

Agency of Materials

DANIEL M. BAERLECKEN

Georgia Institute of Technology

KATHERINE WRIGHT

Georgia Institute of Technology

NORA MUELLER

RWTH Aachen University

JUDITH REITZ

DESIGNDEVELOPBUILD

BERNADETTE HEIERMANN

RWTH Aachen University

Following the idea to integrate real-world design and construction experience with service learning in a collaborative environment three international universities have joined collaboration to self-build a multifunctional theatre in a township in Cape Town in South Africa.

Starting from the first design the students of the Peter Behrens School of Arts (Düsseldorf), the Georgia Institute of Technology (Atlanta) and the RWTH Aachen University (Aachen) have developed within three years sketches and concept models to detailed design plans and the realized project.

The students experienced in the process all phases of a building project. Apart from detail design and calculating quantities, scheduling, financing and cost control were also part of the task. Next to the unique building process and cultural impact on the township the project aimed to rethink South African vernacular materials and the reuse of existing materials for building.

While building the local community was encouraged to join workshops on clay and earthwork. The participative workshops were

a catalyst to open the local community to re-learn the old African vernacular techniques and to open a discussion to integrate new technologies.

90 % of the theatre is recycled or donated material found in the area around the township, just the structural system as well as the roof are contemporary new materials, was acquired in the local industry.

The project focuses on combining research about re-used or recycled waste materials with traditional earth construction methods as a neo-vernacular low cost construction method in developing countries. The Guga S' Thebe theater serves as pilot project for the research strategy.

The multi-functional theater is constructed from a system of loosely stacked sea freight containers surrounding a central theater space. The container's structural performance is maximized by minimal modifications, advocating an honest use versus a highly engineered condition, which tends to introduce a high amount of additional, hidden structure in support of a purely aesthetic vision. The containers incorporate spaces such as backstage

areas, a soup kitchen, a recording studio, an exterior stage and other educational and music training facilities. In order to improve the interior climate, the paneling system uses a straw and clay construction as the thermal skin of the theater. The straw-clay panels are covered with recycled local wood from fruit crates. The facade adapts a vernacular South African textile.

The re-use of materials in Africa often holds connotations of poverty. Especially building with earth and clay is the typical rural building strategy. Combining the recycled/re-used materials with smart energy concepts, as well as the sustainable earth constructions is a solution to create an affordable, highly ornamented building.

Within the township the combination of ornament - using recycled or re-used waste materials - with a new typology of shipping containers as poche, has changed the societal acceptance of 'dirty', poor materials as earth and straw.



1.

AGENCY OF MATERIALS

Following the idea to integrate real-world design and construction experiences with service learning in a collaborative environment three international universities have joined collaboration to build a multi-functional structure in a township in Cape Town in South Africa. Starting from the first design for students of the Penn State School of Arts (Harrisburg), the Georgia Institute of Technology (Atlanta) and the RWTH Aachen University (Aachen), have developed within three years sketches and concept models to detailed design plans and the realized project.

The students experimented in the process all phases of a building project. Apart from detail design and calculating quantities, scheduling, financing and cost control with also part of the task. Next to the unique building process and cultural impact on the township the project aimed to rethink South African vernacular materials and the reuse of existing materials for building.

While building the local community was encouraged to join workshops on site and outdoors. The participants workshops were a catalyst to open the local community to re-use the old African vernacular techniques and to open a discussion to integrate new technologies.

90% of the structure is recycled or donated material found in the area around the township, just the structural system as well as the roof are contemporary new materials, was acquired in the local industry.

The project focuses on combining research about re-use or recycled waste materials with traditional earth construction methods as a non-vernacular low cost construction method in developing countries. The Cape 9' Theatre theater serves as pilot project for the research strategy.

The multi-functional theater is constructed from a system of loosely stacked sea freight containers surrounding a central theater space. The container's structural performance is maximized by structural roof trusses, advocating an honest and serious a light engineering condition, which needs to overcome a high amount of additional, hidden structure to support of a purely aesthetic vision. The containers incorporate spaces such as backstage areas, a stage kitchen, a recording studio, an entrance stage and other educational and music making facilities. In order to improve the interior climate, the painting system uses a stone and the construction as the thermal skin of the theater. The street-level porch are covered with recycled local wood from fruit trees. The facade adapts a vernacular South African textile.

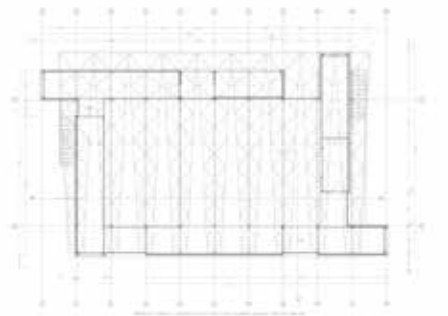
The re-use of materials in Africa often lacks consciousness of poverty. Especially building with earth and clay is the typical rural building strategy. Combining the recycled / re-used materials with smart design concepts, as well as the sustainable earth construction is a solution to create an affordable, highly vernacular building.

Within the township the combination of container - using recycled or re-used waste materials - with a new typology of shipping containers as porches, has changed the social acceptance of 'shanty' poor materials as earth and stone.

1. Sea crates as cladding material
2. steel and street porches as trusslines
3. shipping containers as porches



2.



3.

