



# SELF-HELP HOUSING

## Recreating the Vernacular with Safer Materials

2/13/2010

Patti Stouter,  
landscape architect

Help with rebuilding should allow Haitians to recreate the local texture and style of their towns and cities in earthquake and hurricane resistant buildings. An inexpensive and simple material would 'fit' Haitian's cultural strengths and available resources. One example illustrates the use of a simple earth material for transitional housing in a traditional Haitian house form.



### Problems with Recent Construction

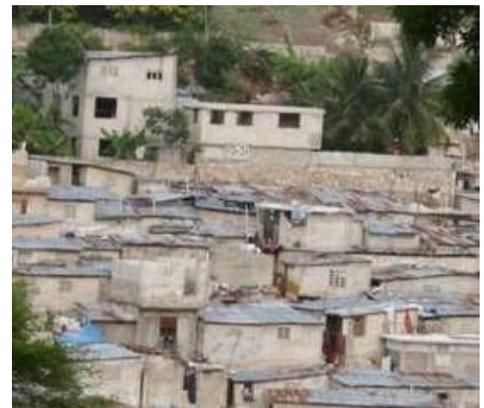
At least in part, the disaster in Haiti resulted from the misuse of a costly and technical building process that is ill-suited to a country with a strong ethic of sharing and weak financial resources.



In the past Haitian carpenters masterfully mixed forms and decoration from Africa, Europe and the West Indies to create large and small dwellings that were airy for Haiti's humid climate. These wood buildings flexed in quakes, and their narrow roof overhangs weathered hurricanes even if porch roofs didn't.

Wood is scarce from overuse for cooking, and most new construction is built with cement. Concrete's thermal mass traps daytime heat and cools more slowly in the evening than wood, brick, or unfired earthen materials.

But the worst results of concrete construction come from the interplay between its technical construction requirements, Haiti's group-oriented culture, and the severe economic conditions of the past decades. These three factors played a large and regrettable part in the great tragedy caused by Haiti's recent earthquakes.



### Haitian Culture

Haitians place great value on relationships. They are a generous people who value hospitality and care for each other in practical ways. The coumbite

(shared work days on large projects) illustrates their strong group identity.

Children learn “We all take care of each other. No one stands alone.” ...This translates into behavior that is inclusive, not independent.<sup>i</sup> Common decency shows that belongings, like air and food, are meant to be shared.

Cement is very expensive even though Haiti produces it in-country. Steel used for reinforcing is also very costly to the ordinary Haitian. These are powerful incentives to reduce the amount used in a project, or ‘share’ job supplies.



The rules that control safe use of reinforced concrete are also not obvious. Steel and cement are strong enough only when combined in certain magical proportions, determined by different specialists. And inferior construction looks, until a catastrophe, as if it was strong enough.

Many Haitians are more oral than literate. Reinforced concrete work either teaches them they know nothing and cannot build for themselves, or gives a false sense that a rule-of-thumb understanding is good enough. Either of these is unfortunate in a culture where house-building is a gradual, additive process. ‘Like an organism it grows according to the needs of the family.’<sup>ii</sup>

#### Safer Buildings for Haiti

In Haiti simpler building materials are safer. Construction processes should use affordable materials and be understandable to the ordinary person. Many dry climate cultures have mastered compressed earth blocks or adobe. People in forested areas use wood or bamboo.



Haiti's quakes and deforestation require a different solution.



Geo-textiles are a high-tech way to make retaining structures, dams, and even airfields. Surprisingly, they also allow a very low-tech approach to buildings. Earthbag is a form of geo-textile building construction that is growing in popularity around the world. Recent engineering tests of the strength of different forms of earthbag

have shown it to be stronger than traditional stud walls.<sup>iii</sup> And an orphanage building (shown above and at right) completed of it recently near Port au Prince for Free the Kids was untouched by the recent quakes.



Inexpensive materials form earthbag walls. Grain bags are filled with moist earth, stacked, tamped, and covered with plaster. Under roofs they dry into an improved adobe with tensile strength from fabric, barbed wire, and mesh.

Below: Costa Rican house with buttresses

Earthbag building is easily understood and created with simple rules of thumb. Openings must be kept certain distances apart, long walls need piers or temporary bracing. The whole structure is tied together with a conventional cement bond beam or steel pipes tied into the



wall below. Overall it is a labor intensive process using hand tools. This simple and visually obvious process works well for one-story buildings, and can easily support upper levels.

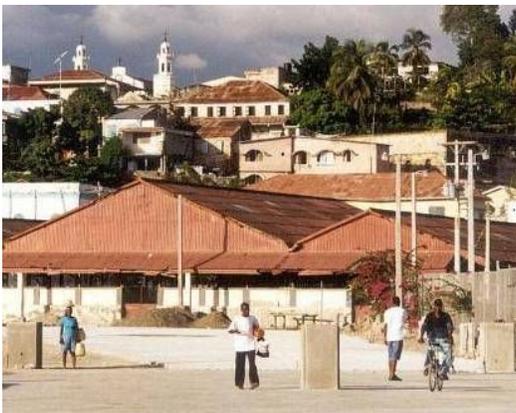
Many local and foreign aid groups are looking for good simple technologies to help Haiti. There may be other materials that will be useful as well. But they need more than just a good material to use.

### Let Haitians Return Home

Despite a global economy, different cultural groups live in very different ways. Habits about using space are deeply rooted. The US ignores empty front stoops and wants attractive rear decks. Haiti, in contrast, greets neighbors from breezy front porches called 'galleries'. Children play in quiet streets below, while rear yards are practical work areas.



Many of the familiar building forms of Haiti respond well to both climate and culture. The vernacular or traditional buildings of an area can give 'insight into a society's values, lifestyles, symbols and identity; whether these characteristics change or remain constant...'iv Yet, even a traditional building will make a dismaying cookie cutter neighborhood if mass-produced.



'Destroyed neighborhoods were previously mostly vernacular, and it is to a comfortable vernacular that their residents wish to return. This implies a number of patterns which are too often overlooked...'iv These patterns include the seemingly random variety that often includes important responses to local

site conditions. Neighborhoods are defined by repetition of ‘familiar plans and the recurring three-dimensional geometric shapes (form classes) of the houses, businesses and churches.’<sup>vi</sup> But real streetscapes are unique places of ‘variety, whimsy and surprise. They are about local artistry and expression.’<sup>vii</sup>

Jay Edwards, director of the Louisiana State University Cultural Resources Lab at Baton Rouge saw Katrina rebuilding try but fail to recreate neighborhoods. Aid



‘must rely heavily upon the voices and underlying cultural ground-rules of those being aided.’ We need local input at every stage, and willingness to change plans to try ‘what may at first appear to be unworkable solutions.’<sup>viii</sup>

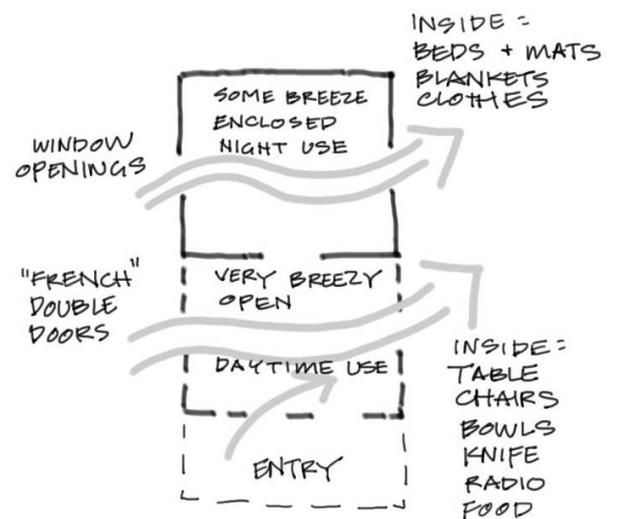
Above: A Creole style house in Haiti’s provinces

The best way to avoid mass-production and misunderstanding by distant planners is to work with Haitian designers, planners, and builders to solve housing needs. Offer suggestions, but empower many small contractors and home-owners to build for themselves, they will be able to come ‘home’.

### One Haitian House Type

Traditional Haitian housing includes different shapes of detached housing called Creole, ti-kay, and townhouse. The detached house is a basic to Haitian culture because it symbolizes adulthood as well as allowing needed ventilation along side walls.

The ti-kay is the simplest form, and can



provide a good example of how a simple transitional shelter can grow into an appropriate Haitian house.

The ti-kay probably has roots in the strong West African traditions of captives brought to Haiti directly from Yoruba. It was used as a type of basic plantation shack, but because it did belong to the slaves, it carries connotations of resistance. Among newly liberated slaves it was transformed into a genteel symbol of independence and simplicity, which may have contrasted with the more generous Creole buildings used by colonists or the new upper classes.

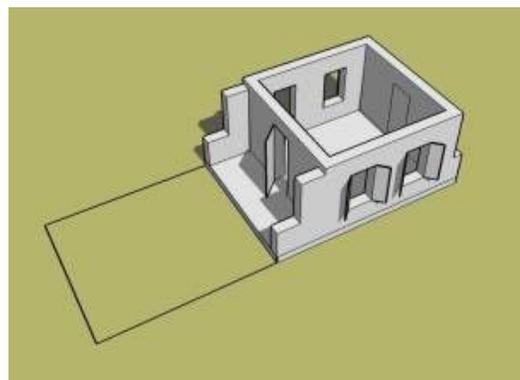


A kay is a long, narrow building (like the shotgun houses in the US which probably developed from it). Each room opens into the next without any hallways, allowing good cross-ventilation. It is easy to add onto, by extending the same rooflines. By adding a shallower roof onto one side it can become an L shape.

A gallery at the narrow gable end of a kay always faces the road or path. An extended gable above it is used for storage. This 'soute' can be locked and accessed from inside or out. Larger porches are sometimes desired, but the entrance is always through the often lavishly decorated gallery that faces the street.

'Little by little the bird builds its nest.'

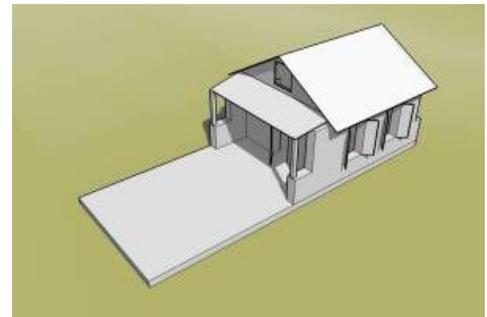
This Haitian proverb can be fulfilled in transitional housing of earthbag or other materials. The basic square room shape of



the kay (10 x 10' to 12 x 12') is a good structural module for easy roof construction. Earthbag walls in this size and shape are strong and earthquake resistant when they are tied together with an adequate cement, wood, or steel bond beam. This single room will be the chambre or bedroom later, but can shelter a whole family.

A lintel support above a door and window opening could reuse strong concrete scraps, be cast in place 12" high by the width of the bags, or could be made from metal. Because it is difficult to cut openings in earthbag after the soil cures, a doorway at the rear can be framed out for the future and then filled with earthbags that are not woven into the rear wall.

The basic kay shape will be easier to add on to later in earthbag if stepped piers are left where the walls will extend in the future. Additive construction is safe when each unit ties into the previous and follows the same structural form.



A tarp can be added to keep rain off of the entrance at this first stage. Doors and shutters will be desired early because many Haitians fear openings at night.



The next room built will be the salle or main living space. This is traditionally the breeziest room of the ti-kay, with 3 or 4 outside doors.

After the gallery is roofed over, another addition can be started at the rear of the building.

Earthbag walls can be built little by little as long as they are not exposed to the sun for longer than a month. If earthbag walls are not roofed over immediately, they can be covered with a tarp to keep the sun off of the bags.



Once plastering and roofing is finished, walls can be painted in bright colors. Haitian carpenters can embellish them with trim just as well as the traditional wood ti-kay.

Many thanks to Professor Jay Edwards and architect Christine Neptune for their advice, help, and encouragement.

#### Additional Information:

Patti Stouter is a landscape architect and building designer who usually designs training facilities for Wycliffe Associates at various locations in the developing world. For information on working across cultures, or Haitian culture and architecture contact her at [handshapedland@yahoo.com](mailto:handshapedland@yahoo.com).

Many instructional articles on earthbag building techniques are available at [www.earthbagbuilding.com](http://www.earthbagbuilding.com). For help planning earthbag relief or construction projects contact Owen Geiger at [strawhouses@yahoo.com](mailto:strawhouses@yahoo.com) or Kelly Hart at [kellyhart@greenhomebuilding.com](mailto:kellyhart@greenhomebuilding.com).

More information about traditional Haitian houses and yards can be found in the following volumes:

Jack Berthelot and Martine Gaume, /Kaz antiye jan moun ka rete= Caribbean Popular Dwelling=L'habitat Populaire aux Antilles, (Guadeloupe:1982, Editions perspective Creoles)

Jay D. Edwards, "The Origins of Creole Architecture", / Winterthur Portfolio/ 29 (Summer - Autumn, 1994), 155-189

Anthony Hart Fisher and John Michael Vlach, "The Popular Architecture of Haiti", MIMAR: Architectue in Development, 1987 at [www.archnet.org/library](http://www.archnet.org/library)

Sidney W. Mintz, "Houses and Yards among Caribbean Peasantries" in Philip W. Scher, ed., /Perspectives on the Caribbean: A Reader/(2009, Wiley-Blackwell)

John Michael Vlach, "The Shotgun House, an African-American Architectural Legacy" in John M. Vlach, eds.,/Common Places: Reader on American Vernacular Architecture

#### Photographs

From [www.commons.wikimedia](http://www.commons.wikimedia):

Cover: Sondra-Kay Kneen

p. 1: Doron, House in Port au Prince, Haiti; Alsandro, Haitian housing

p.2: Clindberg, Port au Prince, Haiti earthquake damage detail

p. 4: Spyder 00Boi, Jacmel view

Other sources:

pp. 2-4: details of earthbag construction, Sun House of Free the Kids construction process, Sun House plastered, earthbag tools and supplies, and Costa Rican house, various photographers, used with permission of [www.earthbagbuilding.com](http://www.earthbagbuilding.com)

p. 5: Christine T. Neptune, used with permission

---

<sup>i</sup> Sarah A. Lanier,/Foreign to Familiar: A Guide to Understanding Hot-and Cold-Climate Cultures,(Hagerstown, MD: 2000, McDougal Publishing), 42

<sup>ii</sup> Christine Therese Neptune, /Creating New Precedents for Residential Design in the Contemporary Haitian Society, (University of Florida Graduate College of Architecture, Master's Thesis), 28

<sup>iii</sup> Information about tests by engineering departments at West Point, Queens College, and the California building code enforcement officials are detailed at <http://earthbagbuilding.com/testing.htm>

<sup>iv</sup> Neptune, 14

<sup>v</sup> Jay D. Edwards,/ Comments on 'Haitian Wisdom for Aid Buildings, (unpublished paper: 2010), 2

<sup>vi</sup> Edwards, 3

<sup>vii</sup> Edwards, 4

<sup>viii</sup> Edwards, 2

Source :<http://www.earthbagstructures.com/PDFs/Self-helpHousingforHaiti.pdf>

---