

Fieldwork Tahiti: Houses of Flux

Our studio methodology stands in direct opposition to the belief that ecological solutions can be addressed only through global interventions and international conventions. This then is the paradigm shift: to engage the supra-global effects of climate change with a quiet, rigorous and restrained methodology and design philosophy of hyper-localism.

... two kinds of islands, continental and originary, reveal a profound opposition between ocean and land. Continental islands serve as a reminder that the sea is on top of the earth, taking advantage of the slightest sagging in the highest structures; oceanic islands, that the earth is still there, under the sea, gathering its strength to punch through to the surface. We can assume that these elements are in constant strife, displaying a repulsion for one another. In this we find nothing to reassure us.

Gilles Deleuze¹

This paper describes a field study studio that immerses students into a particular non-western culture, French Polynesia. The studio methodology, which begins with investigations into indigenous materials and traditional craft techniques, emphasizes the building skin as the focus for design exploration and spatialisation of local cultural practices, is intended to alchemically lead to an architecture of site specificity, adaptability, resilience, ecological sustainment and responsiveness to climate change.

Instead of employing a design methodology that begins with an a priori intention of designing for the effects of climate change, we begin by radically restricting the palette of materials our students can use, thereby stealthily making our way into the conversation of envisioning an alternative language for an environmentally responsive architecture. Without making unsubstantiated and grandiose claims, the case studies presented here quietly and often ingeniously propose solutions that respond locally to effects of global climate change: rising sea levels, changing rainfall patterns, ocean acidification, and intensification of tropical cyclones. By deploying indigenous resources, local materials and traditional skills, the case studies redefine cultural identity and generate a hyper-specific, hyper-local architecture.

Ingalill Wahlroos-Ritter
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STUDIO METHODOLOGY: THE STUFF

Materials are the ultimate outwardly expression of an architectural idea or concept. They render transparent the thought that gave rise to the edifice's existence. Materials carry the burden, literally and figuratively, of the building's *raison d'être*. A composition of materials implies, indicates, infers, and proves the rule, the determination or the lack of consideration behind a particular architectural problem.

Wilfried Wang²

We are not anthropologists, archaeologists, historians or scientists. We do not speak French or Tahitian. The lengths of our visits are limited by the academic calendar. How can we as students of architecture begin to understand this place, indeed any place, when our language consists of conceptual representations, material transformations and tectonic assemblages? Where to begin?

By investigating the stuff from which architecture is made and the actions through which people filter these materials, this studio encourages students to translate physical reality of an unfamiliar non-western culture into a unique site specificity. The results of the studio are a hyper-local architecture using indigenous materials, deployed and transformed through traditional and digital processes. Students interrogate, describe and synthesize new understandings of private and public territories through material aggregation and programmatic assemblages. The result, is an information and reformation of architecture by the materials of its place.

The studio begins by undertaking a series of related investigative exercises based on the assumption that materials carry implications of potential form, function, meaning, program and appropriation. We focus on materials associated with the Society Islands, not typically included in the architectural lexicon, assess them from western and non-western perspectives, thereby opening up design possibilities and broadening our architectural discourse. We restrict the palette of materials our students can use in their design proposals: only materials indigenous to the islands are investigated (Figure 1a).

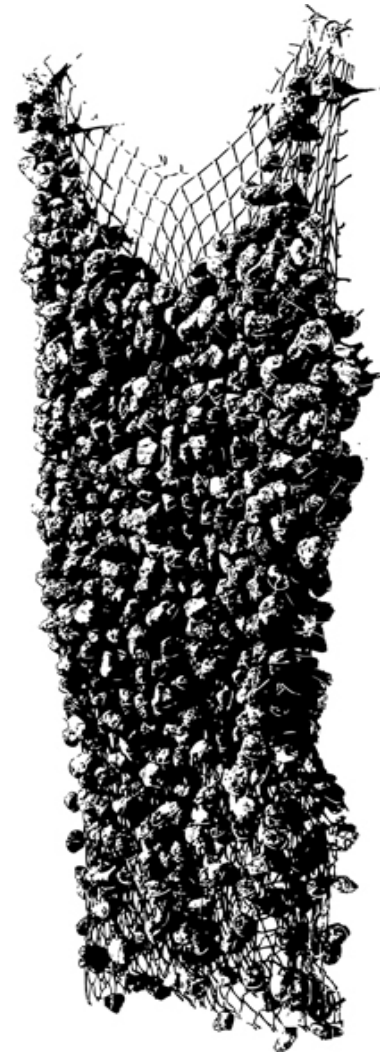
The architecture of the islands is defined by limited physical resources, most of which are imported from great distances at great economic and environmental cost and perhaps most surprisingly, significant water scarcity due to poor planning and an unsustainable tourist ecology. Some students select non-architectural materials: bone, hair, flowers, tree bark, while others select traditional ones: wood, flax (pandanus), palm trees, stone.

A methodological research of the properties, characteristics, and distinctive features of the selected materials follows. Operating under the assumption that each material is laden with implications of memory, emotional response and visceral reactions (as well as clichés, stereotypes, and preconceptions), each student develops a narrative for a particular material through the inextricable link between mnemonic and the temporal, the western and the non-western, the historical and the contemporary.

The studio program is the design of a house in the Society Islands. The designs for each house, the ritual mappings, the enclosure, the tectonic, and the program all derive from an assemblage of the materials investigated. Through this method of designing only with indigenous materials, a unique site specificity is invoked. The studio methodology – an investigation



1a



1b

into non-traditional substances from which architecture can potentially be crafted – acts alchemically to dissolve the boundaries of ‘outside’ and ‘inside’ and ‘outsider’ and ‘insider’.

STEP 1: DEVICE (PROGRAM)

For craft to function as a useful concept today, especially in the context of digital design and production, it might be best rethought as a process of mediating not only between tools and the objects that are produced but also between design as a process of imagination and production as a process of technique.

Scott Marble³

In his essay “Uniformity and Variability,” Manuel de Landa refers to the loss of knowledge that accompanied mechanization and the resultant deskilling of craftsmen. He suggests that empirical know-how is stored in the form of skills.⁴ This first exercise asks whether we can reskill the craftsman?

Our students are tasked with translating a particular indigenous, non-architectural material into a measuring device. The device must be full scale. It must be operable. And it must be kinetic. It must have multiple functions and

Figure 1a: Student mapping of the local materials found on the island of Huahine, Society Islands, Wilson Le, Jenny Agdayan, Erick Avila, Ivana Morfin.

Figure 1b: A Dress of Rock, Courtney Power

respond to different environmental or cultural conditions, for example dark and light, public and private, wet and dry. The device must use the selected material in multiple forms. Results are evaluated according to the ingenuity in translating or engendering ritual behaviors and innovative use of materials.

A diverse group of graduate and undergraduate, U.S. and international students from interior architecture and architecture departments, work with Polynesian students at Le Centre des Métiers d'Art, an art school in Papeete Tahiti. The Centre seeks to preserve the inherent traditions of Polynesian and Pacific heritage through the acquisition of traditional techniques and visual language. More importantly, the Centre seeks to ensure the continuity of Polynesian art by encouraging students to develop a personal expression based upon traditional skills with an emphasis on innovation and ingenuity. These students are ideal design partners for our studio.

Working with Polynesian students, our students learn and apply indigenous craft techniques to non-traditional materials, many of which have never been considered for use in architecture. Innovation relies on an understanding and transformation of traditional skills. Consider, for example, the skill involved in the making of ocean-going vessels, many of which travelled, with intention, across thousands of miles of open ocean. The skill of crafting these vessels, progenitors of nomadic buildings, suggest possible applications as domestic architecture well-equipped to adapt to rising sea-levels.

Joseph Brodsky makes the point that beauty is always the result of other concerns, and often of very ordinary ones.⁵ There is no intention in this exercise of creating art, merely to produce a functional object. Often simple, the most successful devices reveal an exceptional beauty and demonstrate that the craft inherent in its design produces knowledge. Students filter these traditions of making, culture, and necessity through the lens of contemporary design. These vernacular construction and craft techniques bypass the process of representational translation through the custom of oral tradition, demonstrating the importance of craft knowledge in sustaining community.

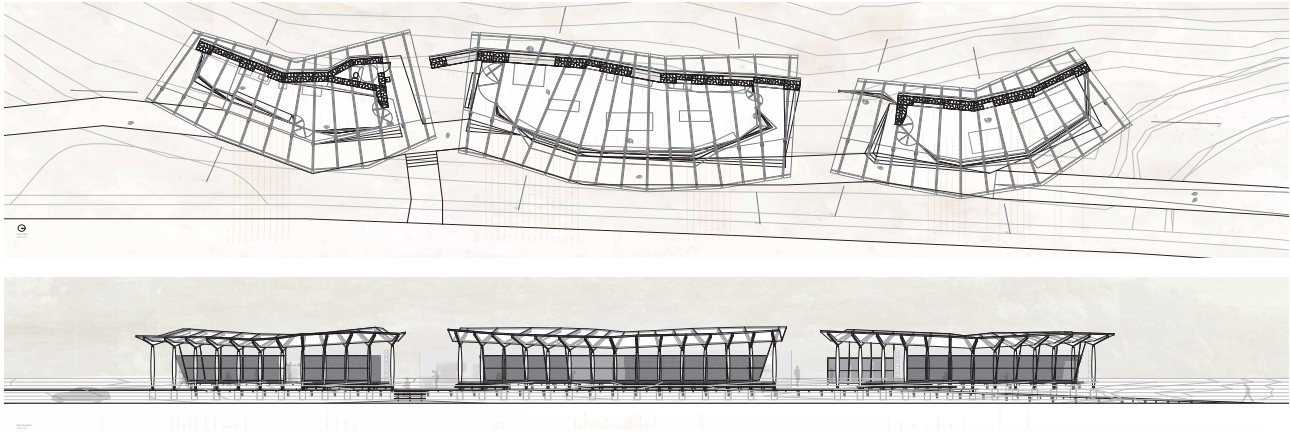
The partnership and hands-on design exercise reveals narratives about these materials, traditional uses, skills and techniques for transformation, rituals associated with their application, and programmatic clues. This first assignment asks students to use these devices to measure a particular material in a local condition in hopes of discovering its abundance and uses, thereby revealing the way the environment is manipulated to accommodate local conditions. Awareness of limits of any given resource is the starting point for preserving the resource.

Case Study: A House of Light (Denisse Alejandre)

A living unit prototype for the adaptive reuse of an abandoned post-colonial hotel, deriving inspiration from the traditional paper-like tapa cloth made by beating the bark of the mulberry tree and marked with ornamental inked designs, using only recycled materials, for students (Figure 5a).

Case Study: A House of Tree Bark (An Ho)

A library, along a dock on Moorea, with building elements inspired by the traditional tapa cloth made from tree bark, that physically marks the passage of time and collects the local narratives that are rapidly being lost resulting



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in a loss of knowledge of craft and environmental conditions, for visiting researchers, scholars and scientists.

Case Study: A House of Rock (Jenn Pope)

A making complex made of rock, occupying a narrow swatch of land between a road and a mountain, that collects water-runoff using traditional water collection strategies, and provides a place for reskilling of local craftspeople (Figure 2).

STEP 2: PROGRAM SURFACE (SKIN, TECTONIC, PERFORMANCE)

Can the effects of depth, of interiority, of domesticity and privacy be generated by the billowing convolutions and contortions of an outside, a skin? What does the notion of outside, exterior, or surface do that displaces the privilege of interiority, architecturally, philosophically, and subjectively? The boundary between the inside and the outside, just as much as between self and other and subject and object, must not be regarded as a limit to be transgressed, so much as a boundary to be traversed.

Elizabeth Grosz⁶

The next step is to translate the measuring device into a program surface, the progenitor of a building skin.

Traditional Tahitian architecture consists of both heavy and light, or, to borrow from Gottfried Semper's architectural taxonomy, stereotomic (earthwork) and tectonic (frame and membrane), precedents. The stereotomic precedent is the marae. These open-air sacred places serve both religious and social purposes and consist of terraces constructed of vast stones, squared and polished and weathered over time, and existing in various states of disrepair and decay throughout the Pacific Islands. The tectonic precedent consists of the traditional fare, domestic structures built of wood beams, thatched coconut fronds and plaited bamboo. Contemporary structures on the islands can be described as a hybrid of these two precedents, consisting of cement block buildings, with particle-board partitions and corrugated-iron roofing, and offering greater resistance to the threat of cyclones.

In his book *Studies of Tectonic Culture*, Kenneth Frampton refers to these two basic modes of building, the compressive mass and the tensile frame in vernacular architecture, as intrinsically tied to spatio-temporal rhythms

Figure 2: A House of Rock, Jenn Pope

and a non-Western nonlinear attitude toward time. He refers to a time when space was not an integral part of our thinking about architecture and seeks to 'mediate and enrich the priority given to space by a reconsideration of the constructional and structural modes' by which architectural form must be achieved. Frampton is less interested in constructional techniques than in 'the poetics of construction' which is neither figurative nor abstract. In this design studio attention must be given to both: Frampton's 'spatio-plastic unity of interior and exterior space', wrapped by enclosure whether virtual or physical, allowing for multiple space-time experiences, as well as attention to the techniques of construction.⁷

Our bodies are surrounded by four layers - the first being our skin, the second our clothing, the third is the layer of others, and the fourth, the buildings in which we reside. This last layer, the program surface to be designed, must participate with our bodies in the ways that those other layers do: sweating, breathing, hairy, distressed, recoiling, flocculent, aging, scarring, tanning, wrinkling; removable, wearable, adjustable, buttoned, stitched, zippered; hearing, illuminating, narrating, echoing, reflecting, interacting, participating, adapting, and above all, providing delight.

The building skin is traditionally defined as the layer that separates the interior of a building from its exterior environment. In a location with a climate as tropically well-tempered as that in Polynesia, the static concepts of enclosure, threshold, boundary and separation must be discarded in favor of ideas of fluid continuities and dynamic lines of demarcation. The traditional Tahitian concept of transitory habitat is largely derived from this tropical environment, one that causes all materials to rapidly decompose, and suggests a temporary, possibly even dissolving architecture.

We struggle to come to grips with a culture that encompasses an ocean not as an impassable boundary to other cultures, but as an extension of territory, with a radically different and uniquely fluid conception of architectural space. Notions of interior and exterior are further complicated and enriched by ideas of wetness and dryness, stability and fluidity and how architecture engages vastly different surfaces.

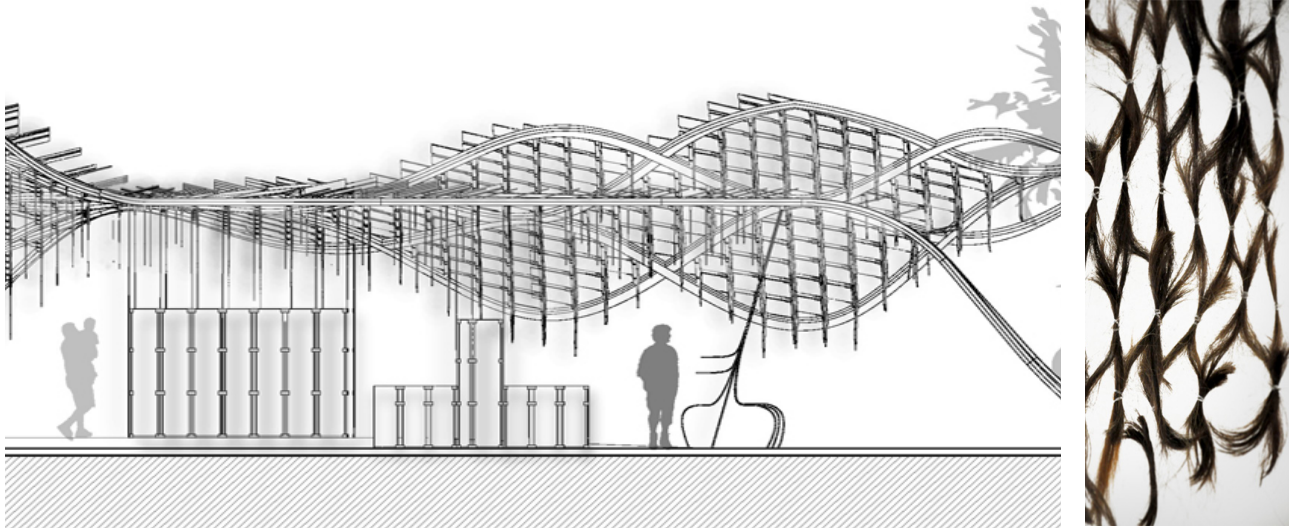
Each material has the potential of providing a source of the narrative or program for the house, the geographical location, and for the physical embodiment of museum enclosure. The device acts as agent for the material. The narratives associated with the material and the skills required to transform the material into the device are necessarily an intrinsic part of each proposal and suggest associated construction techniques and morphologies. By translating the device into a full-scale program surface, the students continue to apply local crafting skills, often married to contemporary digital ones, filtering their investigations through antipodal and latitudinal histories, and seek to integrate innovative techniques of transformation.

Case Study: A House of Hair (Marques Fallejo)

A barber shop, in an island village, employing biomass supply to generate energy, for people who need a shave and a haircut (Figure 3).

Case Study: A House of Vines (Andrew Rahhal)

A treehouse inspired by the parasitic vines of the banyan tree, located within a tree canopy of an ancient-growth forest on Moorea, extracting



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moisture from the humid air, thereby creating multiple micro-ecologies for humans, birds and plants (Figure 4).

Case Study: A House of Bone (Manuel Alcalá)

A crematorium and restaurant, located near the largest village on Huahine, that borrows geothermal energy for powering a traditional earth oven for cremating and cooking, for local families and visitors (Figure 5b).

STEP 3: RITUAL MAPPING (SITE)

How to see dwelling as something other than the containment or protection of subject? In short, how to think architecture beyond complementarity and binarization, beyond subjectivity and signification? This is a question that cannot afford easy answers: for ready-made answers become a blockage for thought, for architecture, for building and creating.

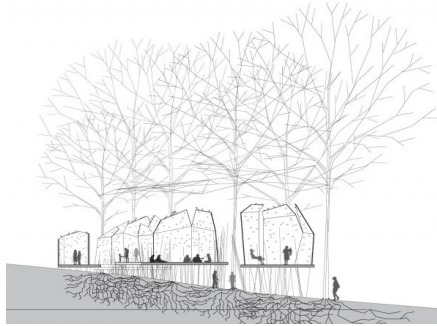
Elizabeth Grosz⁸

Next, students translate material knowledge into ritual mappings. These rituals are derived from material extraction, transformation, application or cultural significance. Cultural and site specificity is demonstrated by mapping the rituals associated with the transformation, application, use and misuse of the materials onto places associated with the materials or rituals. Filtered through the lens of Polynesian culture, students extract programmatic considerations from domestic activities and map them - sleeping, eating, cooking, gardening, bathing, singing, working, studying, speaking, listening, reading, coupling, dancing - thereby spatializing local cultural practices.

By taking measure of the materials and environment of the site, the mapping exercise reveals the way the environment is manipulated to accommodate local conditions. One of the ritual mappings, for example, is derived from indigenous techniques of navigation and exploration, another from the ubiquitous, delicate and rapidly degenerating ecologies of reefs and other sub-tropical ecosystems that are highly sensitive indexes of climate change. Territory is interrogated, described and mapped through material aggregation and assemblage.

The archipelagic cultural territory of Polynesia is made up of over a thousand islands spread across 70.1 million square miles of Pacific Ocean and united

Figure 3: A House of Hair, Marques Fallejo



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by language, culture and beliefs. Innovation is evident in the cultural adaptation from the tropical equatorial islands to the non-tropical environment of New Zealand, which defines the southernmost node of the Polynesian Triangle (the two other nodes being Hawaii to the north and Rapa Nui or Easter Island, to the east).

The site of investigations is limited to the Society Islands, occupying the geographical center of the Polynesia triangle, and one of five archipelagic groupings that make up French Polynesia. This overseas collectivity of the French Republic, has seen decades of political instability, combined with an intensification of cultural identity and language revival since the 1970's and in indirect proportion to a decrease in subsidized financial support from the French Republic. Defined by traditional and contemporary cultural notions of territory and boundary, this place is a multi-cultural construct of multiple cultural identities that resists an over-simplified critical regionalism based upon a long-distant and romantic past, and a local economy heavily subsidized by a colonial power and struggling with changing export resources.

The productive steps of the studio, resulting in proposals for building skins that wrap domestic space, allows students, in Andreas Ruby's words, to weave 'together the various time-spaces of a specific place to create a trans-historic place'.⁹ While the methodology of the course is applicable to any given program on any given site, it gains particular relevance, intensity and applicability when tested in a place of such 'otherness' as a way of dissolving the constricting building conventions of 'inside' and 'outside'.

Case Study: A House of Leaves (Marilyn Chavarria)

A place for performances inspired by traditional woven pandanus mats, located in the Atitia Community Center on Moorea, providing multiple seating configurations for formal and informal rehearsals, music and dance performances, adjustable to time and weather conditions, for performers.

Case Study: A House of Water (Alejandro Diaz)

A house in the forest of Moorea, bridging a culvert alongside a path, capturing rain, running and well water, for visiting international students and students visiting from neighboring islands.

Case Study: A House of Fish (Amanda Ehrlich)

A dock-like house and fish hatchery, that juts alongside of a rocky shoreline in Cook's Bay on Moorea, restoring the fish hatching habitat that has been destroyed by the construction of stone sea walls, for research donors and juvenile fish.

STEP 4: HOUSES OF FLUX

A house of dust
 on open ground
 lit by natural light
 inhabited by friends and enemies

A house of paper
 among high mountains
 using natural light
 inhabited by fishermen and families

A house of leaves

Figure 4: A House of Vines, Andrew Rahhal

by a river
using candles
inhabited by people speaking many languages wearing little or no clothes
Alison Knowles (Fluxus artist)¹⁰

By now, each student has a material, a tectonic, a site, a series of programmatic rituals, multiple cultural narratives and an environmentally performative function derived from the measuring device. With these inputs, the students are challenged with designing a house.

One measure of the success of each design proposal is how stringent criteria for environmental and cultural sustainability are met. Design solutions must address issues of performance and efficiency of material and energy usage and often engage in fantastic narratives that respond to inevitable effects of climate change: rising water levels, acidification and resulting destruction of oceanic ecologies, changing patterns of rainfall, and the intensification of intense cyclone activity. The results employ ingenious strategies to address these environmentally catastrophic narratives. Yet the projects are understated, modest, quietly elegant and suggest nascent forms of architectural unfamiliarity.

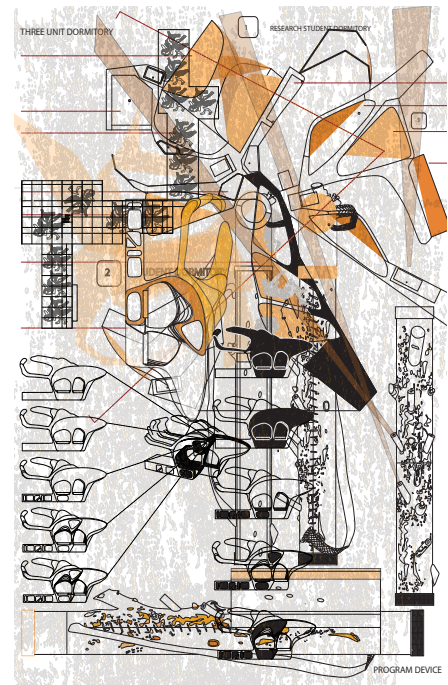
PARADIGM SHIFT: FROM SUPRA-GLOBAL TO HYPER-LOCAL

My preference is for the local, the idiosyncratic and the strange in adaptations to the climate, geology and the cultural landscape of a place with the subtleties and nuance once embraced by proponents of Critical Regionalism.

Marlon Blackwell¹¹

Tahiti, defined in large part by micro-ecologies and micro-economies, provides a rare opportunity for small-scale investigations at an intimate and comprehensible scale that can be demonstrated to have a significant and immediate environmental impact. This place provides students with a milieu that is seductive and mutinous, and where conceptions of space encompass oceans resulting in fluid boundaries of family, social structures, and astonishing dispersals of cultural knowledge; where your closest neighbors are globally distant and locally connected; where highly accessible rituals introduce students to the immediacy of bodies in space; and where a seemingly benign environment effects a rapid dissolution of materials.

The studio methodology begins not with an obvious intention of designing architecture that responds to climate change. Instead, through a design methodology that restricts the palette of materials only to those that are locally accessible, the development of envelope systems that engage traditional techniques of production and perform environmentally and culturally, site mappings that interrogate an environment defined by evasive spatiality, students engage multiple topics critical to environmental responsiveness. Enriched by hands-on experimentation with local craft skills, tools and techniques, the design proposals use only renewable or local materials, resisting the unsustainable practice of transporting materials long distance. Cut off from the application of contemporary building materials, students are required to find different design techniques, tectonics, and possibilities that lead to a new understanding and new architectural forms.



5a



5b

Figure 5a: A House of Tree Bark, Denisse Alejandre

Figure 5b: A House of Bone, Manuel Alcala

The resulting case studies exemplify results that implicitly embody concerns for renewable resources and suggest an unfamiliar and nascent architectural language for architecture that embodies sustainable principles, including a reduction of dependency on imported carbon fuels. Inherently critical of the standard tropes of 'green architecture' which consist largely of conventional materials and building traditions packaged as 'LEED certified' and 'sustainable' and with no discernible difference from conventional buildings, these case studies signify a departure from conventional conception, inhabitation, perception and formation of architecture. These departures are driven by the use of unconventional materials and unfamiliar construction and fabrication methods, absolute adherence to renewability of resources that range from materials and energy to the sustenance of local craft knowledge and cultural ritual, and rethinking of the fluidity and performative possibilities of architectural boundaries.

Our studio methodology stands in direct opposition to the belief that ecological solutions can be addressed only through global interventions and international conventions. Here, global issues of environmental degradation are addressed not through vast, generic solutions that discount local resources and cultural knowledge, but through research and propositions that are hyper-local and hyper-specific. The end results are architectural proposals that provide a particular place, one that is in direct conflict with the global processes of climate change, with an architectural design identity. This then is the paradigm shift: to engage the supra-global with a quiet, rigorous and restrained methodology and design philosophy of hyper-localism.

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ENDNOTES

1. Gilles Deleuze, *Desert Islands and Other Texts, 1953-1974* (Los Angeles, CA: Semiotext(e), 2004).
2. Wilfred Wang, "Sustainability is a Cultural Problem." *Harvard Design Magazine* 19 (2003).
3. Scott Marble, "Imagining Risk.", *Forward: The Architecture and Design Journal of the AIA National Associates Committee* 118 (2013).
4. Manuel De Landa, "Uniformity and Variability: An Essay in the Philosophy of Matter," <http://www.t0.or.at/delanda/matterdl.htm> (2006).
5. Joseph Brodsky, *Watermark* (New York: Farrar, Straus and Giroux, 1993).
6. Elizabeth Grosz, *Architecture From the Outside: Essays on Virtual and Real Space* (Boston: The MIT Press, 2001).
7. Kenneth Frampton, *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture* (Boston: The MIT Press, 2001).
8. Elizabeth Grosz, *Chaos, Territory, Art: Deleuze and the Framing of the Earth* (New York: Columbia University Press, 2008).
10. Andrea Ruby, "Hyper-locality. On the Archaeology of the Here and Now in the Architecture of R&S," in Benoit Durandin, Ed., *Spoiled Climate*, (Basel: Birkhäuser, 2004).
11. Alison Knowles, "A House of Dust," <http://www.aknowles.com/hannah.html> (1967).
12. Marlon Blackwell, "Architecture in a Landscape of Unholy Unions" *Journal of Architectural Education* (October 2009).