the material aspect of the thesis itself.

Programmatically narrowing the Center’s artists to three materials was key to moving forward with how the Center would develop. The choice of glass, ceramics and metallurgy emphasized the hearth aspect and focused the material aspect of the thesis to three essential materials that use fire as the means of tranmutation from basic earth elements into new materials with distinct properties.

The idea of a central hearth developed overtime into a central hearth space in which three distinct areas were dedicated to each artistic discipline.

Beginning sketches and models of the central hearth were executed to understand what I thought the nature of the hearth could be along with understanding the technical aspects. Models, sketches and beginning massing models began to shape the location of the central hearth space and also the final resting places of the master artists’ residences which would act as counterpoints and reminders of the three materials that were the focus for the Center.

A heat map began synthesizing and illustrating the ideas of the site potentials, the center of the site, the sensed heat of the hearth and its presence on the site, and the perceived center of the Center itself.
First generation studies of the central hearth, exploring the spatial and programmatic relationship to the central tree and the site.
Progression of the **Central Hearth** from the initial single hearth to multiple hearths (furnaces) for each discipline defining the heart of the Center for Making. Each derivation relating to itself and the geological axial shift of the site and developing its own language independent of the other programmatic spaces of the center. The appearance of an organizing grid appears in the third derivation as a formal anchoring mechanism for the building as a whole and as a counterpoint to the independent axis of the central hearth containing the three furnaces for each craft discipline.
The final iteration of the hearth as three independent but inter-related furnaces. Each structure contains the working furnaces, kilns or casting element. The upper space houses the in-line filtration and heat recovery system to suppplement the in-slab radiant heating system in the winter months. Each hearth is cast-in-place concrete using custom on-site forms from metal, class and terra cotta with each material form left cast-in-place as the exterior cladding and finish. A similar form is also used to clad the individual residential units tying each artist’s residence to the corresponding hearth in a visual, material and craftsmanship manner.
MATERIAL EXPLORATIONS
The alchemy of fire. The transformation of earth and ores into metal, glass and ceramics. Through this alchemic action the physical, ocular and tactile separation of the handmade and the machine-made form the physical proximity of the grounded human to his making.

All images © 2007-2008 William G. Petersen, Jr.
The exploration and research of materials was crucial to developing the formal and tactile qualities of the thesis. Exploring how material would be used in the construction of particular elements and as a reflection of both the Center’s making and that of the materials used.

With specific examples of glass, ceramics and metal I began to ascertain my own understanding of how each material had the potential for expressing it’s manner of making, it’s tactile qualities and also it’s capacity for handcrafting and manufacturing with each iteration expressing the above qualities and also reinforcing the central aspect of the thesis: A Center for Making that explored the realm of the crafted with the system of fabrication.

These explorations took form in sketch details, photographs and the actual making of how materials would engage with each other, actively creating and making channel glass samples, creating metal textures, researching new material applications like aluminum foam and also traditional materials such as rammed earth wall construction and.

Material explorations and inspiration went beyond simple examples of the built world to include natural phenomena and the textural qualities that stone, sand or even water would exhibit through natural forces of erosion, touch and time.
The Center for Making culminates in the final pages. The exploration of materiality and tracking of materials in the drawings was aided in plan by the use of colors attributed to specific materials that were to be used in the making of the project. Working through thumbnail sketches of details, elements and views to find the essence of the project as it was finalized was key to understanding the end results of the thesis design. The sketches led to the final resolution and ultimately to the expression of the hand-drawn in the design making process next to the computer generated solutions.

“Free workmanship is essentially of the nature of the sketch” David Pye

Rammed earth walls anchoring the building to the site, the ‘central hearth’ constructed from hand-crafted and prefabricated techniques of the custom form and standardizing the forms into a system. Each hearth is cast in concrete formed by the same materials that will ultimately be manipulated and transformed by the master artists into crafted works. Glass, terra-cotta and metal are each custom crafted to create and construct the hearths themselves as well as link the residences both visually and in materiality.

The Center is constructed within the anchoring wall of the rammed earth using prefabricated systems. The exterior screen walls filter sunlight on a seasonal basis and oriented both to visually screen public from private but also provide the proper shading. Natural ventilation is used throughout and the vegetated roof doubles as private green space and garden for the artists-in-residence but also to protect and moderate building temperatures.

Custom channel glass is used to identify and enclose the circulation stairs of the complex and create visual anchor points and light wells for the buildings.

The workshop roof is sloped to catch rainwater and funnel the water into underground cisterns for on-site sprinkler, potable water use and radiant heating systems. In addition pervious paving in the courtyard further adds to the internal microclimate of the building complex.

Finally, the Gallery Pavilion, at the southeast corner of the Center, anchors the project to the site with a double height gallery space enclosed with its own independent material language that encompasses all the elements of the Center within the facade skin of aluminum, glass and rammed earth.

The aluminum foam panels fluctuate in density and porosity to mediate natural light within the gallery and also provide a secondary reading of the skin from within and without. Behind this aluminum screen wall is the glass curtain wall with ceramic frit to further control daylight levels and add another layer of translucency and transparency to the pavilion, leading to a gallery space that allows for final display of the crafted elements of the Center for Making. A refined space that compliments the both hand-crafted qualities of the Center itself and the fabricated elements.

SECTION STUDY THROUGH COURTYARD
ENDNOTES:

1. Japanese Living National Treasure - Shoji Hamada

PHOTO CREDITS:
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