Location: Rudrapur, Dinajpur, Bangladesh
Bauherr: Shanti Bangladesh e.V.
Architects: Anna Heringer, Eike Roswag
Engineers: Ziegert Roswag Seiler, Berlin
Construction: Dec 2005 -Feb/March 2006

school*handmade*, the METI School in Bangladesh

Corner detail showing earthen and bamboo construction

The construction of the school**handmade** building in Bangladesh employs the locally available materials earth and bamboo. Adapting and improving upon traditional construction techniques, the building provides an example of how local skills can be used to secure a future for the rural region. The building was built by hand by local labourers and trainees from the organisation under the leadership of the German-Austrian architect team and were trained on-site during the building process.

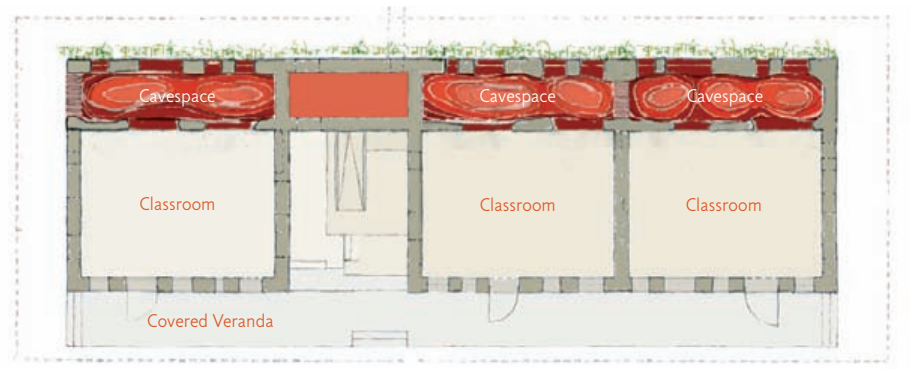
The ground floor is made of earth using a technique similar to cob-walling. Each of the three ground floor classrooms have their own opening to a series of organically formed "cavespaces" to the rear, also formed out of earth. The light upper storey, made of a bamboo framework, provides two large rooms with expansive views and generous room for movement. The boundaries between indoors and outdoors are fluid.

The different kinds of spaces and uses provided reflect the approach to teaching and learning at the "Modern Education and Training Institute" (METI), which aims to promote individual abilities and interests taking into account the different learning speeds of the schoolchildren and trainees.

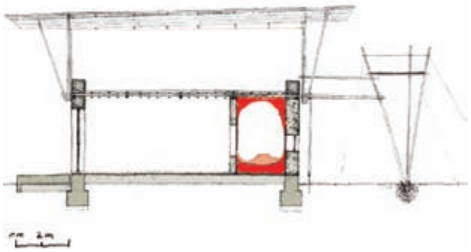
The design, its construction and the involvement of the building's users in all aspects of the building process are an example of how architecture can provide a lasting contribution to local communities in developing areas.

Classroom with internal clay plaster

Organically formed "cavespace"



Floor area: 325 m²
Building costs: 30,000 €
Building costs/m²: 92 €/m²
Thermal performance: no heating



Elevation, section and plan

The use of locally available building materials and techniques contrasts strongly with the prevailing trend to more expensive and energy-intensive construction methods using concrete and masonry that is evident in the region as it is in many other parts of the world.

The local earthen construction techniques were improved in terms of structural stability and protection against rain and rising damp. Cows were used to mix the earth, water and rice-straw mixture. All other work was undertaken by hand without the need for technical machinery.

Local building constructions do not usually have a foundation or damp-proof course, and this is the reason for their short 8 - 10 year lifespan. The brickwork masonry foundation, the PE damp-proof course and compacting methods used in the school also help prevent rats and other vermin from nesting in the walls.

The earth is heaped in layers onto the wall. After each layer has dried, the surfaces of the earth walls are cut flat with a sharp spade. On the outside they have been left bare, on the inside they have been plastered with a clay plaster and light-coloured limewash. The "cavespaces" are formed out of sand and brickwork below and a bamboo mesh above and then coated with a cob daub and plastered.

The ceiling consists of a triple layer of thick bamboo beams arranged perpendicularly to one another. Bamboo boards are laid on the central layer and the floor is filled with a two-layer straw-earth mixture and earth floor.

The bamboo framework construction of the upper floor and roof is firmly anchored with the wall beneath. The eaves project outwards beyond the building's perimeter providing a wide covered veranda and protection against strong rainfall. The corrugated flat roof rests on top of the construction. The façade is clad with bamboo strips on wooden frames.

Both the construction and the purpose of the building intend to strengthen the infrastructure of this rural region in the most densely populated country of the world.

Cows help mix the earth, water and rice-straw mixture

Cob walling built on top of a brick foundation and damp proof course. The wall surfaces are later trimmed flat using sharp flat spades.

All photos: www.hoerbst.com