Adaptive Rebuilding

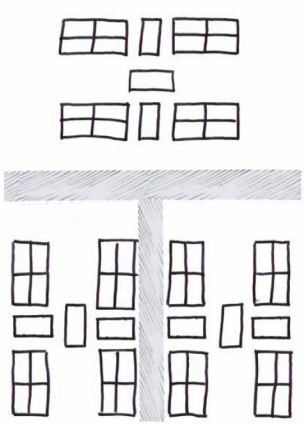
The town of Sirombu on Nias was destroyed by the Tsunami- everything from the shoreline development, to the regional market, to homes. Here is a series of strategies to help Sirombu adapt the modular relief houses into a comfortable community over time.

community scale efforts +
adapting the new town +
reuse as secondary structures+

financial
human
social
physical
natural

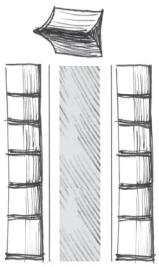
Town Adaptation Strategies

The layout of the relief housing built by Zero-to-One in Sirombu consists of pods of four clusters of four houses surrounding community toilet, water, and laundry facilities. These pods are all decentralized, consisting of a series of grids. The resulting community structure is nothing like the traditional one, which consists of elevated rowhouses lining a street-like linear public open space.



relief layout

+



traditional layout

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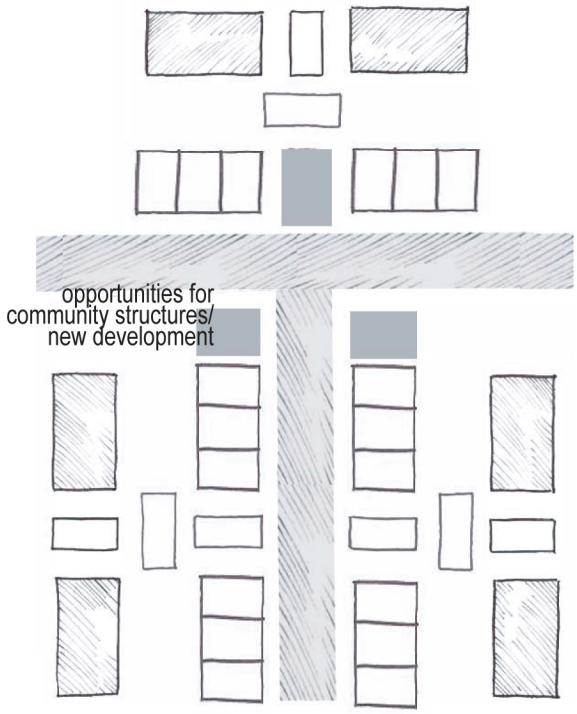
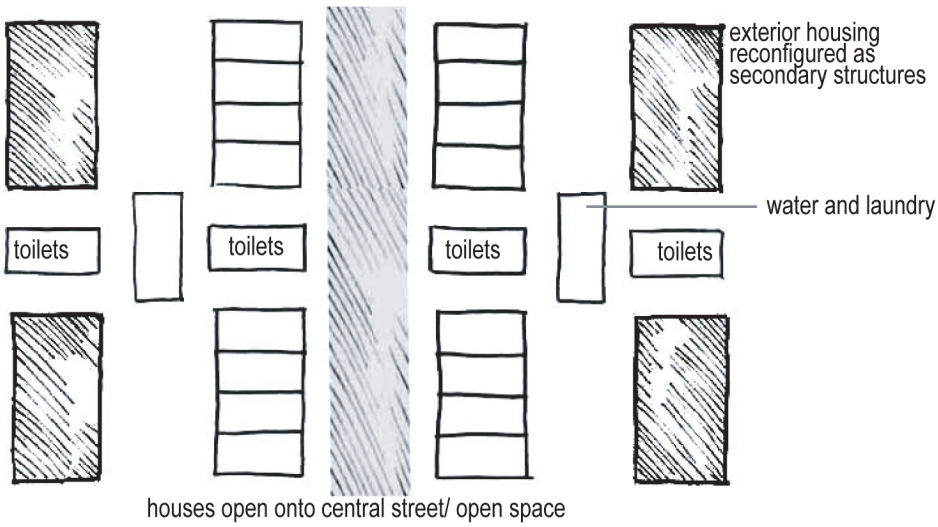


adapted layout

Reconfiguring the buildings of the new town creates possibilities for a more suitable community structure. One key strategy would be to focus the houses bordering the main road between two pods inward on the road, and adapting those along the outside of this new center to new uses. These buildings could then become secondary community structures.

In the reconfigured plan above, the houses are adapted to the three large attached house reconfigure plan; below, to the four attached house plan. Houses may be adapted using the ideas presented on the adaptive rebuilding housing strategies on the following pamphlet in response to the needs and number of community members wanting to participate.



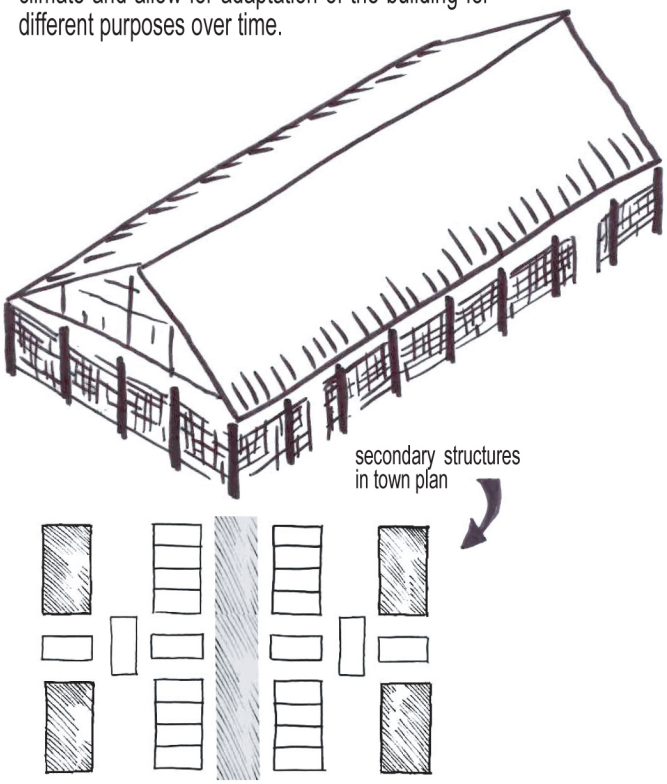
Adaptive Rebuilding

Reusing Relief Housing: Secondary Structures

The Zero-to-One buildings have potential to also serve the community as structures other than houses. As secondary structures, the buildings would not need to meet the community's needs as primary shelter and might not require as intensive construction strategies in their adaptation. These buildings might be able to serve as business opportunities, tourism functions, or community buildings. The post-and-slat construction method of the buildings will allow the community to rearrange the layout of the structures without completely disassembling them.

Screened Walls for Versatile Buildings

A pod of houses could be commissioned to serve the many functions as a secondary structure, and with the needs of the community changing, the ability for the structures to adapt is valuable. Looking to traditional uses of woven fibers such as palm and rattan as walls and screens, one might remove the concrete walls. Replacing them with screens will allow for air circulation in the muggy climate and allow for adaptation of the building for different purposes over time.

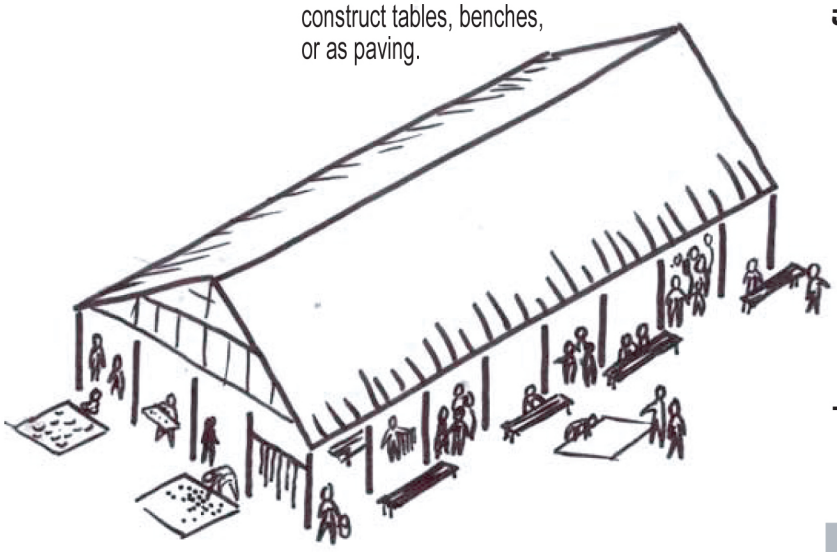


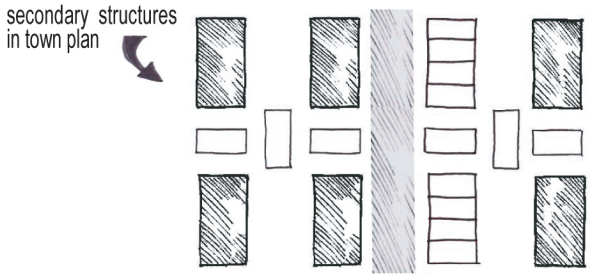
Uses supporting this building may include:

work space for craftsmen
surf hostel for Nias' growing tourism industry
schools
additional live/work space for nearby residents
storage space for nearby homes
animal pens
commercial space

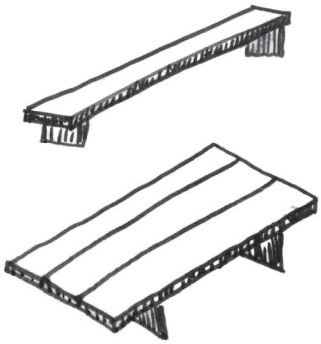
Market Scheme

An entire pod of homes, or a series of pods, can be converted into market space for the town. As the western coast of Nias' main port, Sirombu held the region's market until the tsunami destroyed it. Removing the walls and leaving the infrastructure of the building could create an ideal market setting. The slats that formed the walls could be used to construct tables, benches,
or as paving.





A plan for a large market could extend the secondary structures out to the central open space. If the town's needs for more or less market space changed, structures could be easily converted for different purposes by adding or removing screen walls. The covered area, with the assembly of many permanent tables and benches from the wall slats, could be used by the public for many different purposes during the market's off-time



transitioning to permanent communities in Sirombu: family efforts

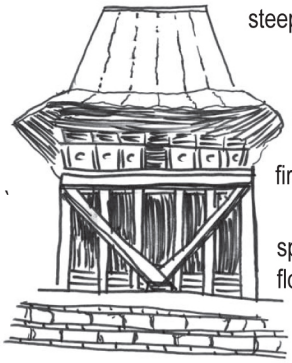
Adaptive Rebuilding

A study on how the town of Sirombu on Nias may undertake rebuilding efforts to develop more permanent homes while integrating the infrastructure and materials of the temporary/emergency relief housing undertaken by the Zero-to-One foundation.

family and individual scale efforts +
adapting temporary homes +
reusing materials+

A More Environmentally Responsive and Culturally Appropriate Home

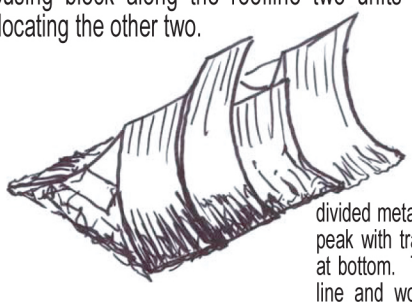
The traditional homes of Nias are a response to the local environment, and the forms they have become are a part of daily life and culture. Modern design and construction efforts should not only use what is available but look to traditional form to create a space that is both environmentally and culturally comfortable.



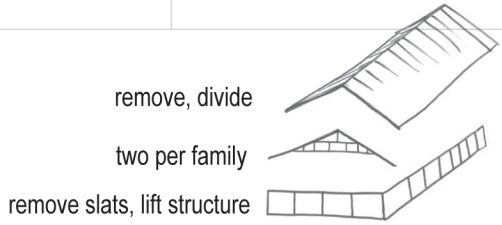
It would be ideal for families to be able to relocate their homes entirely and construct them in the manner custom to their needs. Some families will be able to do this, and will leave relief homes vacant. These vacant spaces will create rebuilding and redevelopment opportunities.

Phasing

The living situation during the rebuilding of the new home will be important for the family. Because of the nature of the four-unit pods of houses and that the new homes would be lifted an entire floor, it is impossible for families to remain in the unit while reconstructing. Families could swap units with eachother, or move into vacant units within the community to make the construction phasing and timing work together. The best method for redevelopment would be for all of the families in one pod to redevelop at one time as a group effort. In the four-unit scheme, theoretically, if a cut were made in the center of the housing block along the roofline two units could be rebuilt without relocating the other two.

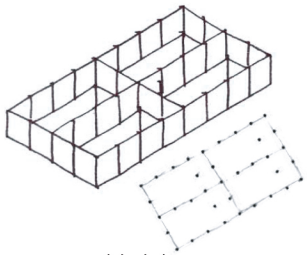


divided metal roofing, extending down from peak with traditional thatch fiber technique at bottom. This creates a more traditional line and would be an alternative to the existing, more modern roof



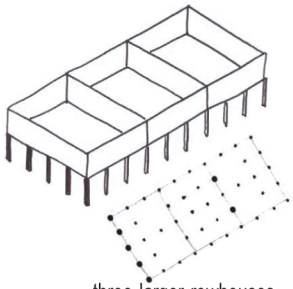
Adapting the Existing Houses: Models

The proposed adaptive strategy includes taking the structure apart and lifting it onto the support beams that originally helped form the walls. The roof, one mass of metal sheeting, would be removed and cut into portions for each unit. The roof's support beams would be removed and divided up amongst the units to have two (or three in larger units) support units per housing unit. The slats could then be removed from the support posts and a platform could be constructed atop the posts, using local materials or in conjunction with the concrete slats. New homes would be better-ventilated with screen-like walls rather than the thick concrete ones of the relief homes.

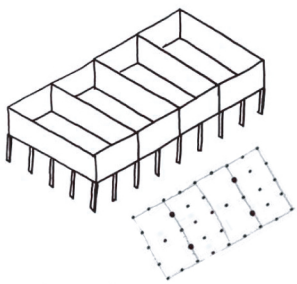


original plan

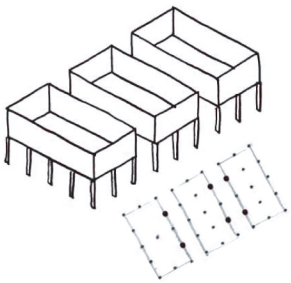
Here are four different ideas for adapting the temporary houses. Below the sketches for each idea are plan drawings showing the proposed layout in relation to original and proposed posts. Proposed ones are bolder.



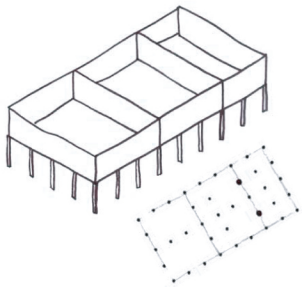
three larger rowhouses, adding one row of posts



four smaller rowhouses



three detached houses



two larger, one smaller rowhouse

financial
human
social
physical
natural

for more information please visit http://courses.washington.edu/larescue

Adaptive Rebuilding

A study for Sirombu on Nias as to how the community may reuse the material from housing relief efforts to rebuild their community for non-housing purposes in a more long-term and sustainable manner.

reusing temporary housing material +
private and public spaces+
community, family, individual efforts +

financial

human

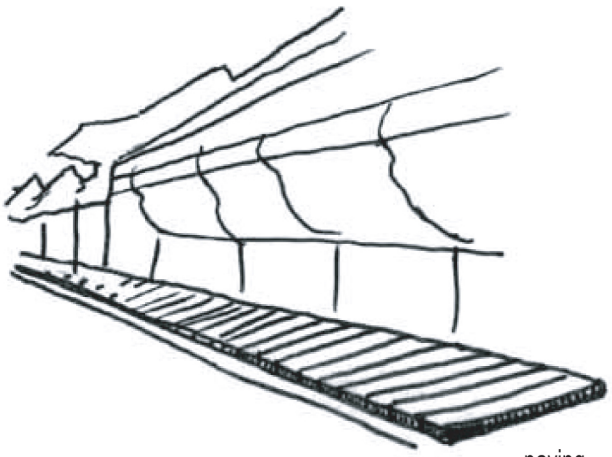
social

physical

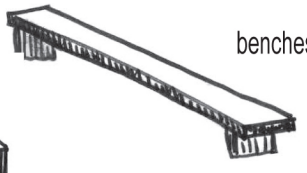
natural

Public Space

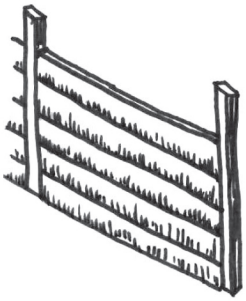
The concrete slats, 2.05 meters long, 40 millimeters high, and 5 millimeters wide, which form the walls of the Zero-to-one relief houses, could be reconfigured to serve many purposes within the town.



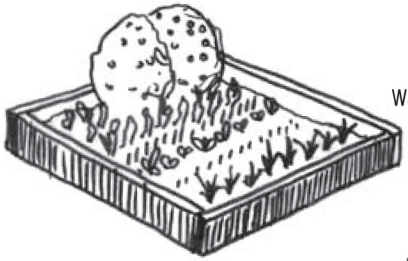
paving



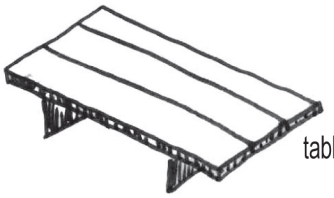
benches



fencing/walls



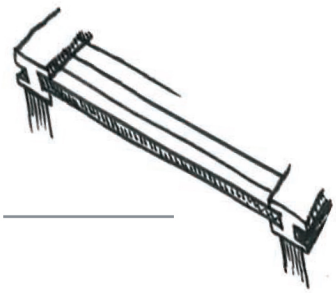
walls for raised planting beds and gardens



tables

Shoreline Structures

The impact of the tsunami not only destroyed the town's buildings but also the infrastructure for Sirombu's shoreline. In a community that makes most (80%) of its living off of fishing, the use and access of the waterfront is crucial. The modular fencing slats (used as walls for the housing) could be used to begin to reconstruct shoreline structures to help the community rebuild their economic livelihood.



fencing panels laid top to bottom, laid on pilings form the walkway for a dock

fencing panels laid top to bottom can be set into the ground along the shoreline as paving for a boardwalk

fencing set vertically and anchored to pilings can serve as a bulkhead