

Global Vernacular

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Transdisciplinary conversations about the inherent complexities of the built and natural environments in the Hawaiian context led to discussions about the challenges and opportunities facing Hawai'i today. These talks sparked a public discourse that was explored through both talking and making. "Making" resulted in the creation of an international design competition, a curated exhibition of selected entries, and ultimately a design-build project for a traveling installation.

This paper presents the design process by which the installation project was conceived. Stakeholder engagement, multiple inputs and cultural influences informed the ideation, prototyping, and student-led fabrication of this effort, resulting in the creation of Design Islands, a cultural artifact that exists between art and architecture, the indigenous and the foreign, and the global and the vernacular.

REMOTENESS

Hawai'i is an isolated volcanic archipelago in the Central Pacific and the only US state not in North America, known to many as one of the most remote archipelagos on earth. It is composed of eight major islands, ranging from 4,000 to 40 square miles: Hawai'i, (The Orchid Isle), Maui (The Valley Isle), O'ahu (The Gathering Place), Kaua'i (The Garden Isle), Moloka'i (The Friendly Isle), Lāna'i (The Private Isle), Ni'ihau (The Forbidden Isle) and Kaho'olawe, which is currently uninhabited.¹

80% of the population of the state of Hawai'i live on O'ahu², which is also home to Honolulu, the fourth densest city in the US³ and the most remote city of its size in the world⁴, with a population of 337,256 inhabitants in Honolulu proper and 953,207 in the Honolulu Metro Area⁵. This place exists about 2,397 miles from San Francisco, the next city of comparable size, approximately 3,850 miles from Tokyo, and 4,950 miles from New York.⁶

This isolation from continental landmasses creates unique conditions that exist nowhere else on earth, from high percentages of rare and endangered endemic species to culture, language, and way of thinking, exclusive to the region.

A HAWAIIAN WAY OF THINKING

Hawaiians have a rich history that includes a legacy of exploration, a heritage of environmental stewardship and a deep-rooted responsibility towards the land and other Hawaiians.

The first people to arrive in the Hawaiian Archipelago were the Polynesians, who were skilled navigators and made canoes out of stone, bone, and coral; Their remarkable journeys are known for their use of ocean currents and celestial navigation to travel great distances and reach undiscovered islands. These early voyages resulted in multiple remote locations of the Central Pacific sharing similar traits, including culture, language-family, and beliefs.⁷

The ancient Island Nation of Hawai'i's population is estimated to have been in the 100,000's and prospered as a self-sustained, closed-loop system. This large population was possible because of an organized and sophisticated land division system, which partitioned each island, or *mokupuni*, into smaller districts, known as *moku*; and each district, into narrower, mountain-to-sea subdivisions called *ahupua'a*. "Ideally an ahupua'a would include within its borders all the materials required for sustenance -timber, thatching, and rope from the mountains, various crops from the uplands, kalo from the lowlands, and fish from the sea. All members of the society shared access to these life-giving necessities."⁸

"The Hawaiians had their own mystical and ancestral roots. According to tradition the Hawaiian Islands and its people were born of the spirit world. The honored genealogies of the Hawaiians do not stem from Adam and Eve but from Papa and Wākea. Wākea was the first man and the ancestor of the Polynesians. Haloa, son of Wākea was born a shapeless mass and was buried beside Wākea's home. A taro plant grew in this spot. The word '*ohana*' comes from the '*oha*', or corm of the taro plant. The taro plant links the Hawaiians to the origin of their people."⁹ "Thus, the 'modern' concepts of *aloha 'Āina*, or love of the land and *Mālama 'Āina*, or serving and caring for the land, stem from the traditional model

established at the time of Wākea...it is the duty of Hawaiians to Mālama 'Āina, and as a result of this proper behavior, the *Āina* will *mālama* Hawaiians. In Hawaiian, this perfect harmony is known as *pono*, which is often translated into English as 'righteous' but actually denotes a universe in perfect harmony."¹⁰

Highly sophisticated problem-solving skills, navigation engineering feats, extensive knowledge of topography, microclimates, watersheds, advanced irrigation technologies, astonishingly productive agricultural landscapes, holistic healthcare, construction techniques specifically suited to limited island resources, storytelling, dance, and art, are some of the values that described the advanced Hawaiian Society.

The arrival of Captain Cook in 1778 marked the first contact with the west, and because of Hawai'i's privileged geographic location, placed the archipelago on a remote, but highly trafficked crossroads. By the late 1800's the islands were well known to both eastern and western foreign nations as a port of call, a wintering place and stopping point for ships on trade routes. The first non-native residents included Englishmen, Chinese, Americans, Irish, Genoese, and Portuguese. By the 1930's foreigners were fully integrated into Hawaiian society and commercial flights allowed them to freely come and go.¹¹

Culture, politics, socio-economics, and the natural and built environments were significantly impacted by these events and rapidly changed the way of life in the archipelago.

BETWEEN INDIGENOUS & FOREIGN

The modern world delivered, amongst many other aspects, advanced technology, state-of-the-art infrastructure, and new economies. Foreign access to the archipelago, also presented new beliefs and practices that did not always align with the values embedded in the indigenous Hawaiian culture.

Today, Hawai'i is considered a diverse state, where no racial or ethnic group constitutes a significant majority. According to the US Census Bureau, population estimate by race is 37.7% Asian alone, 25.8% white alone, 23.7% two or more races, 10.2% Native Hawaiian or other Pacific Islander alone, 2.2% African American alone, and 0.4% Native American or Alaska Native alone.¹²

Honolulu is considered a global city, and Hawai'i is a renowned hub for space and meteorological research.¹³ While NASA is running advanced research projects, including long-term simulations on the effects of colonizing Mars in its volcanic landscapes,¹⁴ multinational corporations are prototyping infrastructure-scale systems.¹⁵

These contemporary realities are also associated with increasingly complex urban challenges: O'ahu used to produce 100% of its food on the island, but today it imports over 85-90%.¹⁶ Also, the island has the eighth worst traffic in the nation,¹⁷ despite having an award-winning bus transit system.¹⁸ Honolulu needs 66,000 new housing units by 2025,¹⁹ while construction costs are the second highest in the world, only Oslo, Norway is more expensive.²⁰

As we design in the present, How might we mediate between the learnings of the past and the complexities of the future? How do we continue to mediate between the host culture, the new settlers and visiting foreigners? How does a rapidly evolving city at a global crossroads incorporate indigenous Hawaiian identity into its urban fabric? How does one practice design with aloha?

Renown offices such as Richard Meier and Partners, Seattle's Bohlin Cywinski Jackson and San Francisco's Solomon Cordwell Buenz are dealing with just these issues as they design highrises in Kaka'ako, which is both the fastest growing neighborhood in Honolulu and a significant site in the history of the city. To mediate the tensions between development, gentrification and cultural appropriateness, Hawaiian firms and designers are being asked to act as translators of culture.²¹

These and many other questions are continually being revisited by architects, designers, and engineers, within local and global practices, as they attempt to solve the critical urban issues Hawai'i faces today.

TAKING INITIATIVE

As with many other indigenous nations, ancient and recent history and culture play a significant role in critical issues within the urban environment in Hawai'i. This knowledge should be foundational for every designer that inhabits or practices within the islands.

As the only architecture institution in the state and the entire South Pacific; and a designated "Hawaiian Place of Learning"²², the University of Hawai'i at Mānoa's School of Architecture has taken the initiative to frame some of these conversations.

Recently, the school re-defined its own identity in relationship to the Hawaiian host culture, resulting in a provocative, open-source visual language. Initial translations include a graphic abstraction of the stick maps utilized by early Marshall Island navigators to traverse the waters of Polynesia and a custom typeface that juxtaposes the native Hawaiian and Roman alphabets. "Sticks overwrite non-Hawaiian letters."²³

In the Fall of 2016, a critical debate about design in Hawai'i, in relationship to post-colonial identity was held. Leaders from architecture, engineering, and fashion came together to discuss how their work translates a Hawaiian way of thinking into design. Strategies ranged from straightforward environmental approaches to the inclusion of metaphorical references, and Hawaiian history.

This initial debate, and other ongoing informal conversations, between academics, industry professionals, and the design community, sparked an idea for a design festival where these talks, about the future of the built environments in Hawai'i, could be continued through an inclusive forum that would be free and open to all.

BUILDING VOICES, TALKING AND MAKING

What are the main challenges and opportunities facing Hawai'i today? What solutions or expertise have we developed in Hawai'i

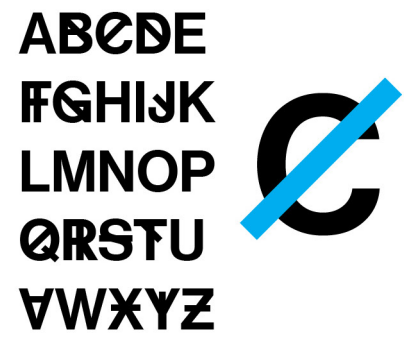
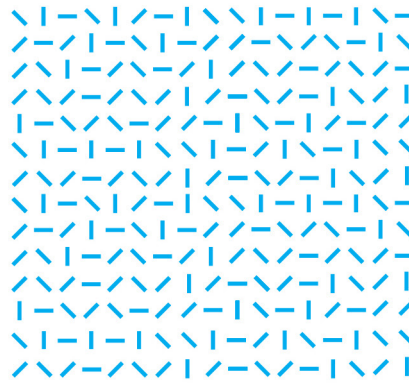
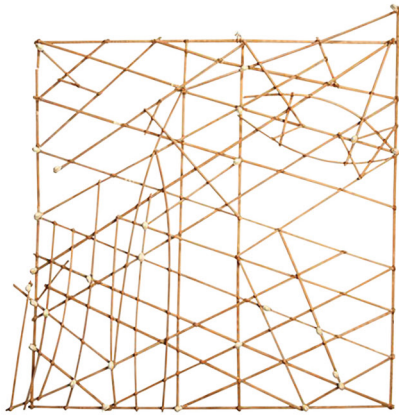


Figure 1: Stick map utilized by Marshall Island navigators, Stick field abstraction and HI Sticks typeface created as part of an identity system for the University of Hawai'i at Mānoa's School of Architecture. Credits: (from left) National Museum of Natural History, Jack Henrie Fisher.

that we can share with the rest of the world? What are your hopes for Hawai'i in 50 years?

These three initial questions were taken on a listening tour and lead to the development of themes for discussion for the Building Voices Design Festival²⁴, to be held on Earth Day 2017. As conversations developed, a significant question emerged. How can we promote the value of design and discuss critical issues within the city without design itself? Building Voices needed to address these topics both through talking and making. As a result of this inquiry two teams emerged; a Symposium Team and a Competition & Exhibition Design Team.

As chairs of the Competition & Exhibition Design Team, we focused on generating design provocations that would:

1. Highlight prototypical solutions for the built environment that generate a positive impact on the natural world.
2. Celebrate designs that foster a deeper understanding of the unique context(s) of the Hawaiian archipelago.
3. Spotlight projects that impact and benefit multiple populations.
4. Foster communication between designers, political institutions, and the larger community through catalytic projects.
5. Recognize design that says "What is good for Hawai'i, is good for the world."

Design provocations needed to be both imaginary and tangible, which manifested in two ways: first, as an international call for ideas through a design competition and second, through a physical construct that could resonate at a more human scale and be directly interacted with by the local community.

The single-stage international design competition sought innovative design solutions that addressed Hawai'i's unique geographic location, cultural richness, global visibility, and ecological diversity. The call invited new ideas for buildings, environments, landscapes, community

programs, infrastructures, product designs, network concepts, service design offerings, transportation solutions, among others.

We developed a detailed brief and a unique design framework specific to the Hawaiian context to structure and inform the competition. The Design Framework for Hawai'i's Built Environment is a tool that addresses multiple topic areas and sustainability lenses. Hybrid solutions were encouraged through the combination of five topic areas: Housing for All, Food Autonomy, Resource Independence, Community Centered Mobility, Healthy Citizens. In addition, a Quadruple Bottom Line²⁵, comprised of four sustainability lenses: Social, Ecological, Economic, and Indigenous Culture; defines the inclusion of measures taken to support and multiply the voice of Hawai'i's indigenous culture, identity, and heritage.

The next effort we undertook was the design of an identifiable, movable exhibition system to display the concepts produced by the competition entrants. This process was fueled by the unpacking of the complexities surrounding the research and development of the Design Framework for Hawai'i's Built Environment, ultimately translating into a set of architectural artifacts titled Design Islands.

DESIGN ISLANDS

How might the Design Framework for Hawaii's Built Environment be translated into a physical construct? What kind of structure would aid in promoting the value of design to the local and global communities? How can an installation spark informal conversations about the design of the built environment?

Preliminary project goals indicated the design needed to:

1. Serve as a framework to display artwork while maintaining its unique character.
2. Visually represent the identity of the school.
3. Be designed and fabricated within a tight timeframe, and utilizing limited resources.
4. Rapidly assemble and disassemble to travel beyond the university campus, as well as allow ease of transportation.
5. Adapt to different locations, environments and uses to serve multiple event types.
6. Create welcoming space for the community to have conversations about design.

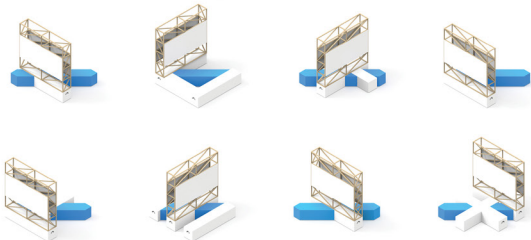
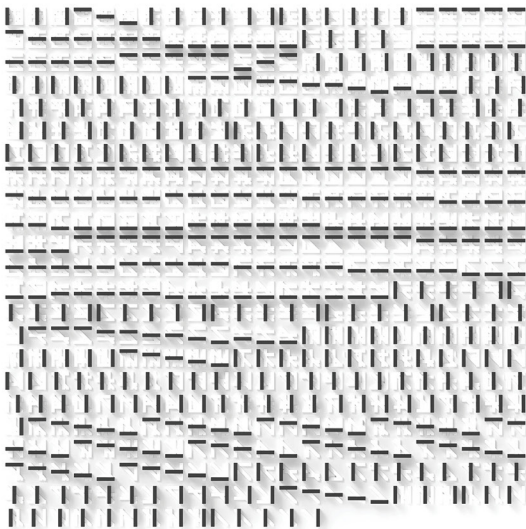
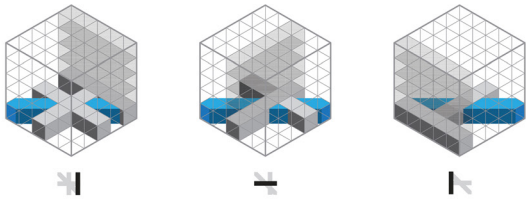
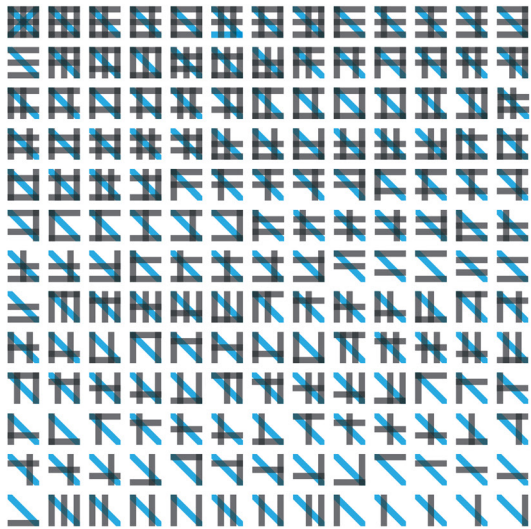


Figure 2: Foundational geometries were derived from the superimposition of both orthogonal and diagonal volumes. Illustrations by Strawn+Sierralta.

Elements + Spatial Characters

Forms were derived from studies of variations and combinations of orthogonal and diagonal volumes in both horizontal and vertical space. Basic geometries were inspired by navigation stick charts and the colonial grid. The *holo*, a defining Hawaiian structural element that diagonally ties together other structural components, was tested in multiple design iterations supporting both communal seating elements and vertical spatial constructs.

A series of rectangular prisms were repeated, shifted and re-arranged within the volume of a virtual boundary determined by the maximum dimensions informed by fabrication and transportation specifications.

These combinations in both two and three-dimensional space generated 521 unique variations. Based on the solid/void relationships and the total number of components, eight assemblies were selected for fabrication, each representing an island in the Hawaiian archipelago.

A total of 41 individual components make up the Design Islands system. Solid volumes function as both bases and benches, and vertical frames serve as mounting devices and spatial enclosures. Some of these parts are modular and interchangeable, while others are unique and give each island a different spatial character.

Island Configurations + Curation

The eight islands can be installed alone or as an archipelago, either indoors and outdoors. Configuration possibilities include circular array, linear, grid, cluster, and others. Just as currents of water in the ocean are affected by land-mass distributions, the organization of Design Islands influences the way people move through and experience space.

The traveling installation has been deployed outdoors in the rotunda of the Hawai'i State Capitol, on the quad at the University of Hawai'i at Mānoa, in the courtyard of the UHM School of Architecture, and indoors on the roof of the Hawai'i Convention Center, the lobby of the UHM SoA, and the storefront conference space at AIA Honolulu's Center for Architecture.

Exhibition curation strategies vary with the arrangement of the islands and the specific deployment setting. For example, the exhibition curated for the Hawai'i State Capitol's outdoor rotunda responded to both the existing architecture and a permanent art piece. A circular organization created a dialogue between the interior and exterior of the loop while responding to the omnidirectional nature of the highly public space. At the Hawai'i Convention Center, a continuous, linear configuration made the display of a long, single image more impactful than a series of smaller ones. At AIA Honolulu, a single island was placed adjacent to a guest speaker and in the center of the main window facing the public way.

The curation of content on the exhibit system is defined by a few key relationships; the front/back nature of the frames, the spaces

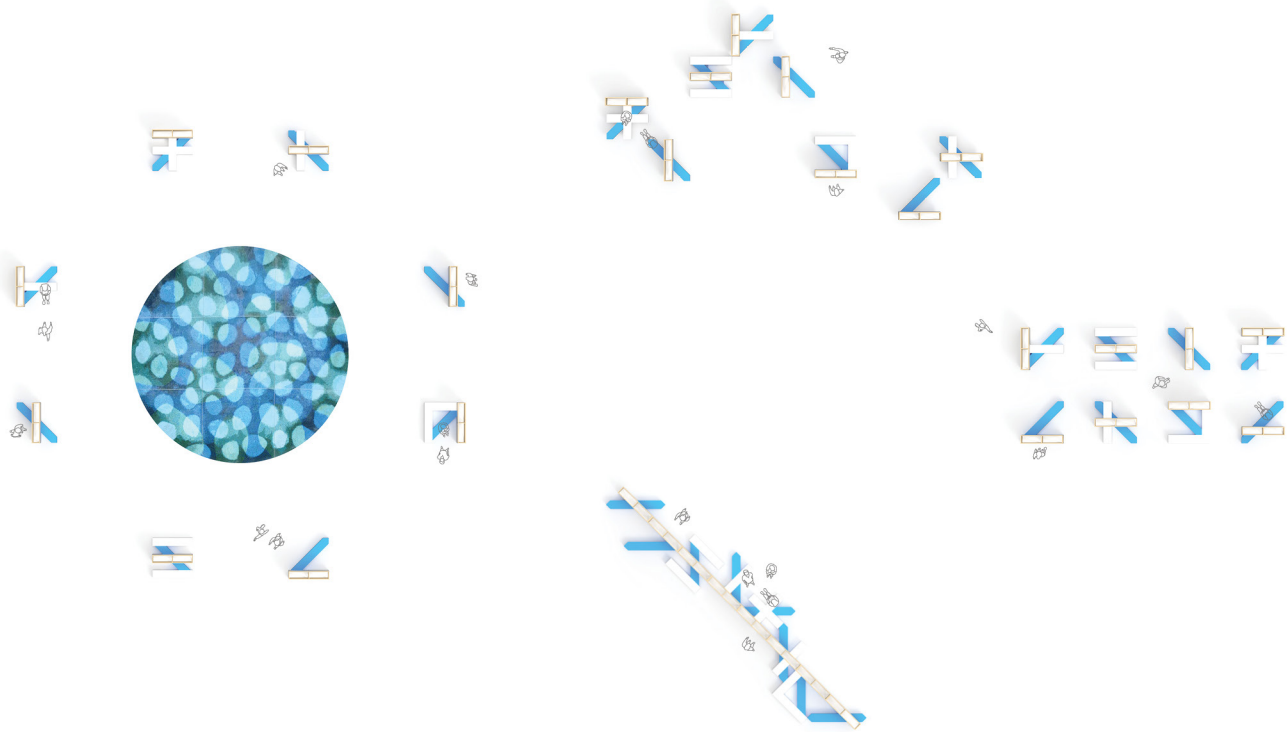


Figure 3: Possible layout formations include circular, linear, cluster, and grid. Design Islands was deployed at the Hawai'i State Capitol on Earth Day 2017. Illustrations and Photo by Strawn+Sierralta.

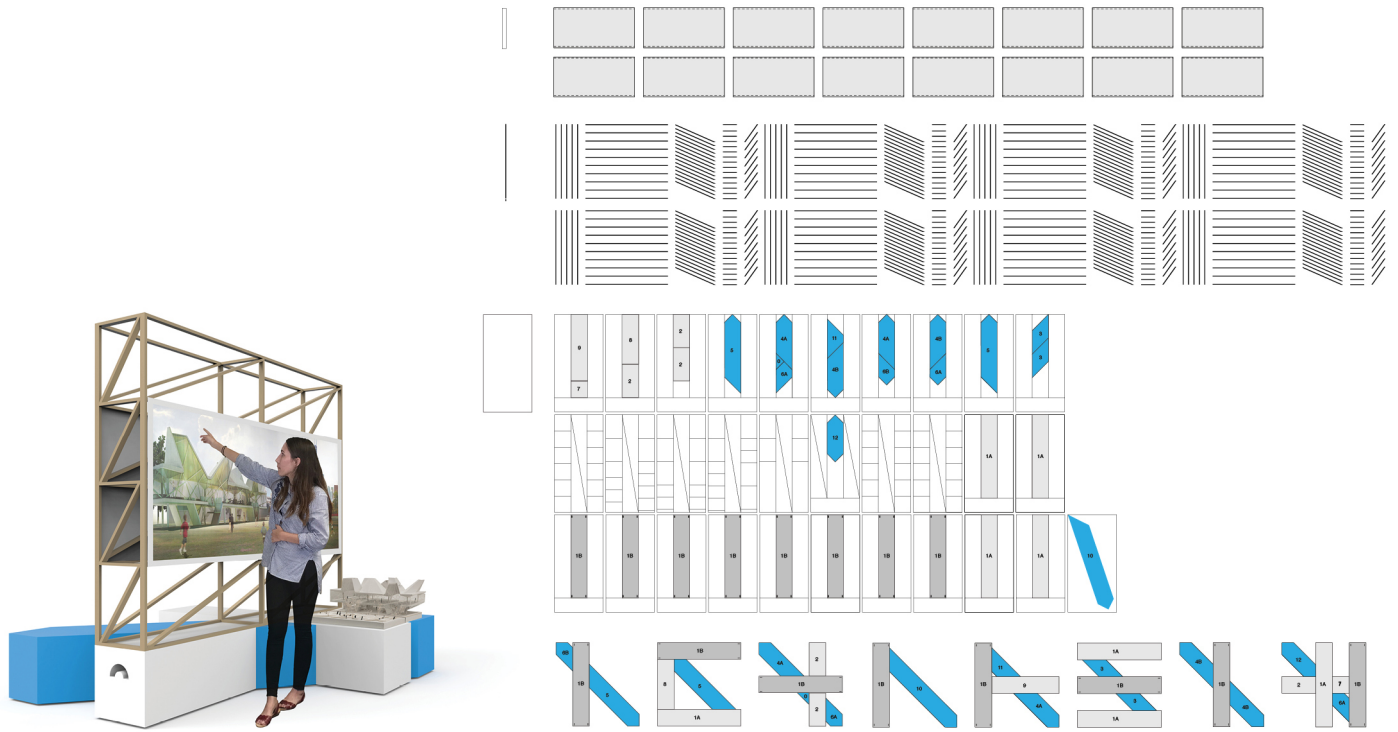


Figure 4: Design Islands was built to function on the road as a communal exhibition installation, while operating in the school as a vertical pin-up and horizontal podium system. Fabrication optimized the material required for construction. Illustrations and Photo by Strawn+Sierralta.

created around each island by the geometry of the benches, and the way in which those spaces relate between paired or clustered components, and the environment in which the set of islands are launched.

Mobility + Installation

The traveling exhibition system, composed of lightweight elements, was designed to be easily transported, assembled and disassembled by a small team.

Click-in, non-locking hardware between benches and frames facilitates assembly without any tools. Frame detailing permits mounting multiple banner formats using common office file clips. A numbering system and diagrammatic maps of elements and configurations were designed to expedite the installation process. Every piece is sized so that it can be carried by one or two people and a small crew can deliver it with minimal oversight. Components are stackable, allowing the entire system to fit into two small moving trucks.

Process + Fabrication

This design-build project was ideated and constructed over four weeks with the help of over 30 architecture students and alumni. The stock at on-island hardware stores, the maximum output of the school's plotter, the skill sets of the student body, and the desire to

produce as little waste as possible shaped the form, materiality and guided construction technique.

Fabrication strategies were developed for each component category. Bases were constructed using virtually all the material from 31 sheets of 4' x 8' marine grade plywood, generating the minimum amount of waste. Frames were built from 240 pieces of 1' x 2' x 8' nominal lumber, the lightest and most economical stock available at the local home improvement supply store.

The construction process encompassed a mix of low and high tech processes; from creating multiple prototypes by hand to using equipment available at the school of architecture's fabrication lab including table saws, CNC routers, and laser cutters, to designing a series of custom jigs for more efficient assembly. Detailing included hidden and visible connections, rabbet, dado and domino wood joinery, adjustable legs, and click-in, non-locking hardware.

Frames were finished with a matte sealant to highlight the natural color of the wood, and in contrast, bases were painted in both light gray (orthogonal components) and cyan (diagonal components) following the school's identity system and highlighting the diagonal.

CONCLUSIONS

Design Islands began as an indoor/outdoor traveling exhibition system that creates environments where the community can talk story about design and architecture in Hawai'i. Its layered, conceptual symbolism simultaneously poses provocations about the future of Hawai'i, as it quietly holds a mirror to its past. While its core, functional purpose was as a framework to display artwork and curated content, ultimately it is its role as a cultural artifact that makes it most valuable to the community.

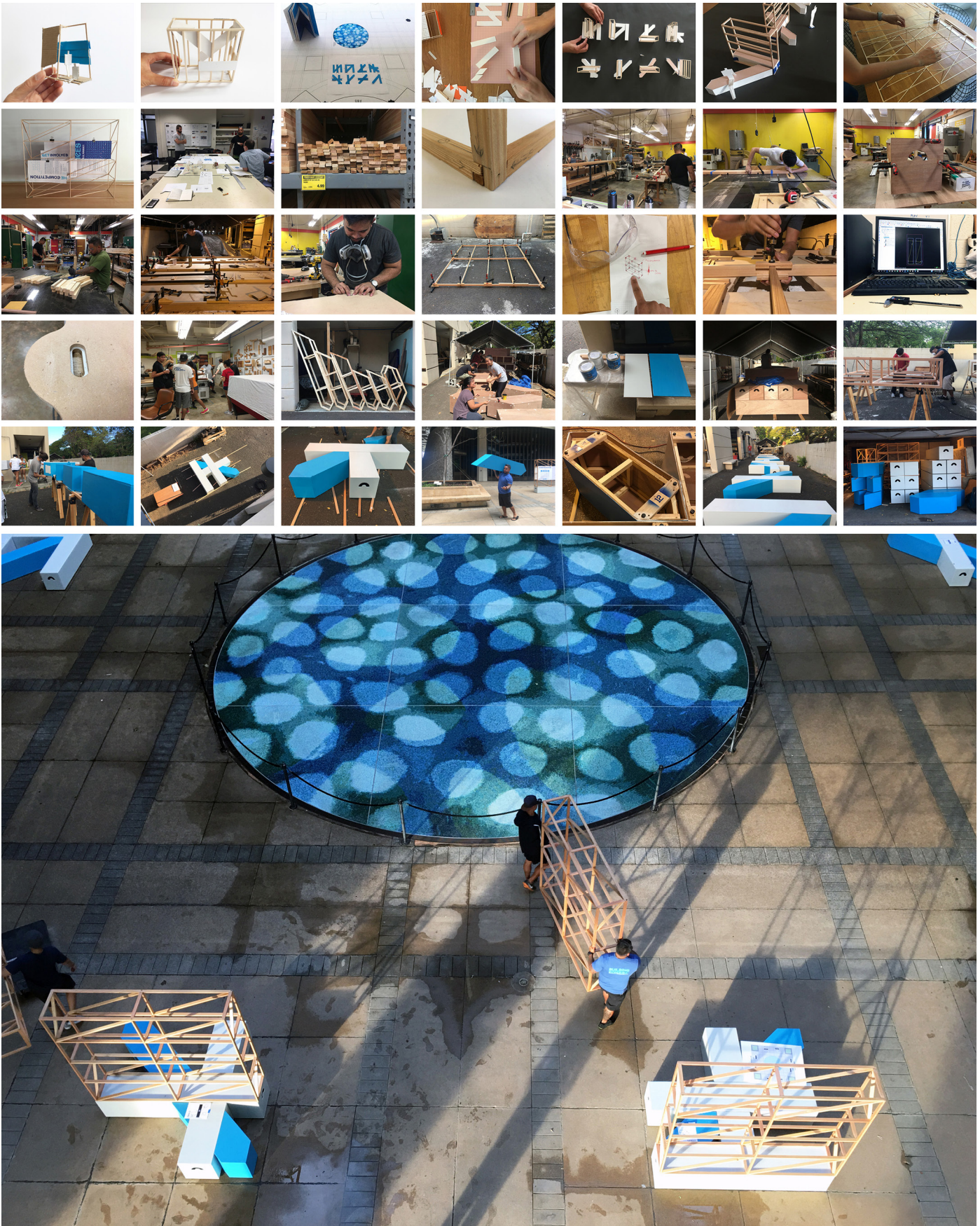


Figure 5: Design Islands was ideated, designed, prototyped, and constructed within a period of four weeks. The fabrication team consisted of more than 30 University of Hawai'i architecture students and alumni. Illustrations by Strawn+Sierralta. Photos by Strawn+Sierralta and the Fabrication Team.

It was after Design Islands was launched as the platform for the exhibition of the Building Voices Design Competition in three separate venues, and had a large exposure to the community, that we received a request for its use beyond design conversations. Most recently, the construct was displayed at the Polynesian Voyaging Society's fundraising gala celebrating the return of the Hōkūle'a²⁶ to Hawai'i, not only because it had the visual weight to serve as a space-making device and landmark in a very large civic venue, but also because of its conceptual connection to the navigation legacy of the Pacific Islanders. It was the cultural meaning the installation held in relationship to the organization's mission that was desired, suggesting that the real value of Design Islands lies not in its existence as an architectural artifact, but rather in its role as cultural artifact embedded in the Hawaiian context. Its *kaona*, or hidden meaning, might indeed prove to be its most useful function.

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