Informal Education: Haiti 2010

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INTRODUCTION

In the film *Citizen Architect,* Cameron Sinclair states that "the reality check is that the world is not gonna look like Dubai, it's gonna look like Lagos, Nigeria," thus beginning a discussion of how the growing social, economic, and environmental inequities of the contemporary world are exacerbated by the inward-looking focus of much architectural education and practice.[1] My stance is that educators and practitioners need to engage this world and learn from it, bringing us and our students into direct contact with systems that are flexible, improvisational, and materially creative.

This paper demonstrates how, through the self-generated work of a group of architecture students with whom I have been privileged to work, we have engaged issues of poverty, inequity, and social justice not as theoretical ideas but as real design collaborations with real people. Design Across Boundaries, established by architecture students at Iowa State University in the spring of 2010, is partnering with the community of La Croix, Haiti to engage the materiality and socio-economic reality of a country ravaged by poverty and disaster through social infrastructure.

This project would not have happened without the initiative of the students involved. With minimal faculty assistance, they established a relationship with the village of La Croix, defined a project, raised funds, and organized travel to Haiti. While on site, they identified technical issues and social needs that led to a range of design revisions and, since returning to campus, have been building de-tails to simulate conditions in Haiti and strategizing staged construction by volunteers.

This project is happening outside the normal curricular structure of our school's accredited architecture program yet it generates more hard work and enthusiasm from both students and faculty than many regular classes. It is a workshop that fuses design, technical, and theoretical knowledge and sets a precedent for both integrated learning and relevance in architectural education.

Background on Haiti

According to the World Bank, 54 per cent of Haiti's population lives on one dollar or less per day. It is the poorest country in the Western hemisphere and only four per cent of its original forest cover remains, leaving the landscape vulnerable to erosion and desertification.[2]

In the introduction to *Mapping Vulnerability*, Dorothea Hilhorst and Greg Bankoff state that some people suffer more than others from disasters because social relationships create greater risk for some populations "and these inequalities are largely a function of the power relations operative in every society."[3] Nowhere has this manifestation of systemic inequality been more evident that in the aftermath of the earthquake that struck Haiti on January 12, 2010.

Since disasters like earthquakes and floods often have severe impacts on the built environment, architects are frequently among the first to ask how they can help assist re-building efforts. A common

mistake, however, is for architects to rebuild in ways that may be technically better but that do not incorporate the social and material practices of the people they serve and as such do not question the underlying power structures that produced dangerous building conditions in the first place. Acting in this way at best provides a Band-aid solution but does not ultimately prevent future disaster because it does not affect the factors that create risk for vulnerable populations.

Typical contemporary construction techniques in Haiti rely on under-reinforced, low-strength concrete frames with concrete block infill typically made using the same poor quality concrete. Buildings made in this way are highly susceptible to structural collapse from earthquakes and hurricane-force winds and they are the result of Haiti's almost universal dependence on foreign aid including the import of Portland cement. While traditional Haitian buildings using wood or wattle-and-daub survived the 2010 earthquake much better than newer concrete buildings, many rebuilding efforts concentrate on improving the quality of concrete construction. This perpetuates the dependence of Haiti on imported building materials such as steel and cement rather than defining a sustainable long-term approach to construction.

Other rebuilding projects for Haiti rely on master plans to reconfigure entire cities according to a Euro-American model. The Haitian government, for example, issued the "Haiti Action Plan" guidelines for reconstruction in March 2010. This document describes a broad effort to to build not only physical infrastructure and services but also social and economic systems. It focuses on redistributing population to a number of centers around the country to generate agricultural, industrial, and tourism development more broadly than just in Port-au-Prince.[4] This strategy has many positive attributes and the inclusion of issues of social and economic equity is a far cry from the dictatorships and military governments that have dominated Haiti for the last century. This is, nevertheless, a top-down strategy proposed at high levels and the details of how its execution includes the strategies and practices of ordinary people will be critical for its success.

Systemic inequality has existed in the Republic of Haiti since it became an independent nation in 1804 and this condition, exacerbated by international policies, has created not only a materially impoverished country but also a place filled with informal creativity and resilience. Following the devastating 2010 earthquake Haiti briefly occupied the international spotlight. Today, as rebuilding continues a long-standing and on-going process of nation formation, Haiti provides rich material for architects and urbanists looking to understand the issues that face the built environment of the twenty-first century.

In Haiti, the traditional Western method of planning has failed, if it ever existed. Reliance on a strong central organization to administer decisions regarding land use, infrastructure, education, health care, building practices, and so on has never been successful in Haiti. It has suffered from international racism, internal political upheaval and class struggle, and economic dependency engineered by foreign governments.[5] As a consequence, not only the urban center of Port-au-Prince but also the secondary cities and rural areas function through largely informal economic, social, and material systems. Public transportation consists of independently run and highly decorated minivans or *tap-taps*, markets sell rope made from abundantly available discarded plastic bags, and children keep shoes together with thorns instead of Velcro. The earthquake called attention to these conditions but they are in fact endemic to the Haitian situation and solving the vast problems of housing, food, infrastructure, health care, and education requires not only outside aid but also understanding of and partnership with the existing social space of the Haitian people.

A Different Approach

Following the 2010 earthquake, Design Across Boundaries took the initiative to work with a Haitian-run community organization to not only provide design ideas for a specific project but also to work with the community to develop strategies that will help them become economically and socially sustainable in the future. This work draws on the informal construction and urbanism strategies that are used in both rural and urban parts of the country.

Through a connection with a Haitian classmate, the group began to work with the community of La Croix, Haiti on a community center that would of-

fer sports and group activity facilities as a supplement to the school that had already been created by the La Croix Haiti Mission, a non-denominational organization that has been in La Croix since 1973 and not only provides services but also builds capacity in partnership with the community. The goal of the current project is to provide a facility that will attract young people, particularly teenagers, and keep them working and living in the community rather than migrating to larger cities. Similar in strategy to Urban Think Tank's Vertical Gymnasiums, the complex will be a new social and civic infrastructure in La Croix.[6] Future plans include developing systems to provide vocational education in trades, small business operation, and sustainable farming to help make the community self-sufficient and less reliant on foreign aid.

The village of La Croix is located approximately 85 miles north of the capital city of Port-au-Prince and about 15 miles south of the port city of Gonaive. Around 15,000 people live in the area of the village and this number increases during the school year when children from surrounding areas come to attend the primary and secondary schools operated by the La Croix Haiti Mission.

La Croix lies in a valley between two mountain ridges. The village consists of a series of building clusters strung out along national Highway One (Figure 1). In La Croix, there are several clusters of housing, a clinic established by the mission, a concrete block production site, and the mission complex strung out along 3 miles of road. Farms surround the village, particularly on the west. La Croix is not large enough to support a market - the closest is in the town of L'Estere 5 miles south - but small vendors operate in various areas, particularly at the entrance to the clinic where people often come from as far away as Gonaive.

Typical of Haitian villages of this size, La Croix has no formal center but instead consists of an incremental development of housing and other facilities that appear in an ad hoc fashion as needed along the road. This settlement pattern is typical of rural villages in Haiti and is mimicked in the urban center of Port-au-Prince by the ad hoc growth of informal areas that surround the more established neighborhoods. In informal sections of Port-au-Prince such as Cite Soleil that are near the coast, ad hoc buildings have gradually filled the spaces between roads

as well as portions of the nearby river bed, making the area vulnerable to seasonal flooding from both river and sea. Newer settlements have developed vertically in the mountains surrounding the wealthy suburb of Petionville. These settlements consist of stacked concrete frame and block housing with few if any vehicular streets. As buildings cover the hillsides and fill in the valleys, they become vulnerable to flooding and landslides as well as earthquakes.
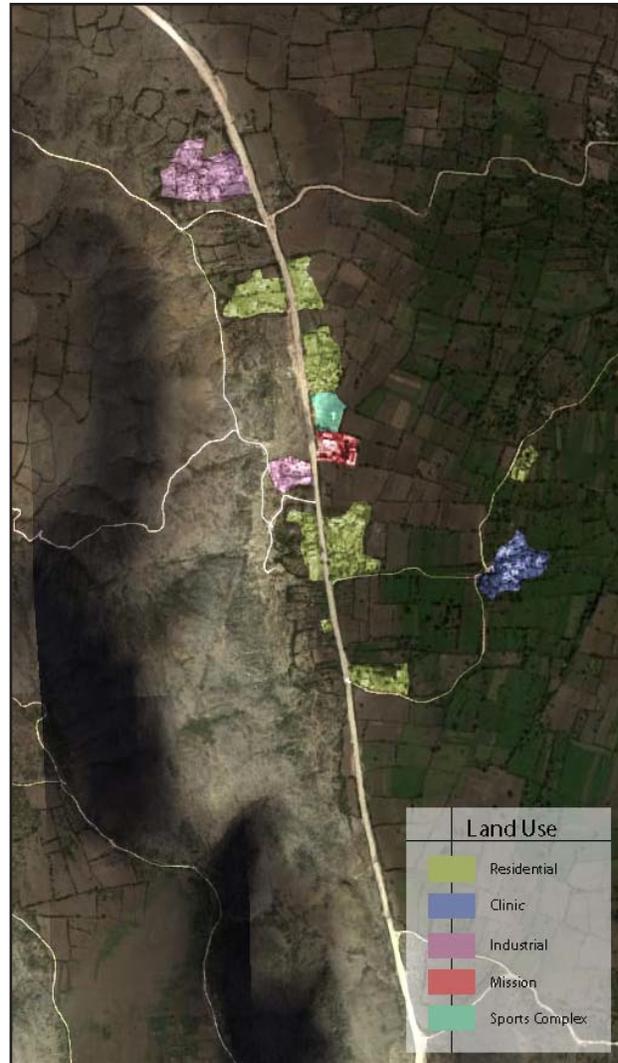

Figure 1. Map of La Croix, Haiti. Google Earth, annotations by Kristen O'Brien.

While not impacted directly by the earthquake, La Croix suffered serious damage in 2008 from hurricanes and in many ways is typical of communities throughout Haiti. One significant difference, however, is the Haitian-run La Croix Haiti Mission.

Mission and aid organizations have been a primary source of education, health care, and housing throughout Haiti during decades of unstable governments and non-existent public services. Most of these agencies are run by foreigners from the U.S. and Europe and, while well-intentioned, many do not partner effectively with the people they seek to serve and do not adequately develop capacities for self-sufficiency. They often bring in outside professional expertise, including architects, to solve immediate problems without concern for local practices or material availability. The La Croix mission is extremely unique in that there is no cultural separation between the people of the village and the mission staff. Ermithe Pierre, wife of mission director Vaugelas Pierre, is originally from La Croix and her family connections in the area have been critical to the success of the mission. Many of the mission staff are from the village and actively serve as cultural conduits between foreign aid workers (including our group) and the community.

Developing a Center

The mission recently acquired a large parcel of land adjacent to their main education center. Their vision is to transform this land into a sports and recreation facility that would both attract young people and encourage them to remain in the area. This vision included a building to house secure storage, concessions, and overnight facilities for guests. This building, referred to as the "community center," has been the immediate focus of the student work since March 2010.

While visiting La Croix in August 2010, the group learned that, at around age fifteen, many young people leave the town during the summer and go to larger cities to watch and participate in soccer matches and to find employment. They frequently do not return to the village or to school after these experiences and it has been difficult to transition students from secondary education to universities. A primary goal of the sports complex is therefore to keep teenagers in town during the summers by providing a range of activities. In the future, they hope to hire coaches and participate in sports leagues, attracting youth as both players and spectators. In addition to soccer, facilities for basketball, volleyball, running, weight-training, music and art education, trades training, and day care are included in the complex.

What materials to use for the project and how to construct it were among the first questions raised by the students. Typical construction in Haiti is a composite of concrete frame and concrete block infill that allows buildings to be built and added to incrementally over time. Poor quality building materials, improper concrete mixing techniques, and lack of adequate reinforcing, however, were responsible for many of the collapsed buildings and deaths from the earthquake as well as damage during previous hurricanes. Traditional Haitian building techniques utilize wattle and daub as well as more elaborate carved wood structures. Because the country is heavily deforested and wood is the primary available fuel source, the wood needed for these methods is largely no longer available or extremely expensive. Neither concrete block nor wood construction was therefore an option.

The group wanted to find a system of construction that would improve upon the safety of local construction methods but still use readily accessible materials and provide needed security. Haiti has long been dependent on outside aid to supply food and virtually all consumable goods and the country has little or no exports due to the erosion of arable soil by deforestation and the destruction of manufacturing and agriculture by international trade policies. As a result, there is a surplus of shipping containers in many of the port cities, including Gonaive, that are frequently used to create secure,

Figure 2. Typical roadside store made from a shipping container. Photo by author.

informal roadside shops (Figure 2). Primary concerns about using shipping containers concerned logistics: How would the containers be transported to La Croix? How would they be lifted and installed? What kinds of materials and equipment are available and what would need to come in from the U.S.? How the aesthetics of the containers would be received by the people of La Croix was also a concern - above all, the center needed to be something that belonged to and was part of the village.
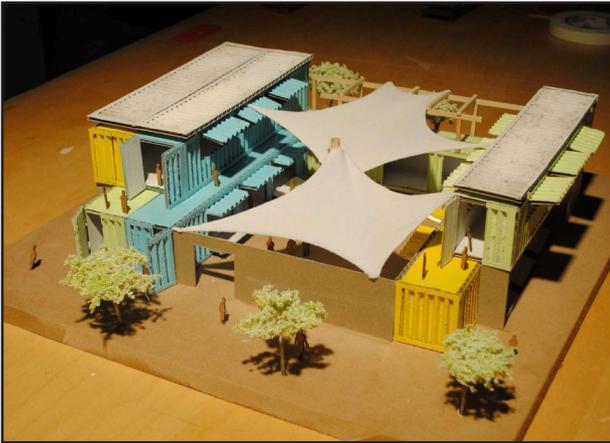

Figure 3. Model of La Croix community center by Design Across Boundaries.

Before traveling to Haiti, the students designed a modular complex using shipping containers that could be expanded over time and built in phases. Arranged around an exterior courtyard, the original design had two levels of containers resting on concrete footings. Operable windows and doors provide access, ventilation, and shade and a double roof system maximizes passive ventilation in the hot climate (Figure 3). To include local creative traditions, canopies made from locally woven palm leaves cover the courtyard to protect from the hot sun. Mural painting is also a strong Haitian tradition; a wall of concrete block that provides secure enclosure is designed to incorporate murals and the containers can also be painted with murals (Figure 4).

Making Contact

In La Croix, we were able to meet with community leaders, teachers, parents, and children to better understand the role of this center in the community. These meetings, both formal and informal, were

Figure 4. Rendering of La Croix community center showing mural wall, by Design Across Boundaries.

critical for understanding not only the specific uses that would occupy the community center but also its broader symbolic role within the village and as a connection to a larger world outside the village. It became apparent, for example that locating the center at the edge of the mission's land immediately adjacent to a housing cluster made it very accessible to the village and could help it serve as a hub of community activity for both children and adults. The community was also overwhelmingly enthusiastic about the shipping containers. While the project is less ad hoc than much local construction, it has an industrial informality that fits with the local materiality and the containers are a familiar "adaptive reuse" building system. One of the young men remarked that, while containers are a common site, this would be "a new thing, unlike anything else from the past."

As a programming exercise, this experience was invaluable for the students involved. They were able to understand through direct experience that building program is not only about designated uses and sizes of spaces but also about the larger social role of the building in the community. Its location, materials, degree of openness, and symbolic purpose are all critical components of the project. This in turn helps inform the relationship of the building to its surroundings, generating a site strategy of interlocked courtyards and gardens adjacent to the sports fields that provide places for shade, gathering, informal activities, and sports spectatorship. Spatial programming essentially came down to defined spaces that could be securely enclosed to pro-

tect equipment and more open-ended spaces that could be used for a variety of functions at different times of day with varying degrees of openness and enclosure. Locating power and water supply lines was also an important aspect of this spatial organization.

On a material level, we discovered that the site soil conditions are highly problematic. Three feet of compacted black soil with high organic content but low fertility lies over sandy soil suitable for bearing. By observing local building practices, we found that, rather than concentrating loads on footings or foundation walls, buildings typically rest on stone mats that spread load across a wide area, raise the floor level off the ground, and help drain water away from the building (Figure 5). By using this technique, we will be able to reduce the need for imported cement and steel and use a familiar building language in the project. This strategy also allows the containers to move separately from the foundation mat during an earthquake.

Figure 5. Typical Haitian house with stone mat foundation. Photo by author.

The students also visited the port in Gonaive and spoke with potential container suppliers about both purchasing and moving the containers to site. Because the condition of containers varies widely, we selected four containers for the initial phase of construction. Moving the containers from Gonaive to La Croix should not be a problem, particularly since Highway One is undergoing significant improvements and heavy equipment is readily available. Lifting containers to create a second level, how-

ever, requires a crane and these are not readily available outside the port. Mission staff are working to develop a system for lifting the containers while the student team is investigating other systems for construction of the second level using other locally available materials and labor.

Where Does This Work Stand?

This project has to date been developed outside of the normal curricular structure of our accredited architecture program. Following the earthquake, while faculty were arguing about how to fit a project like this into an inflexible curricular structure, the students found partners in Haiti, developed a schematic design, investigated construction systems, and contacted suppliers. They also raised money to support travel to Haiti and identified faculty not only in architecture but also in structural and civil engineering who could help with the technical development of the project.

From a pedagogical point-of-view, this project fulfills nearly all of the 2009 NAAB Conditions for Accreditation, although it will not be "counted" as it is not part of the required curriculum. It furthermore gives students and faculty the opportunity to observe, work with, and appreciate the informal indigenous traditions of not only building but also day-to-day living in Haiti. By doing this, it is possible for these students to see how a growing portion of the world's population operates and what kind of material, infrastructural, and spatial systems this way of life can generate. From a theoretical point of view, they see that space is socially produced, as Lefebvre describes it, not only through conception but also through perception and lived experience and this in turn gives voice to its users and thus can become the basis for a spatial tactic of empowerment.[7] From a practical point of view, this experience helps them develop tools for communication, observation, and invention that they can use in the future to handle a wide variety of situations that they would never encounter in a typical design studio.

This project also offers a potential model for architecture education designed around an integrated approach to addressing relevant issues. While Design Across Boundaries is currently operating as a combination of extracurricular effort and 3-credit independent studies, it could become a workshop

substituting for the more typical studio-tech-history/theory courses. This would allow students to commit a significant portion of their coursework to developing solutions to relevant contemporary issues such as social infrastructure in developing countries, disaster resilience, or rural economic development not only through design but through a range of architectural activities and research.

My stance is that architecture students, educators, and practitioners need to get out of their studios and offices and learn from the world that is developing around us and engage issues that are relevant to it. This world is not the orderly urbanism of Cartesian rationalism or nostalgic historicism. Rather, it is "a laboratory for the study of adaptation and innovation… a condition of complex, non-linear systems in which patterns overlap, intersect, and mutate in unexpected ways."[8] It is a classroom that reveals through materiality and improvisation how "new social relationships call for a new space."[9]

ENDNOTES

1   *Citizen Architect: Samuel Mockbee and the Spirit of the Rural Studio,* directed by Sam Wainwright Douglas (2010; Austin, TX: Big Beard Films): http://www.pbs.org/arts/gallery/citizen-architect/citizen-architect-full-film-video/.
2   The World Bank, "Haiti Data at-a-Glance," August 12, 2006: http://siteresources.worldbank.org/INTHAITI/Resources/Haiti.AAG.pdf.
3   Dorothea Hilhorst and Greg Bankoff, "Introduction: Mapping Vulnerability" in *Mapping Vulnerability: Disasters, Development and People*, eds. Greg Bankoff, Georg Frerks, Dorothea Hilhorst (London: Earthscan, 2004), 2.
4   Government of the Republic of Haiti, *Action Plan for National Recovery and Development of Haiti,* United Nations International Donors Conference, March 2010.
5   Paul Farmer, *The Uses of Haiti* (Monroe, ME: Common Courage Press, 1994).
6   For examples of vertical gymnasiums and other social infrastructure projects by Urban Think Tank, see http://u-tt.com/home.html (November 14, 2010).
7   Henri Lefebvre, *The Production of Space,* Donald Nicholson-Smith, trans. (Blackwell Publishing: Malden, MA, 1991), 39.
8   Alfredo Brillembourg, Kristin Feireiss, Hubert Klumpner, "Towards an Informal City" in *Informal City: Caracas Case* (Munich: Prestel, 2005), 43.
9   Lefebvre, 59.