MAKING
ARCHITECTURE...

Namibia University of Science and Technology
2016 first year architecture student projects for
a place of learning in Ombaka, Kaoko Region, Namibia

Phillip Lühl

To the inhabitants of Ombaka
With special thanks to Elia and Hendrik

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NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Faculty of Natural Resources and Spatial Sciences
Department of Architecture and Spatial Planning

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Text, editing, cover photographs, layout and design: Phillip Lühl
Photographs: Phillip Lühl, Harmony Ahalwa, Nauton Louw, Corné Bailey

Architectural Design Studio 1 - 2016
Studio team: Phillip Lühl, Waseela Parbhoo, Conrad Stoffberg
Presentation Techniques lecturer: Oliver Quarmby
Technical Drawing lecturer: Sophia van Greunen

Students:
Harmony Ahalwa
Iyaloo Angula
Tiina Angula
Jana Annandale
Denzel Awaseb
Corné Bailey
Nagene Barnes
Francis Brand
Tsungirirai Chigonga
Varuzjka Coetzee
Magdaleena Hango
Ileni Hitula
Maila Ipinge
Andre Koepp
Wayne Kruger
Chaned Lombard
Nauton Louw
Jonathan Müller
Ethan Musiyalike
Mutago Nanus
Gustav Nekwiita
Gerard Nhinda
Shanik Saban
Mpho Slinger
McDonald Tjaritje
Mbatata Uremena
Leigh Williams

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The NUST undergraduate architecture program

How do we educate young architects to be not only technically literate professionals but also critical citizens able to question their role as professionals in the post-colonial context of Namibia? This is a major challenge for the relatively young Department of Architecture and Spatial Planning, established only in 2010 at the then Polytechnic of Namibia and currently Namibia University of Science and Technology. The validation of the undergraduate programs by the Namibia Council of Architects and Quantity Surveyors in 2016 allowed for some introspection and guided the review of the curricula in the long term process of de-constructing dominant narratives of western architectural and urban theory and re-building them from a more situated perspective. More immediately and practically, the type of projects students are tasked with in design studios must reflect contemporary, socially relevant challenges. Instead of considering projects for informal economies, or housing upgrading and neighbourhood re-blocking as incidental interventions, we realize that such projects will provide major challenges for future architects and other spatial practitioners. Such projects require serious engagement with user communities and the development of methods and tools that transcend the classical representational techniques of architects, in order to co-produce spatial interventions with non-expert stakeholders within a complex field of social, cultural, economic and political dynamics.

The sequence of architectural design studios within the undergraduate architecture programs has been developed over the past few years and was consolidated in the current curriculum review. Beginning with exercises on abstract space and structural understanding in semester 1, students explore the interrelationship between form, volume, structure, materials and basic human spatial and functional requirements without the constraints of context.

Semester 2 investigates the geographical, climatic and cultural context of rural Namibia, and challenges students to formulate locally informed design responses. Students investigate the issue of

> 2016 first year students during a final studio presentation

elemental shelter informed by thorough exposure to a specific rural area of the country. This exposes students not only to the underdevelopment of most rural places but also to indigenous architecture that has evolved in response to conditions of scarcity prevalent in Namibia. Understanding traditional *spatial practices*, rather than elaborating on reductionist *formal interpretations*, is expected to differentiate students' understanding of space in different ways from that articulated in mainstream, western architectural theory.

In semester 3 students engage deeply with construction materials and their architectural expression from structural form down to the scale of the construction detail, as well as the resulting spatial experience. The social aspects of housing and the relationship between the privacy of dwelling and the public urban realm of the neighbourhood provide the focus for semester 4. Given Namibia's acute medium to long term housing crisis, students are introduced to the aspect of adequate and collective housing, challenging conventional models of detached suburban housing that are the norm. After spending semester 5 in architectural offices for their work integrated learning, students conclude their bachelor degree with a studio focusing on public buildings in an urban context developed to a technical documentation level. Seemingly counter to the usual low-density development along sub-urban design principles common to Namibian towns, here the imagination of more dense and socially diverse urban environments is explored.

The Bachelor Honours commences with design programs focusing on urban and landscape design, following on the exploration of the urban realm in the preceding semester. Expanding beyond spatial urban design, students are encouraged to think strategically about how design can make a contribution towards overcoming contemporary urban challenges, within a larger field of urban practices. The final semester critically engages with the notion of heritage in the widest sense. Students are especially encouraged to investigate heritage in a post-colonial context and its relation to the built environment. This aims to counter the firmly entrenched perception that deems colonial buildings, and only those of German origin, as historically relevant. By prioritizing one historical period over others, this view disregards pre-colonial and traditional architecture, more recent modernist heritage, developed mainly during Apartheid times, as well as post-independence architecture, representing Namibia's new-found cultural freedom. The prevalent focus on built heritage furthermore eclipses many forms of immaterial heritage as well as traditional spatial practices that continue to exist today alongside more globalized ways of life.

This publication focuses on the first and second semesters of the undergraduate program and provides an overview of the range of studio projects conducted in 2016. The main focus lies on the semester 2 project for a space of learning in Ombaka, an Ovahimba village in the north-western Kunene Region. As the first project that exposed students to a real cultural and environmental setting, the publication traces the process from the analysis of the context to the development of design concepts. In between the lines of the following pages we aim to present the possibility of a situated architecture in the making...

Phillip Lühl, July 2017

Project #1 - Space / structure

In the first architectural design studio project in the long series of projects that will come to define the architecture students' journey, students are prompted to intuitively explore the interrelation of structure, its materialization and the space it circumscribes. These fundamental principles of the act of *building*, are *practiced* in the literal sense of the word, over the duration of 3 weeks.

The envisioned space needs to accommodate one person, providing some orientation for its scale, but without any functional requirements beyond an abstract notion of shelter. Yet, even such an abstract notion leads to a consequential discovery of the demands of functional design: an entrance is needed; perhaps an opening to the outside world, some air and light…

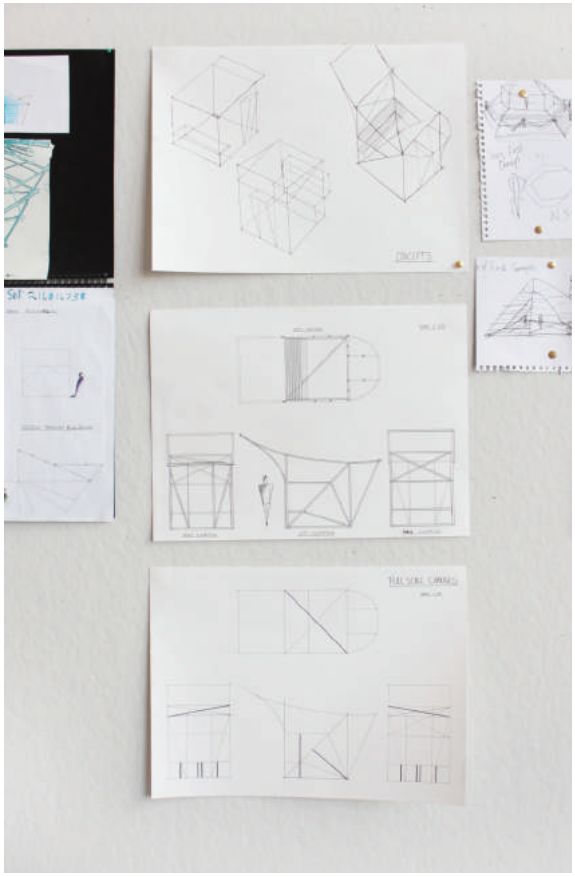
By building 1:20 scale models with flexible twigs, students investigate how principles of materials, stability, triangulation, compression, tension, and cross-bracing allow for the development of a structural aesthetic. Further iterations of the scale model allow students to elaborate how its inherent structural logic can be synthesized with the functional needs outlined above.

Students then convert their designs into single-line projection drawings: plans, top views, side views, sections, and axonometric views, exposing the correlation between these sets of two-dimensional drawings and the actual 3-dimensional space created.

During a collective studio session tutors and students select a number of alternative prototypes to be built on scale 1:1 in groups of three students. These life-size constructions are built with reeds, which due to their diverging material properties and increased scale require some adaptation of the original designs. At this stage *designing* and *making* merge.

Special attention is given to the detail of the joints, which are critical to the overall structural quality and durability of the structure. The final structures, life-size spaces for one person, are then tested for their strength, stability and functionality, building a collective understanding of how spatial and structural requirements influence design outcomes.

> Top left: work-in-progress, design by Magdaleena Hango
> Top right: 1:20 model by Corné Bailey
> Bottom left: projections by Corné Bailey
> Bottom right: 1:1 model by Mutago Nanus, Corné Bailey and Nauton Louw



Project #2 - Ashlar metamorphosis

The second design project is a model-building exercise that compels students to grapple with the interrelationship of mass, edge, surface and volume. A 10 x 10cm clay ashlar forms the departure point of the exercise requiring students to shape its *mass* through subtraction and addition of volume, while maintaining the formal characteristics and proportions of a cube.

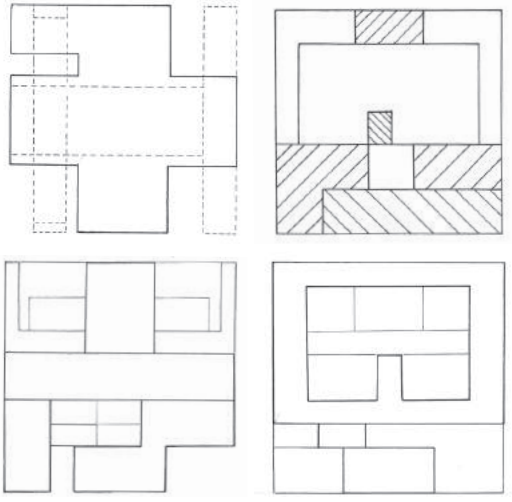
Students are encouraged to initially develop three alternative concepts that are analysed for their conceptual clarity and potential for further development. The selected concept is further refined to increase the level of sculptural coherence, balance, and proportions. At this stage it is imperative that mass and volume are considered from all angles, challenging common conceptions of front or back, top or bottom.

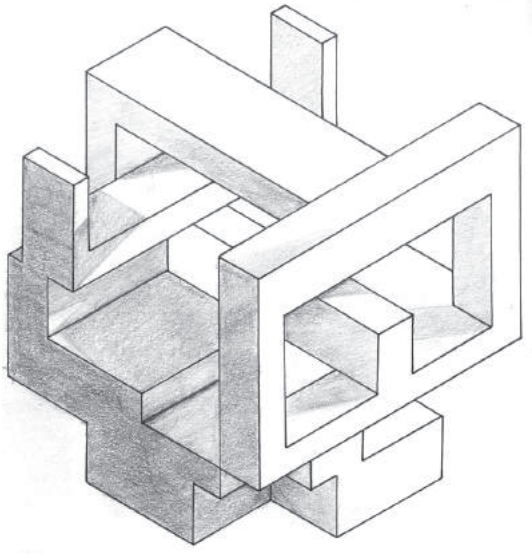
In the third step, students scale up their solid mass model into scale 3:1 of the original, using 4 x 4mm smooth timber sticks to define the *edges* of the volume. Geometric shapes present in the mass model are ordered, re-aligned, and generally elaborated to crystallize more coherent *ordering principles*. Additional structural elements are added where necessary to improve the structural integrity and compositional balance of the edge model.

In the fourth and final step, students partly clad the edge model with grey cardboard to define surface, emphasizing opening and enclosure, and thus re-establishing some of the *volumetric qualities* of the original ashlar. This step in the process challenges students to take basic design decisions, of cladding *over* or *between* structure, and their aesthetic consequences on the overall appearance and resolution of details.

Students document the process in photographs and draw sections, elevations and plans, as well as isometric projections of the solid ashlar, expanding their repertoire of representational techniques. This highly structured, iterative design process requires students to progress from mass to edge to surface and volume and back, and to reflect on an emerging design rationale developed along the way.

> Top left: plan, section, elevations, project by Ileni Hitula, n.t.s.
> Bottom left: isometric projection
> Top right: mass model
> Middle right: edge model
> Bottom right: surface model





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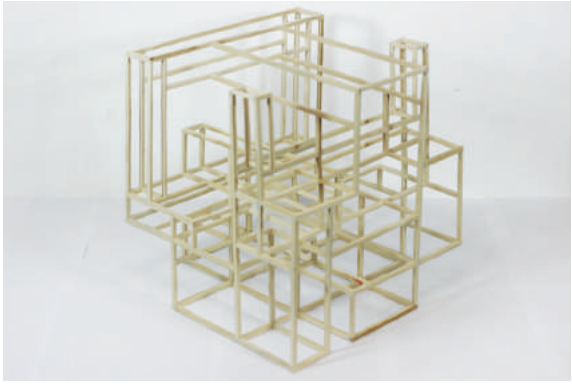

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Project #3 - From abstract to construct

Following the quite purposefully constrained exercise of the ashlar metamorphosis, project #3 challenges students on the level of *conceptual imagination*. Students are confronted with selected early 20th century Soviet constructivist paintings, which form the basis of the exploration.
Constructivism emerged out of an urge to transcend classical art and architecture with its connotations of empire, in favour of representations of the emerging soviet ideology. It attempted to create an architecture that does not develop from the outside "inward through its volume", but "from within outward in its depth". This architecture would be "constructed stereometrically", expressing the "inner dimensions of force" through choice of materials, colours and kinetic elements (Gabo & Pevsner, 1920).
As such the selected paintings are abstract representations of such constructivist imaginations, and without going into much detail of the actual artworks, students are required to develop conceptual spatial interpretations of their assigned painting. While original conceptions are asked for, a strong relationship between the painting and the 3-dimensional object is sought.
Proportion and *scale* of the object, as well as the use of *materials* and *colour* play a significant part in its physical presence. This project is explored solely through iterative model building, in various materials ranging from solid and heavy to light and transparent. Much attention is given to the detail of connections between the separate parts of the whole.
This more open-ended design process allows students – irrespective of them having had prior art education – to cultivate a subjective conceptual imagination that is rooted in an engaged exploration of materiality, construction, proportion, balance, colour and scale. Studio discussions involving artists instead of architects as external critics allowed for a broad collective reflection on the process and its outcomes.

Gabo, N. & Pevsner, A. (1920). Basic Principles of Constructivism. In Conrads, U. (1971). Programs and manifestoes on 20th-century architecture. Cambridge, Mass: MIT Press.

> Top left: Suprematism, 1915, Kazimir Malevich
> Top right: object by Nauton Louw
> Middle left Gravediggers, 1923, El Lissitzky
> Middle right: object by Nagene Barnes
> Bottom left: Suprematism, 1916, Kazimir Malevich
> Bottom right: object by Yaloo Angula

Project #4 - A room for myself

The first semester concludes with a design project that directs the cumulative learning of the foregoing exercises into a more comprehensive exploration of space. This exploration is guided by an investigation of the *human scale* and *elemental functional and spatial requirements* of dwelling, with a focus on circulation and spatial hierarchy.

A predefined interior space of 5 x 5 x 5m literally 'frames' this exercise. Two opposite sides of the space are open while the other two walls, the floor and the ceiling are solid. Students have to realize an ideal room for themselves, accomodating the functions of living, sleeping, cooking, eating, washing and playing.

The challenge laid out before students is to design a room that expands vertically and horizontally to retain the characteristics of a *continuous space*, while creating spatial relationships, thresholds or visual and other barriers between specific functional spaces.

Successfully accommodating all necessary functions in this limited space usually requires inserting multiple levels and consequently the need for vertical circulation. Efficiency of circulation space and dimensioning of furniture - which is to be largely in-built rather than off the shelf - compels students to engage critically with basic human spatial requirements.

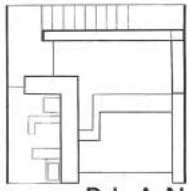
The project is initially explored through model building at scales 1:50 and 1:20 and later introduces students to basic conventions of design drawings of plans, sections and elevations, as well as one- and two-point perspectives. Here, drawing serves to consciously refine space, measurements and proportions.

The room for myself closes a cycle of learning about space, structure, volume, enclosure, materials, function and their relationship to the human need for shelter. This most fundamental need and the infinite possibilities for its fulfillment continues to propel architecture forward. However, this is not to suggest that 'infinite possibilities' equals 'everything goes'.

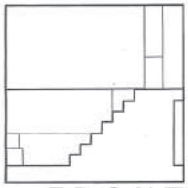
The demands of *context* - physical, social and economic - and its instructive role for design is introduced in the following semester.

> Left: plans, elevations, section, project by Francis Brandt, n.t.s.
> Middle right: 1:20 model, front elevation
> Bottom right: 1:20 model, back elevation

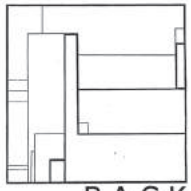
GROUND
FLOOR
PLAN



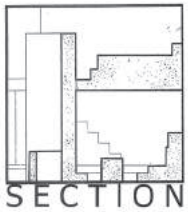
PLAN
FIRST
FLOOR



FRONT
ELEVATION



BACK
ELEVATION



SECTION

Project #5 - Elemental building - Ombaka

The major project of the first year introduces students to natural landscapes, climatic and cultural context. The project commences with a week-long site visit to a rural area for a detailed study of the landscape, climate, and local culture as design inspirations. The design of an elemental building in the open landscape aims at sensitizing students to human requirements for shelter from the natural elements. In addition to answering these basic needs, architects can enhance the living experience by means of designing structures to create comfort, stimulating spatial experiences and a sustainable and nurturing relation with the surrounding landscape. In order to be able to achieve this, the following design aspects were considered: the genius loci, human spatial requirements, the relation to the landscape and climate, the use of appropriate and sustainable materials and construction methods as well as local traditional practices of building and dwelling. The aim is to develop an appropriate architecture that is inspired by local cultural practices, yet innovative in synthesizing the lessons learnt in a contemporary manner.

In 2016 the project brief challenged students to design a contemporary basic educational facility at Ombaka, in the northwest Kunene Region. Hendrik Kraak, a Dutch clay construction expert who had established a relationship with the local population at Ombaka and had helped fund and build the first classroom for the school in 2015 together with the community, initiated the project as a collaboration between the Dutch Hanasaneye Foundation and the Department of Architecture and Spatial Planning. An opportunity to engage with this remote area and its people provided a rare experience for students and staff, most of whom had not visited this region before. The locals, equally grateful for the visit of a large delegation of students from the capital city, opened the doors to their homes, allowing students to survey structures and interview them regarding social and cultural practices. The communities' gratitude was conveyed by presenting the group with a goat towards the end of the stay: a gesture that was genuinely appreciated by students.

> Top: Ombaka school with temporary and permanent classrooms
> Middle: teacher with pre-primary children taught in the open
> Bottom: older children dancing during break time

Through their role as cattle herders, children play an important part in the reproduction of traditional life in Ombaka. Parents are thus often wary of sending their children to school, at the risk of 'loosing' them to a western form of socialization. Education thus has to provide a compromise, where children can 'try' school, and those that succeed can continue on the path towards a formal education, while others might choose to follow the paths of their forefathers as pastoralists.

The current Ombaka school is situated near a borehole that provides water for the surrounding homesteads and their cattle. The school comprises a classroom made of local rock, gathered by locals, and a number of tents and temporary corrugated iron sheds serving as additional classrooms.

Pre-primary school children are accommodated in the open landscape, in the shade of a tree. The school has structured its activities to allow children to mind cattle in the morning until classes start around 10:00, once most children have arrived from the surrounding homesteads. Classes end around 14:30 so that the children can attend to the chores that await them at home. This unique socio-spatial context of Ombaka, and a population on the verge of defining its own situated modernity, provided the backdrop for students to develop architectural responses.

As the proposed designs should emerge from the context, the students undertook a comprehensive analysis of the site and context in three groups, focusing on (A) climate, topography and landscape, (B) dwelling, settlement, and culture and (C) local construction materials and technology. The results of the study are presented in the following pages.

Back at the studio in Windhoek, students were required to undertake a precedent study of buildings that relate to any one or more specific aspects found on site. Based on the school's requirements the agreed accommodation schedule comprised three learning spaces for up to 30 children, a space for up to 15 pre-primary children, a space for cooking and eating as well as store rooms for both kitchen and school materials.

Climate, topography, and landscape
**Text by students*

The small Himba village, Ombaka, can be found in the vast rocky landscapes of Kaokoland. Upon visiting the village, we asked questions, walked around, and observed the way the people live, the way they structure their lives, and the way the landscape, vegetation and climate influences it all... When considering their homesteads, the Himba focus on what the land has to offer. Flat landscapes and good soil conditions (ideally hard soil) for building their houses, grazing land for their cattle and trees providing shade are important aspects to consider. The combination of a classic and cosmic landscape influences their way of building, as materials are relatively scarce, transport is tricky, and the harsh climatic conditions leave the people in a constant struggle against the elements. Despite these harsh conditions, the landscape is peaceful and calming. The school is built on flat land surrounded by trees, rocky hills, and a riverbed nearby. The entire site follows the rhythm of the surrounding nature, uneven, rough, and powerful, but beautifully ancient and masterful.

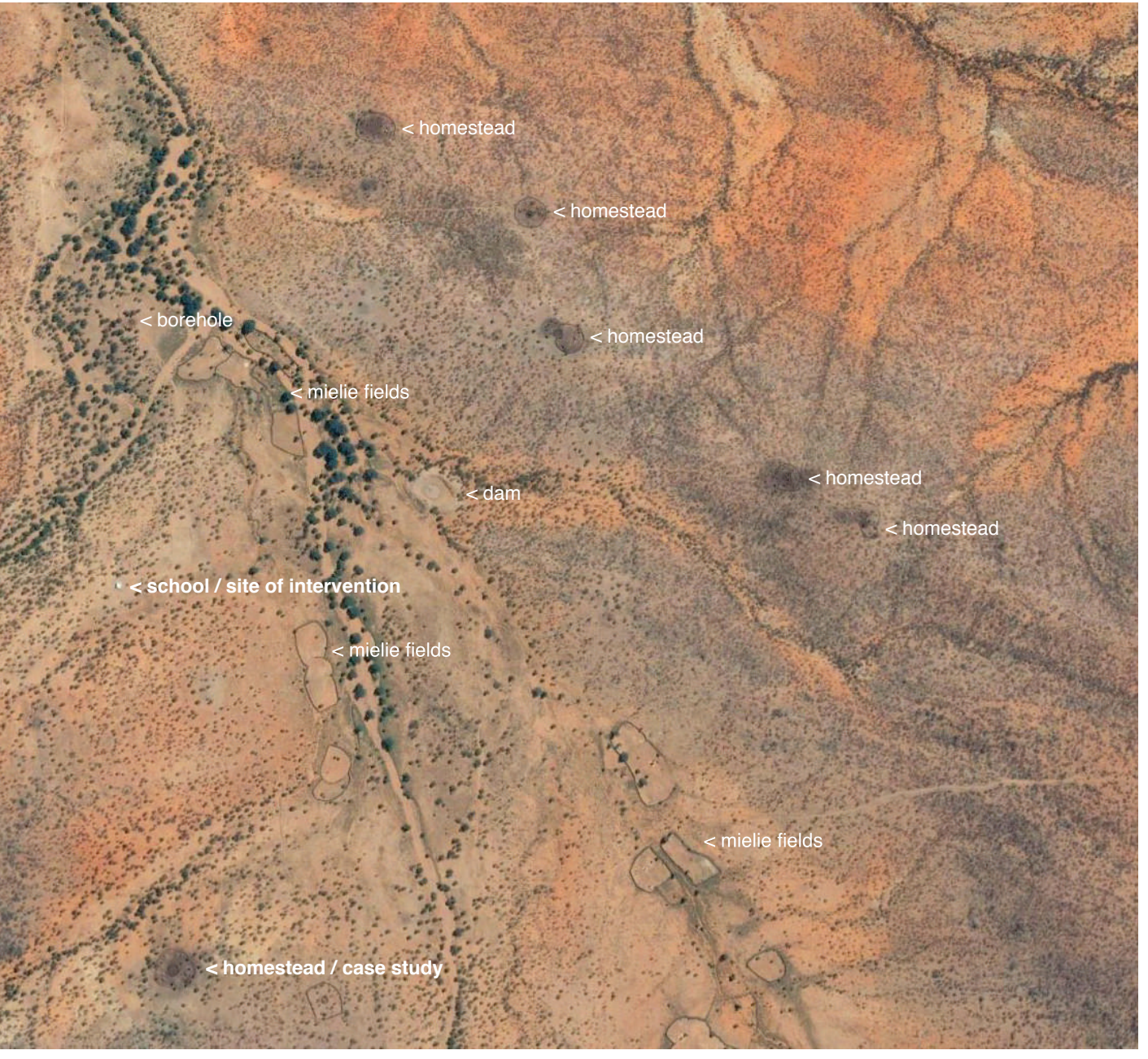
Climate
The region can be classified as arid to semi-arid and has a typical “desert” climate, with wide ranges in temperature (day and night as well as seasonal), with very low rainfall and very low humidity.The area falls within the summer rainfall region with characteristic thunderstorms with high precipitation within a very short period of time. This causes flash-flooding in dry riverbeds, which should be kept in mind while traveling and when considering building sites, design and construction.

Vegetation
What might seem to be barren land has a wide variety of plant life once closely observed. Several species of Acacia trees, a variety of succulent shrubs, and the popular Mopane trees are scattered in the landscape. The local inhabitants are well aware of the advantages the vegetation provides, and they have learnt to make use of the shade, fruits, medicinal qualities and building materials it has to offer.

Topography
The topography is relatively flat with an ancient floodplain along the river flanked by hills to the southwest and northeast. The area is rich in metamorphic rocks with slate used as a building material in the existing school. Possible building material in the form of mud has been discovered in a dry water hole. Whether it is suitable and viable for building is yet to be confirmed.

Conclusion
The Himba way of life is all about being one with the surroundings. Local inhabitants do not go against natural order; a fact that is made clear in their architecture, beliefs and culture. Their timeless way of living is what defines the Himba spirit.

Image source: Google Maps


< homestead
< homestead
< borehole
< homestead
< mielie fields
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< dam
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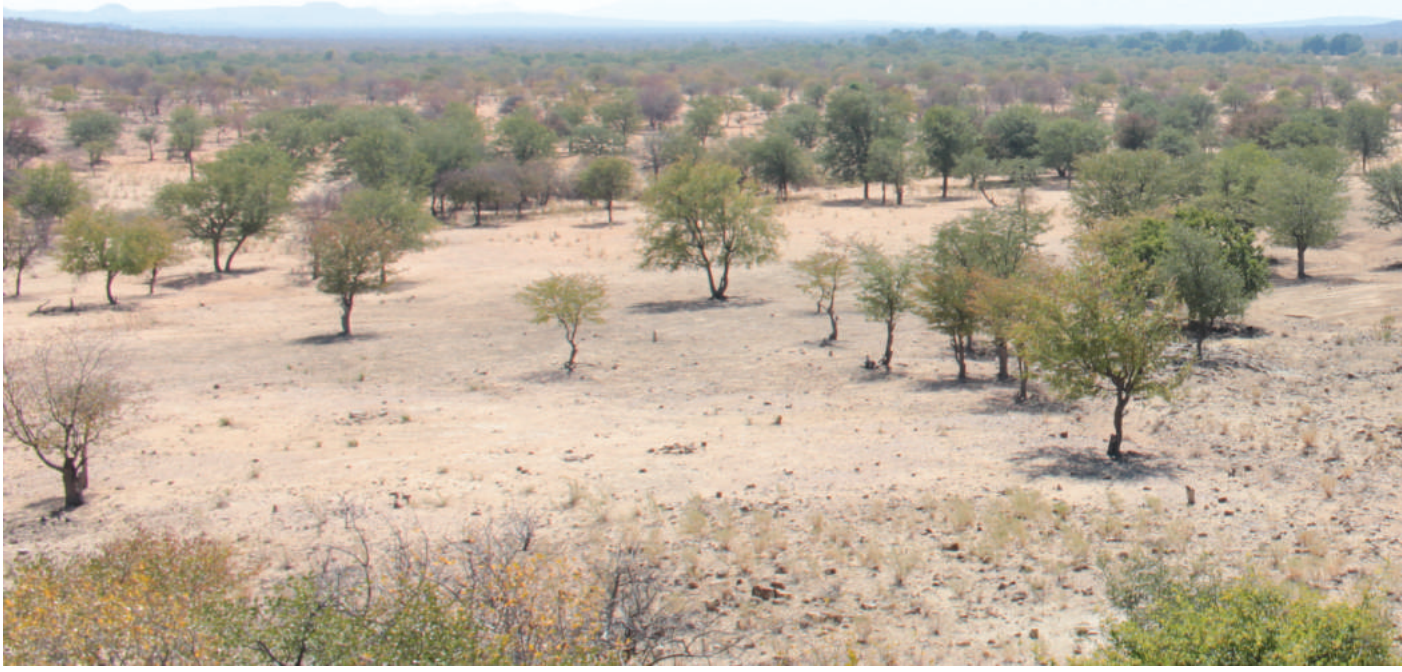
< school / site of intervention
< mielie fields
< mielie fields
< homestead / case study

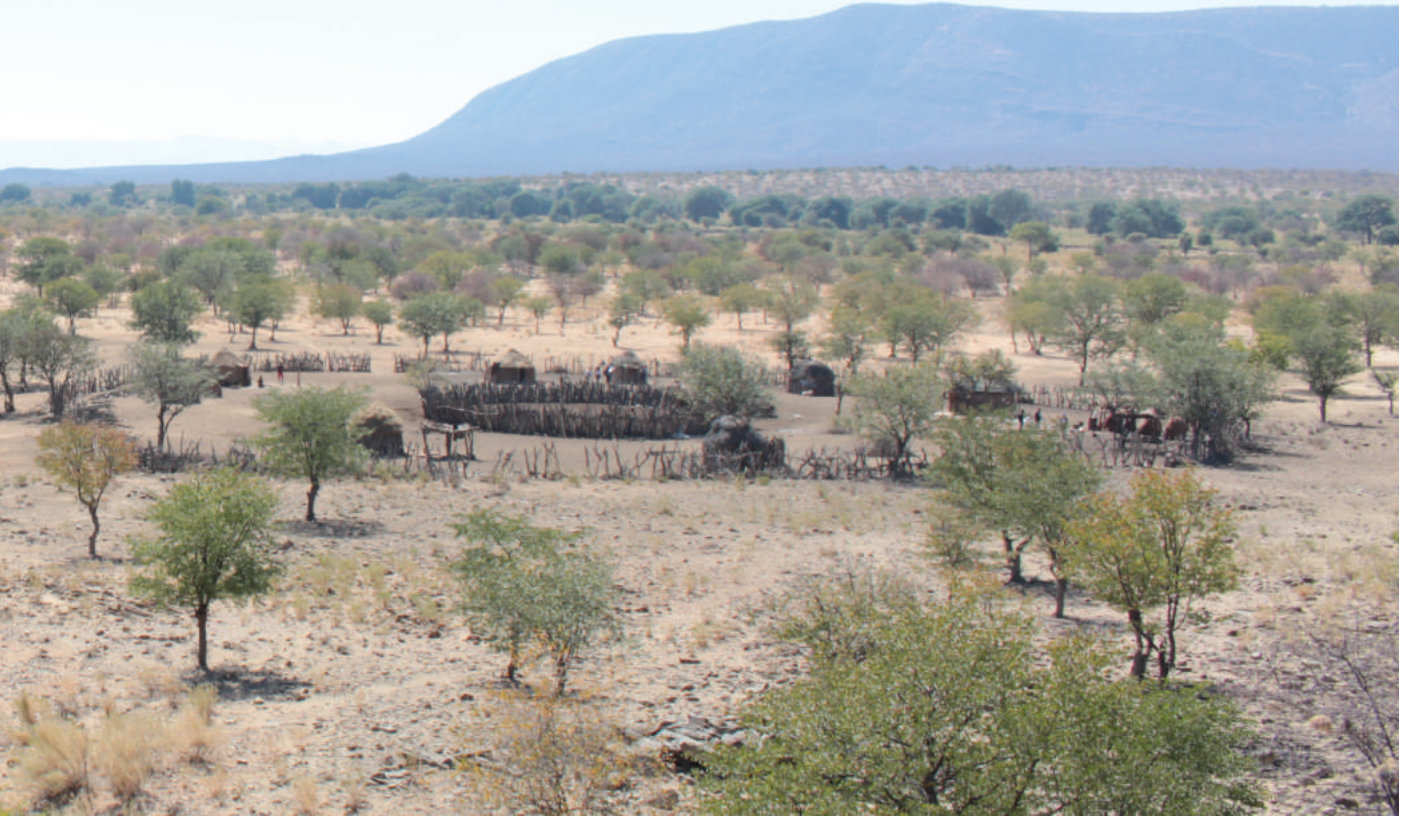
Culture, settlement, and dwelling

Ombaka is a place. It is not a settlement in the sense of a cluster of houses with independent households sharing common spaces amongst them.
Homesteads are at quite large distances from each other, necessitated by the need for lifestock rearing without too much competition. Cattle and their herders travel great distances for grazing and water. Herders sometimes construct temporary shelters when far from the homestead, and those are found all over the land. Mielies, first introduced in the 1800s by the Portuguese from Angola, are grown together with melons along the river edge. Goats are kept closer to the homestead and are reared by the children.
Wealth is measured in heads of cattle, not by other belongings. Cattle are at the centre of this culture:



the cattle kraal quite literally occupies the centre of each homestead and the surrounding houses face their entrance towards it. The headman's house, or the main house is situated east of the kraal where the main entrance is. Between it and the kraal is the holy fire, the most sacred place in the homestead. The households of his wives are gathered in clusters around the circumference of the kraal. They each have their own house, veranda and storage silos and huts. A palisade fence encloses the homestead in its entirety, with three entrances of which one is to the east. The boundaries between the house, the homestead, and the commons are well defined, even though they are not so clearly visible to the unfamiliar eye.

The recent borehole and the school have created some permanence at Ombaka. Before, people had to rely on the large hand-dug wells in the dry river beds, which were more unpredictable. Now, throughout the morning, herders come from all directions to the waterpoint and gather while their cattle take turns to drink. Similarly, the children converge on the school from up to 10 kilometres away, spend some hours together and then go back home to do the chores assigned to them. Ombaka and its inhabitants are bound by daily and seasonal rhythms that structure life in ways that are in tune with the land. Traces of these rhythms are found all over the land, and a place that at first looks uninhabited to the unfamiliar visitor begins to be understood as a living, inhabited landscape, where *dwelling* has a deeper meaning.



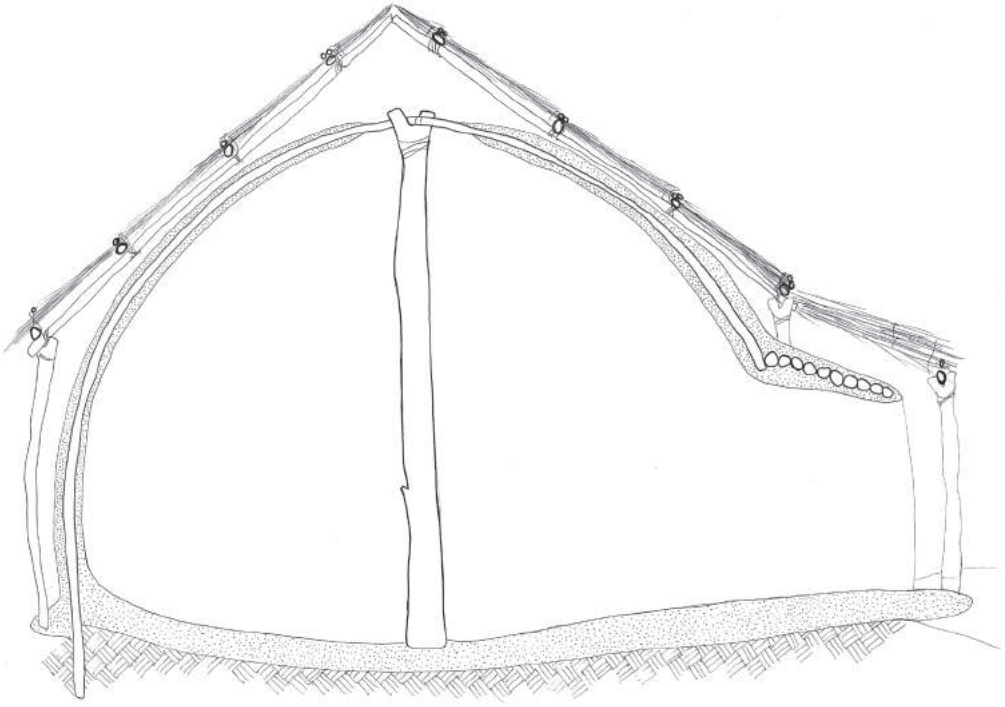
Construction materials and technology

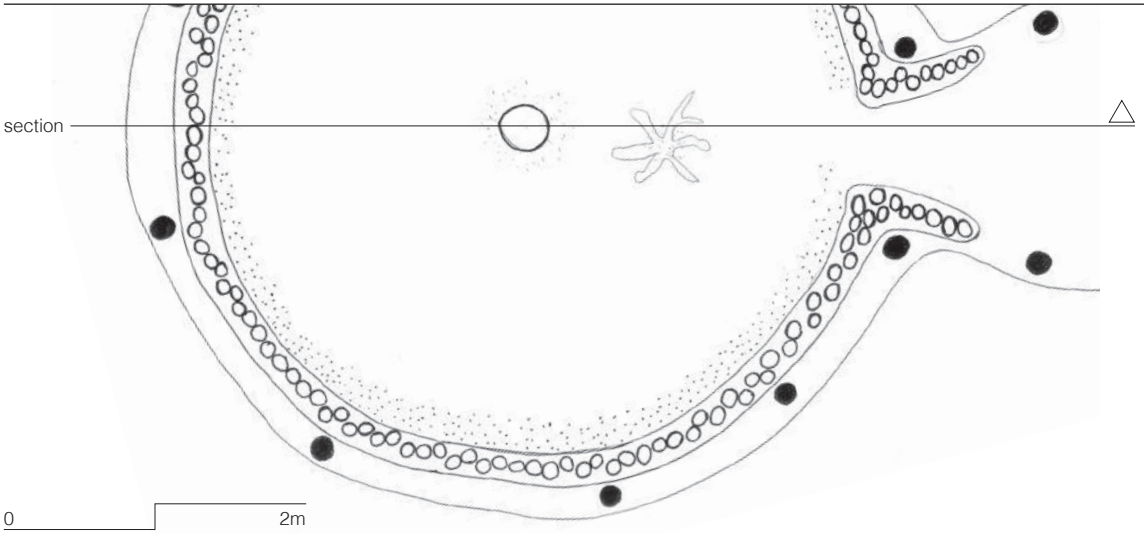
Inhabitants of Ombaka rely on the resources available in the vicinity for their construction materials. The major resource is the wood of the Mopane trees, which is resistant to termites, making it useful as structural timber. Its flexible, fresh bark is ripped into strips to tie together structural members. Timber is harvested, not felled. Mature trees are selected and their major branches cut, leaving the main stem intact so it can continue growing. Termite mound clay, cow dung and ash mixed with water make up the plaster that is applied to timber structures depending on the function and use of the building. The ash prevents insects from destroying the plaster. In the following pages a number of dwellings of the below homestead are presented in terms of typology and construction.


Main house

The main house, or house of the chief, is a round house shaded by a structurally separate thatch roof. Its walls and dome are one, made up of Mopane branches buried in the ground in a circular plan, and held up by a central timber post. The structure is plastered with a mixture of termite clay, cow dung, ash and water inside and out, and left unplastered at the top, to allow the smoke from the central fire to escape. The floor is made of compacted clay and gently merges with the base of the wall. The entrance is through a low threshold, widening to the outside and generally rounded off at the edges. The thatch roof rests on a number of timber columns that surround the house. Forked at the top, they carry the primary ring beam on which the roof beams rest, which in turn are tied together at the highest point. The thatch is tied with Mopane bark, which is used for all timber connections in the house. One tiny window, about 5cm in diameter, allows for air to circulate, while keeping snakes and other unwanted guests out.

< Left: the only window
< Bottom: structure of the double roof
> Top: 1:50 section
> Bottom: 1:50 plan




section
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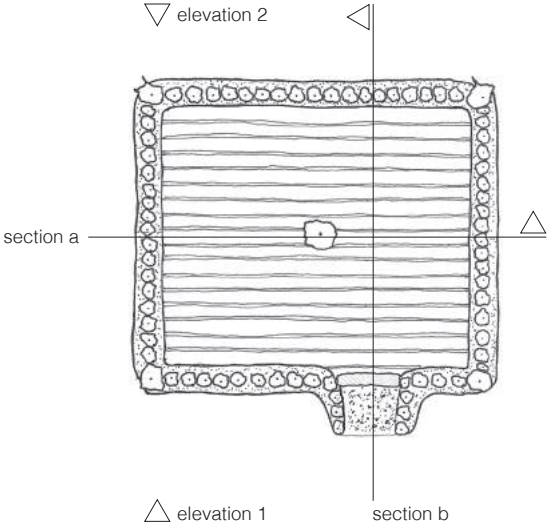
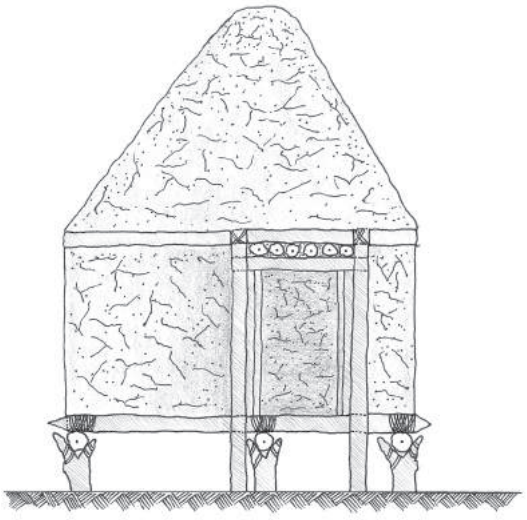
2m

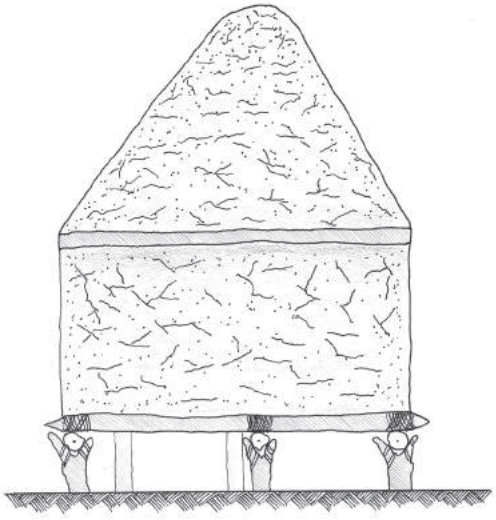
Elevated house #1



The elevated house is a square house. It is raised above the ground by about half a metre, to keep insects out and to ventilate the structure, allowing it to cool down easier. The primary structure is a post and beam structure, resulting in a rectangular design. Forked stud columns keep the building up; walls and roof are articulated structurally, leading to a clear distinction of the vertical walls and the pitched roof. The entrance is off-set through a small portico of which the pillars are buried directly in the ground. The termite clay, cow dung and ash plaster rounds off the edges and traces of the hands that applied the plaster lend the building its visible texture.

< Top: 1:50 plan
< Bottom left: 1:50 elevation 1
< Bottom right: 1:50 elevation 2
> Top left: 1:50 section a
> Top right: 1:50 section b
> Bottom: the house from the front





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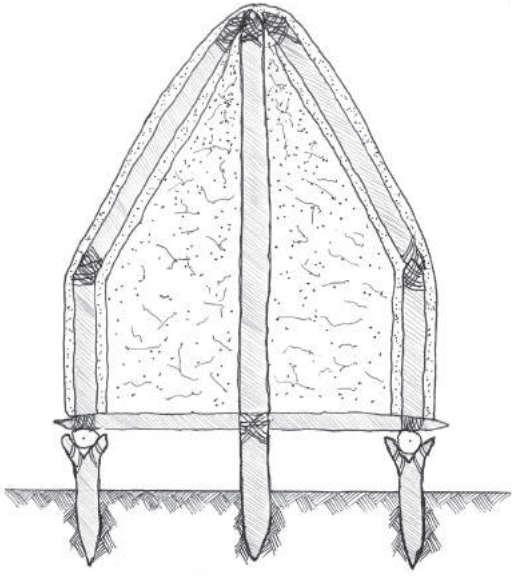
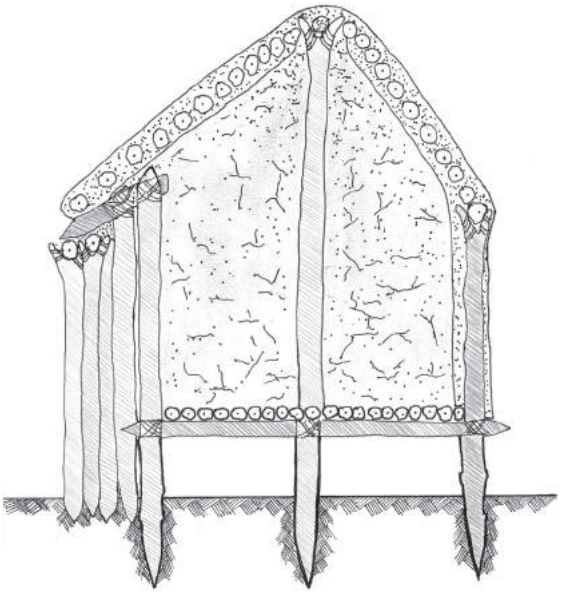
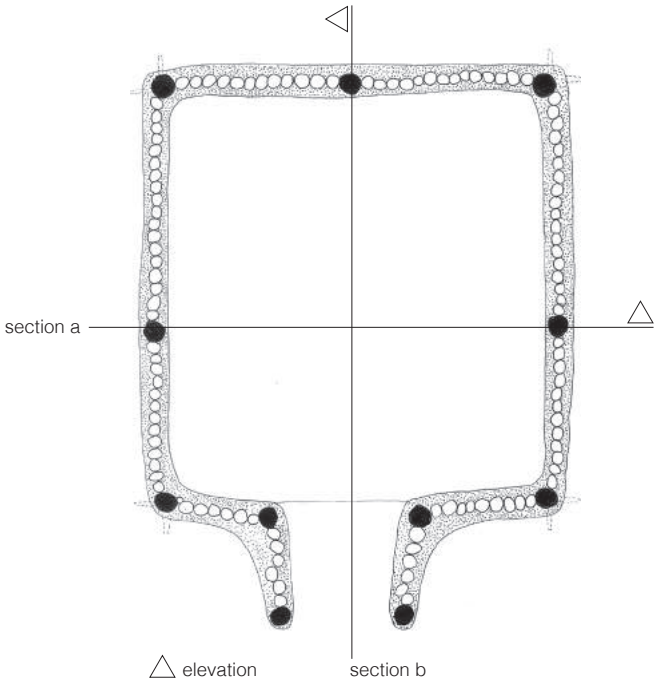


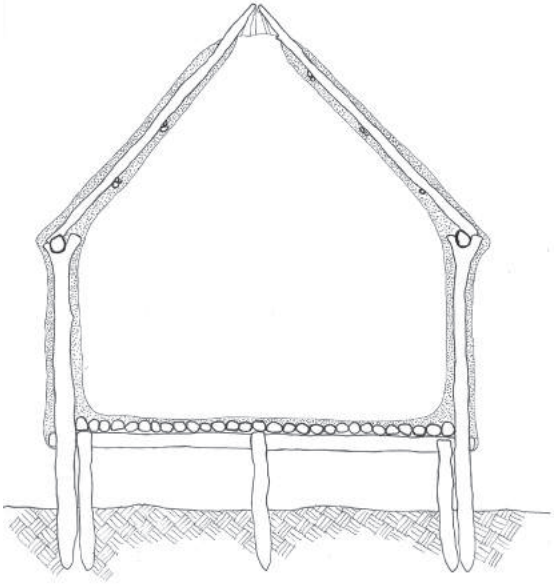


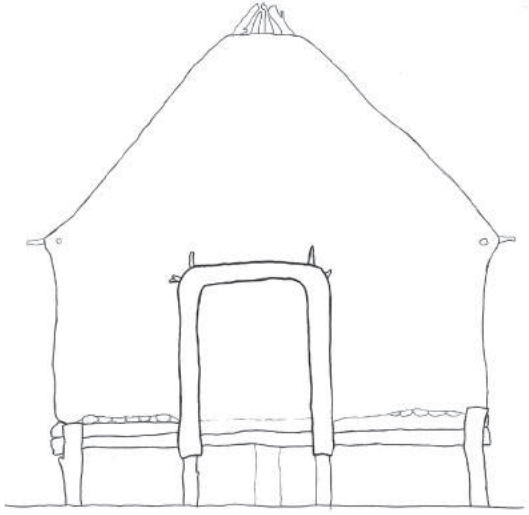
Elevated house #2

The other elevated house is also square. The structure is similar to the previous house, but more articulated. The entrance is symmetric and the house has been recently re-plastered. Raising the house allows the goats to have their own shaded area, and one can store items underneath. Also here the tip of the roof is open for smoke to exit. We understand that the cliché of African architecture - which is said to be always round - is just that: a cliché. All cultures have developed their architecture based on what materials are available to them, and based on various considerations to do with their location, their specific use and aesthetic sensitivities. A structure that relies on posts and beams will likely be rectangular, here and anywhere.

< Bottom: the house from the front
> Top left: 1:50 plan
> Top right: 1:50 section a
> Bottom left: 1:50 elevation
> Bottom right: 1:50 section b


section a
elevation
section b

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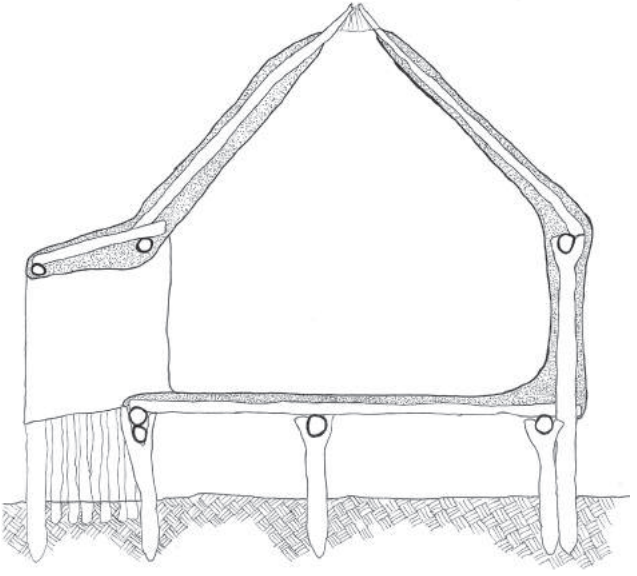
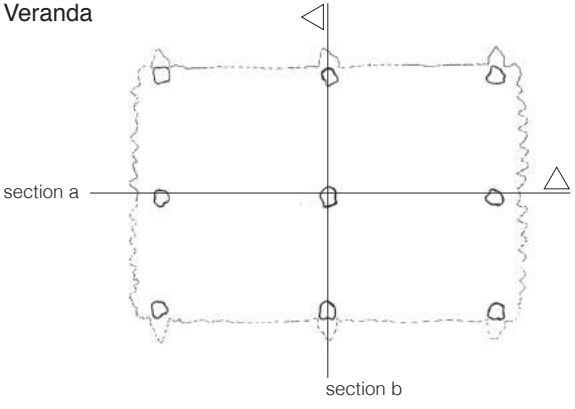
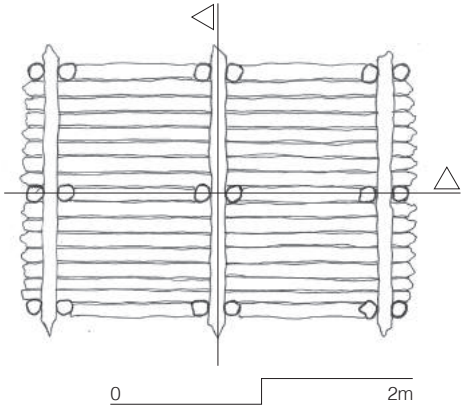
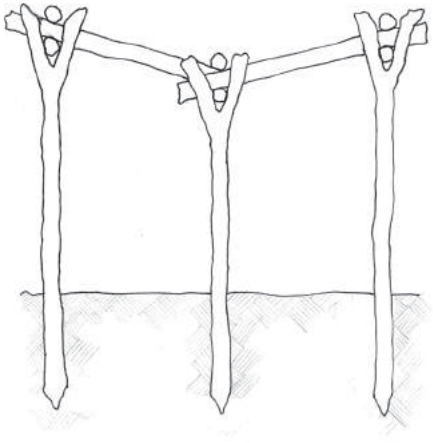
2m



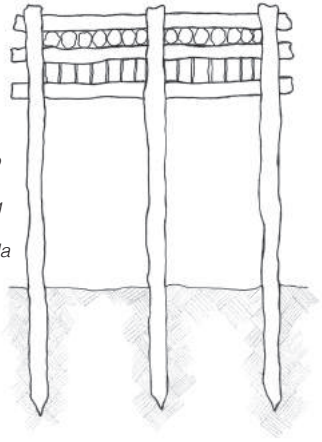
Veranda







< Top left: 1:50 plan
< Top right: 1:50 roof plan
< Middle left: 1:50 section a
< Middle right: 1:50 section b
< Bottom: a young woman making butter while feeding her child
> Centre: detail of the veranda

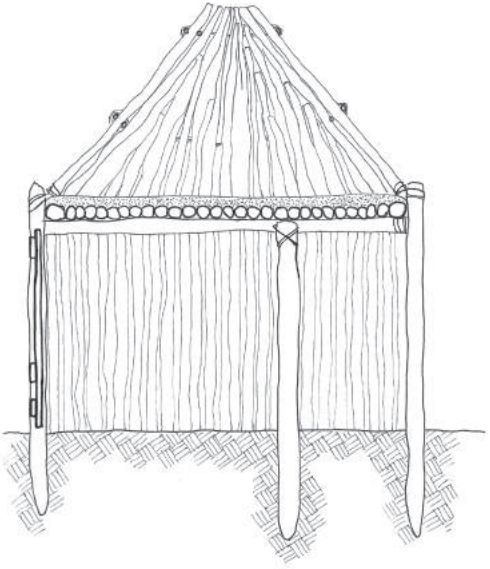


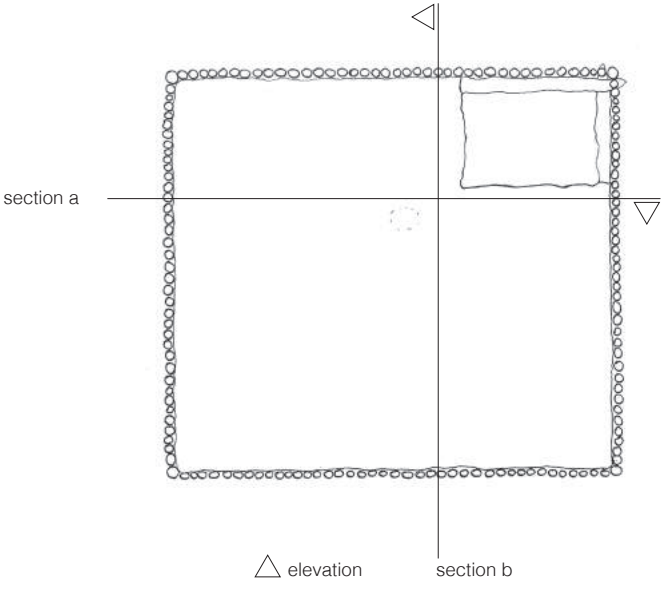
The veranda is a place where mainly the women spend the day, to make butter fat by continuously shaking a calabash filled with milk. Butter fat is mixed with ochre for skin products. The veranda is open to the surroundings and allows to observe the entire homestead. The veranda is not attached to a house. It is a building in its own right, and is found interspersed between other buildings in the homestead. The structure consists entirely of primary structural elements: the roof is v-shaped, and rests on nine forked columns that carry longitudinal beams, and a cover of closely placed rafters. Sometimes the top of the roof is plastered, and used to dry mielies.

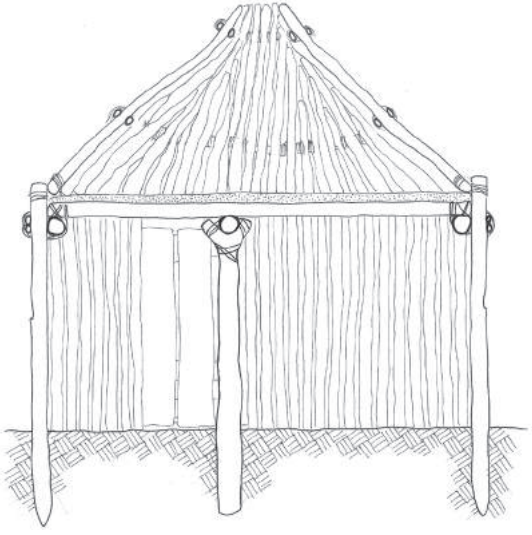
Storage hut with attic

The storage hut is a ventilated hut, its structure made of tightly arranged Mopane columns, carrying an attic floor at the point where the walls meet the roof. It is also rectangular, the logic of post and beam prevails. Yet the roof structure departs from this rectangular base to form a near-circle at the top. The storage hut does not have a floor and can be used as a kraal for small goats. Melons are kept well away and dry on the plastered attic floor. Ash is strewn around the base of the columns to keep away termites.

< Bottom: side-view of the storage hut
> Top left: 1:50 elevation
> Top right: 1:50 section b
> Bottom left: 1:50 plan of attic
> Bottom right: 1:50 section a



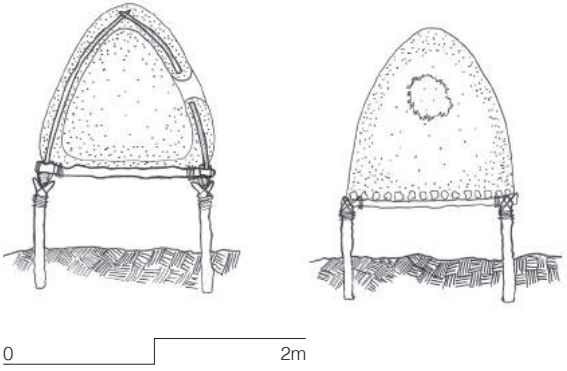

section a
elevation
section b

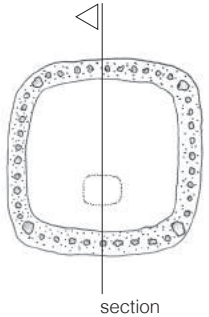



0
2m

Silo

The silos are the most recognizable buildings in the homestead, as they appear in larger numbers clustered around the various houses. They are raised above the ground for the same reasons that some houses are elevated, to ventilate and thus keep cooler inside. It also allows termite attacks to be identified early enought for required measures to be taken. The structure is an interesting hybrid of post and beam for the base, covered with more flexible branches that create an egg-shaped dome. The inside and outside are plastered with a thick layer of the traditional plaster, and only a small opening is made for access. Once the silo is filled for the season, this opening is closed with plaster, to keep the interior entirely sealed.





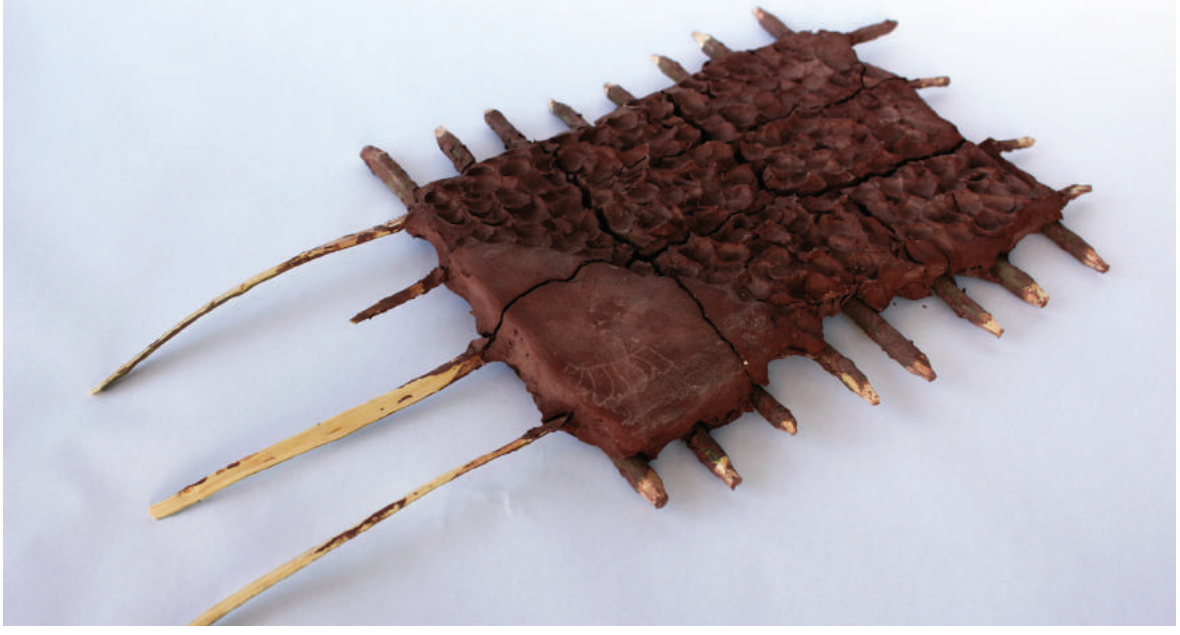
△ elevation

< Left: a silo under construction
< Centre: 1:50 section
< Top right: 1:50 elevation
< Bottom right: 1:50 plan
> Centre: a cluster of sealed silos

Additional typologies: top - young girl's house; bottom - round house with plastered roof

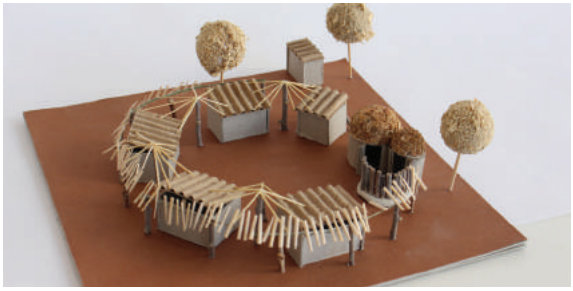
Top - storage hut with flat roof; bottom - round house with thatch roof and enclosing palisade

Some analytical structural models by students



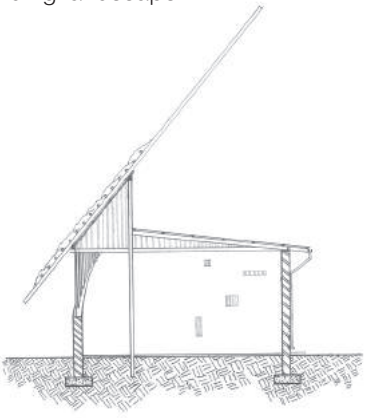
< Top and middle: wattle and daub construction principle, materials and textures
< Bottom: wall types - open/ventilated; plastered from inside only; and plastered from both sides

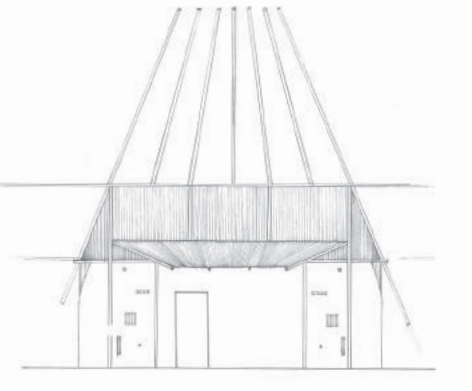
Selected student works



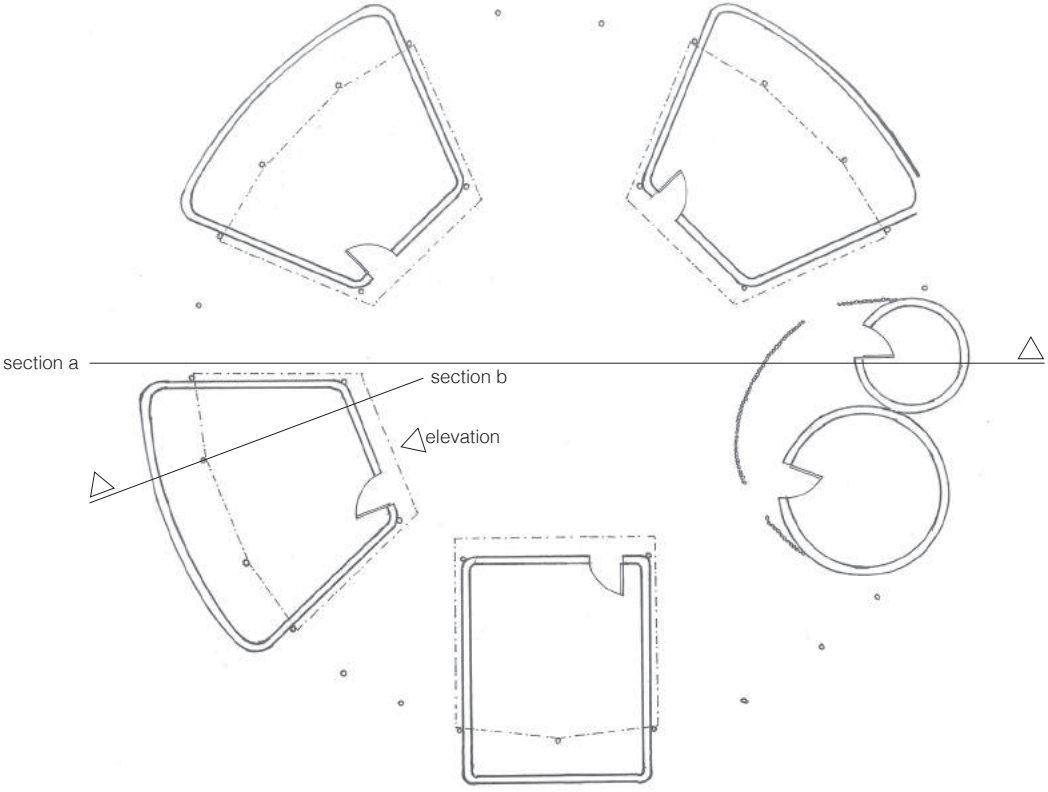
A school as a homestead
Yaloo Angula

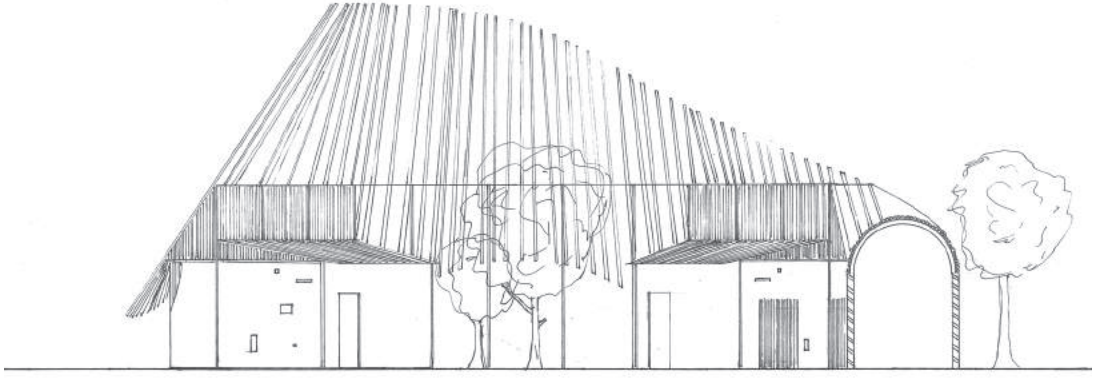
The analogy of the school as homestead allows for the disparate elements to be connected into one coherent ensemble. The interrelationship between individual enclosed classrooms and shaded outside spaces is explored through an all encompassing timber pole structure, that is at times roof, and at times provides shading for outside areas. The existing rectangular classroom is seamlessly integrated into the whole. Kitchen and storage are articulated as closed domed structures, anchoring the large roof. The classroom walls are higher towards the central courtyard, and are lowered towards the outside, allowing views into the surrounding landscape.

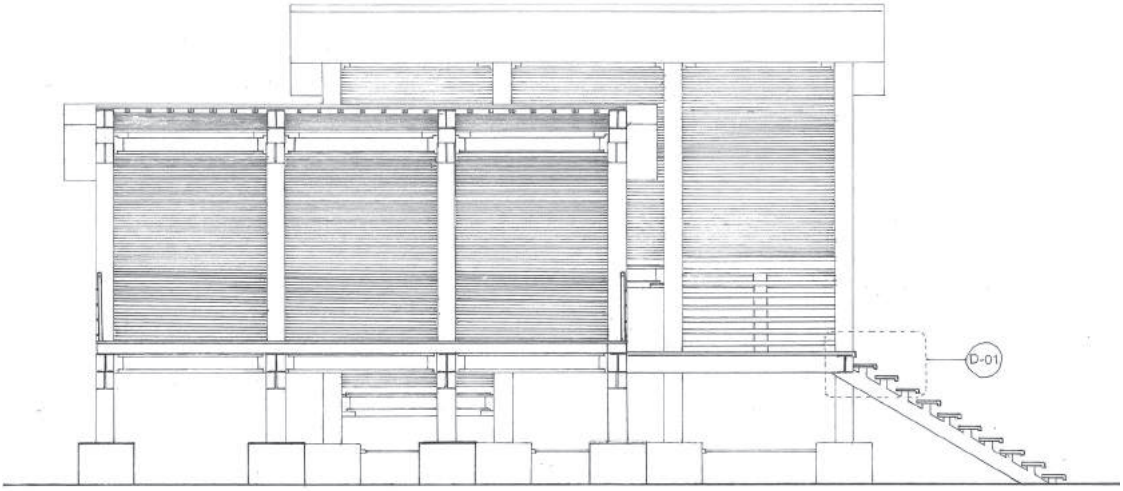




< Top, middle and bottom left: concept models 1, 2, and 3
< Top right: section b 1:200
< Bottom right: elevation 1:200
> Top: plan 1:200
> Bottom: section a 1:200


section a
section b
elevation

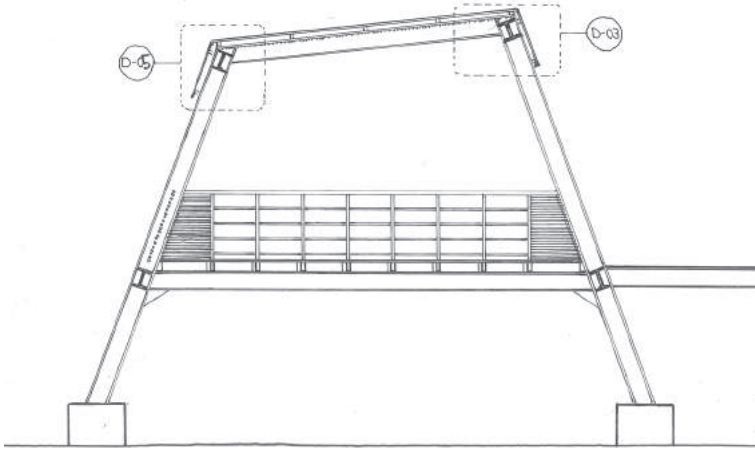


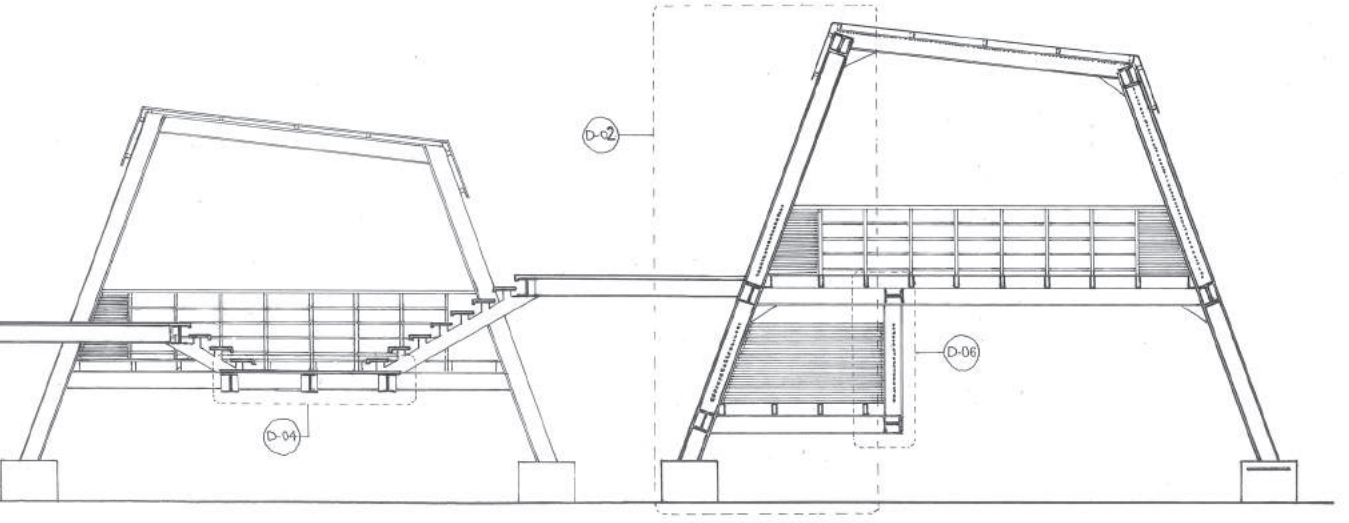


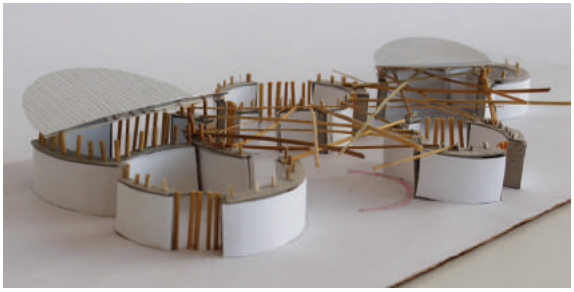
An elevated school
Denzel Awaseb

This concept takes a more abstract lesson from traditional structures: in such a harsh climate, elevating the building offers interesting opportunities. The school is made of a steel structure that is raised from the ground at various heights. It has three classrooms, with the shaded world underneath the structure open for the pre-primary children to play and explore the surroundings. The spaces are largely open to the sides and while providing adequate shade the relationship with the surrounding landscape and its rhythms is always present.

< Top: short section 1:100
> Top: concept model
> Bottom: long section 1:100



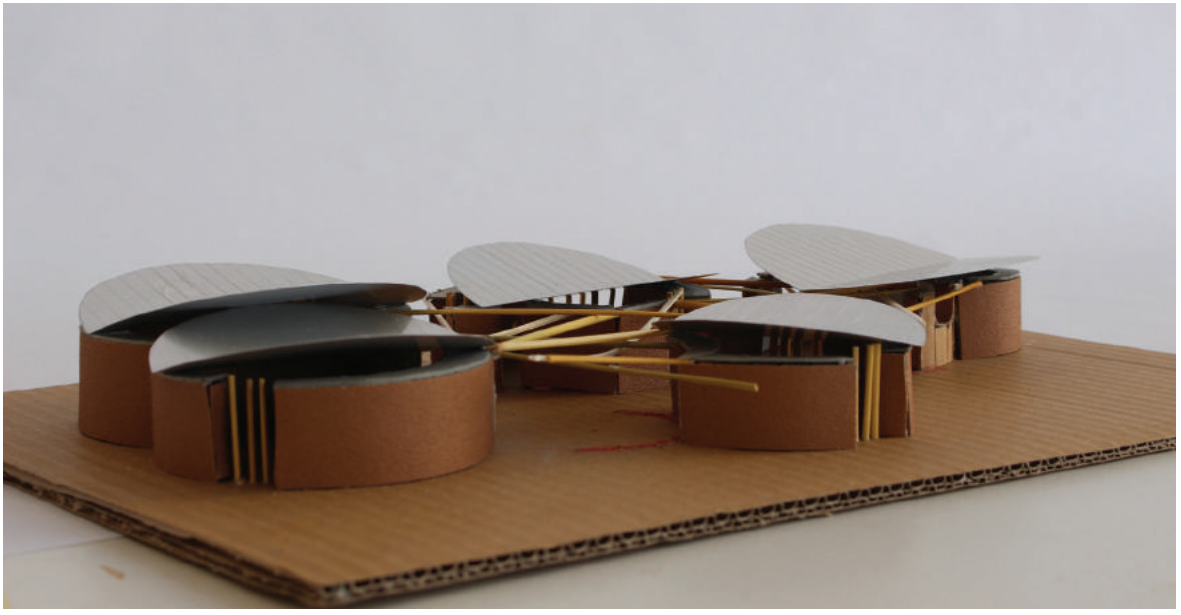

D-02
D-04
D-06

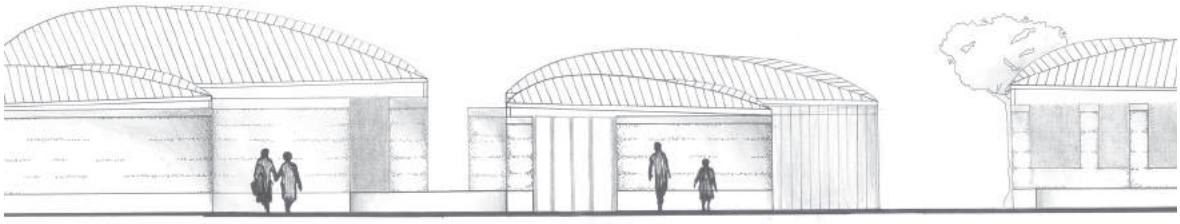


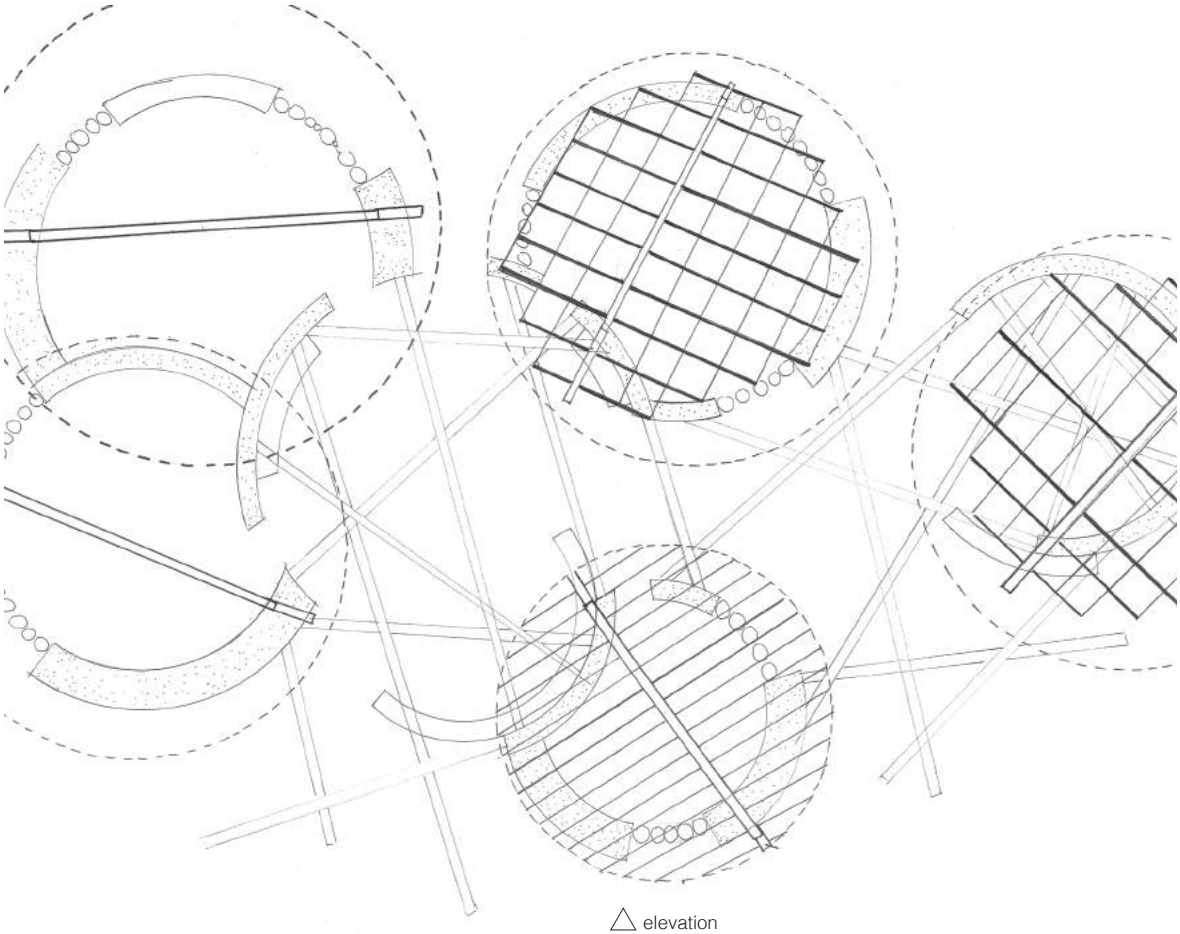
Circular patterns in the landscape
Mutago Nanus

The school is composed of inter-penetrating circular rammed earth walls made of the nearby clay deposits, forming an elegant cluster in the open landscape. It does not have doors or windows, but timber palisades that act as ventilation openings. Lower walls provide seating opportunities in between classrooms. Circular corrugated steel roofs float above the heavy walls like a group of butterflies and the open spaces between classrooms are covered with a lattice of timber poles to provide additional shade.

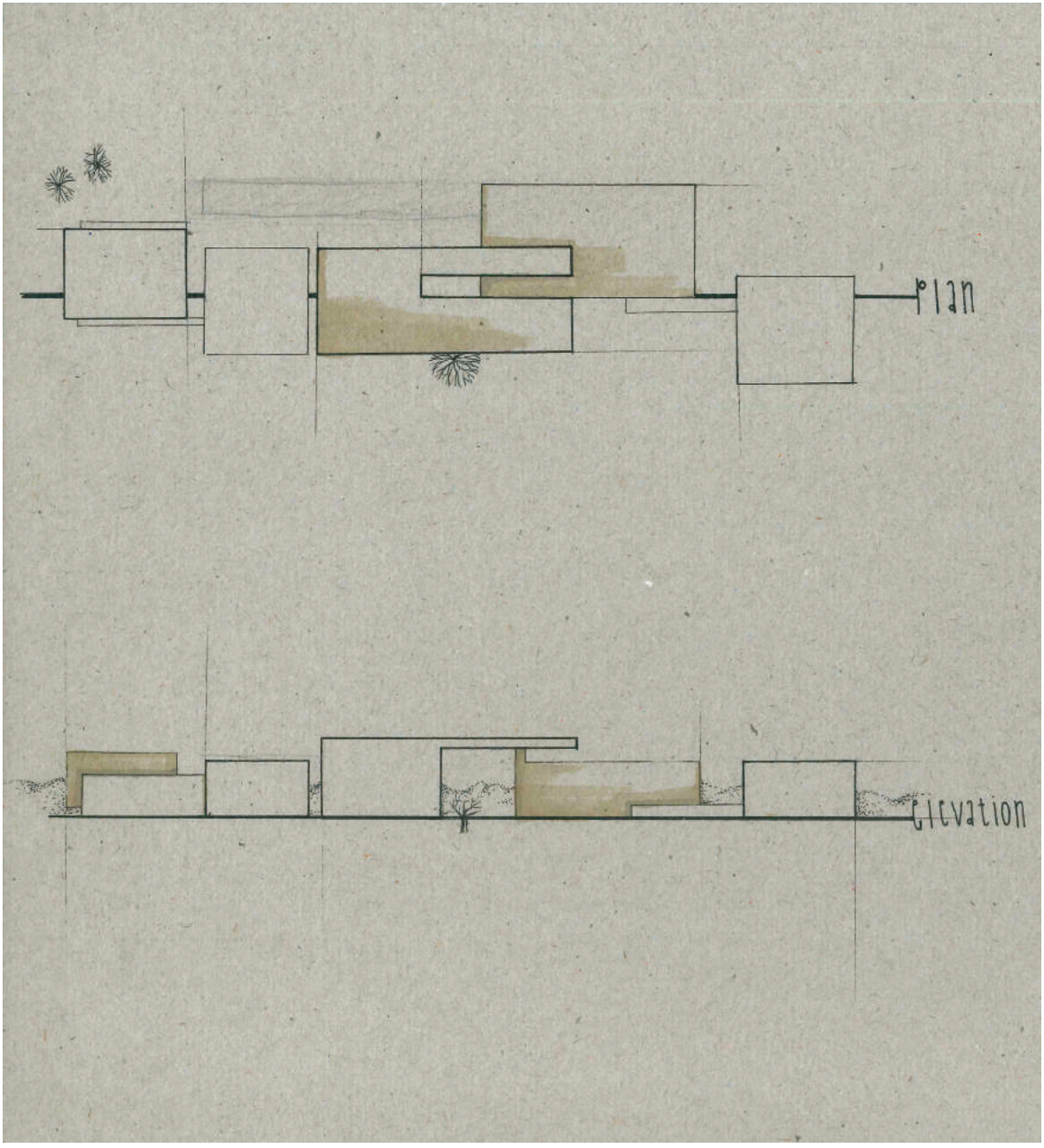
< Top and middle: concept model
< Bottom: final model
> Top: elevation 1:200
> Bottom: roof plan 1:200







△ elevation



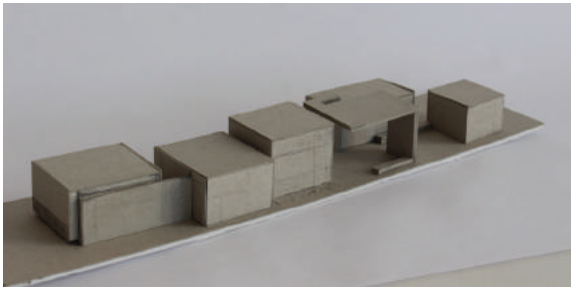
section

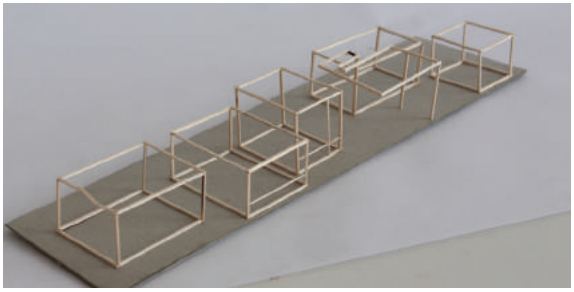
A sequence of crafted cubes

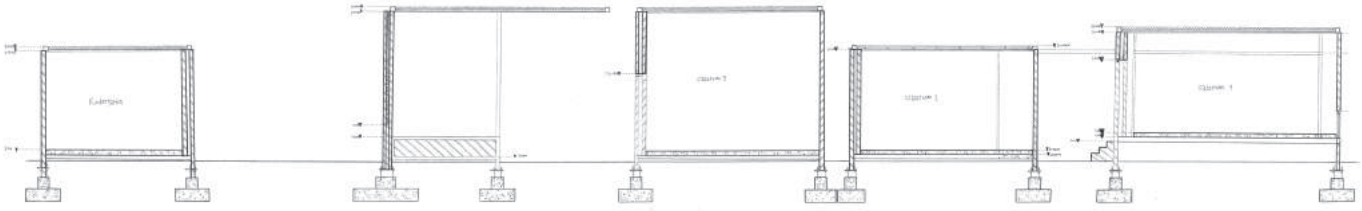
Jana Anandale

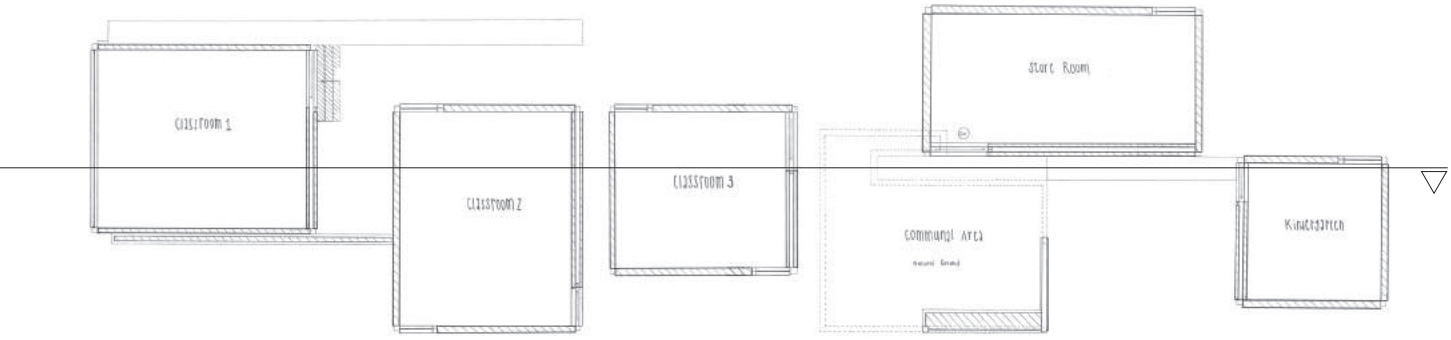
This concept does not draw its formal inspiration from the shape of local dwellings. Instead, it proposes a series of cubes made of a pre-fabricated and self-contained steel frame structure that can easily be assembled on site. It is slightly raised, requiring minimal foundations and leaving the land largely undisturbed. However it is the infill of the walls which is inspired by local construction techniques and allows for a variety of materials, patterns and textured finishes to be applied together with the school community.

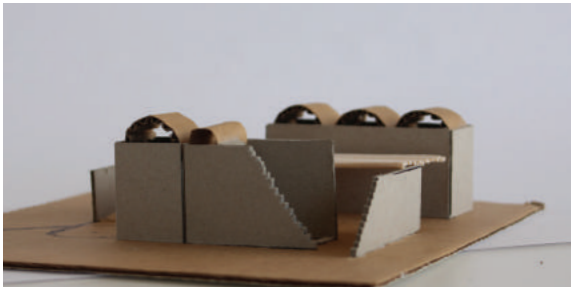
< Top: concept sketch plan
< Bottom: concept sketch elevation
> Top: concept model - volumes
> Middle: concept model - structure
> Bottom: long section 1:200
> Far bottom: plan 1:200

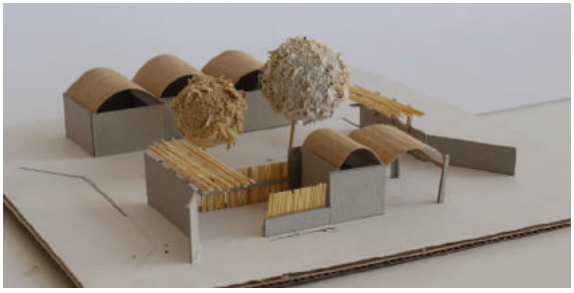








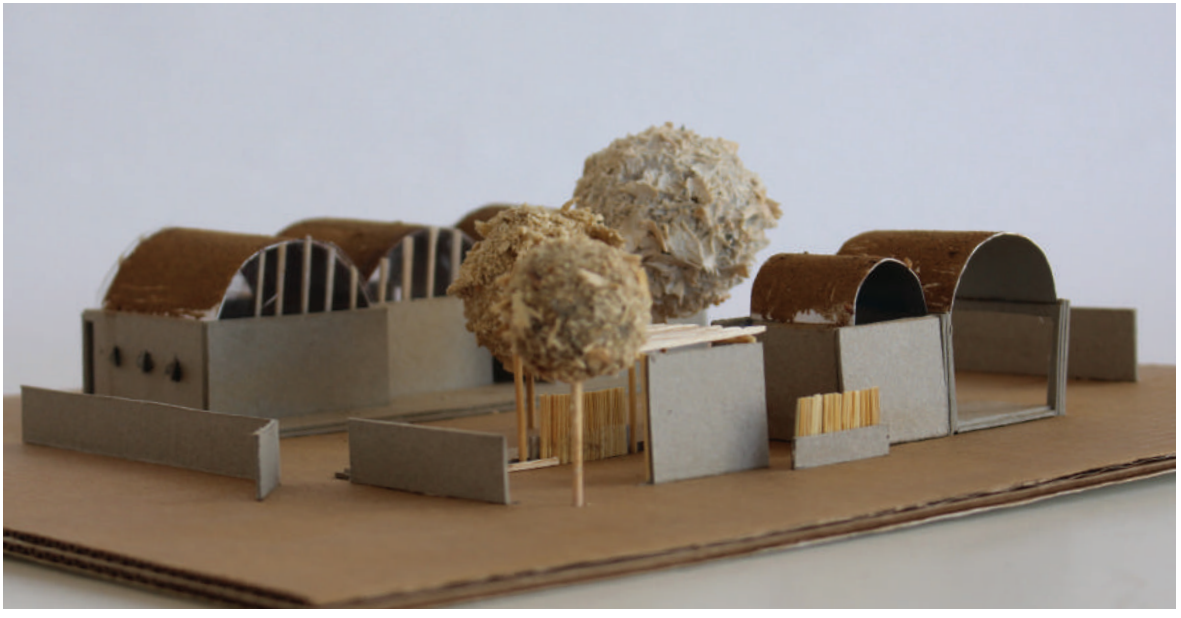


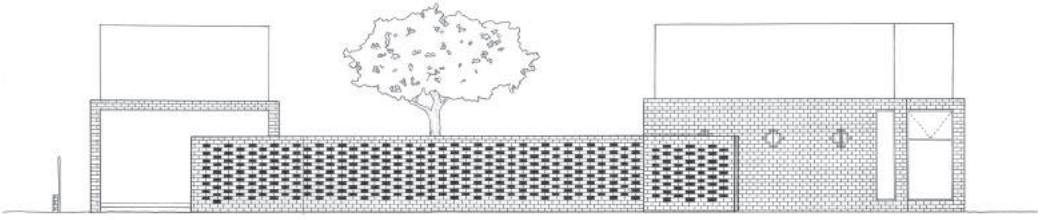


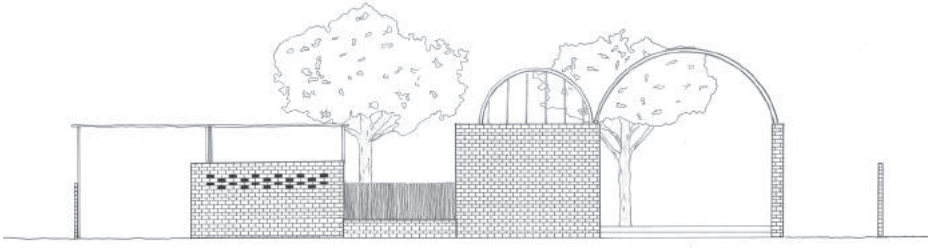
Exploring the possibilities of brick
Mbatata Uremena

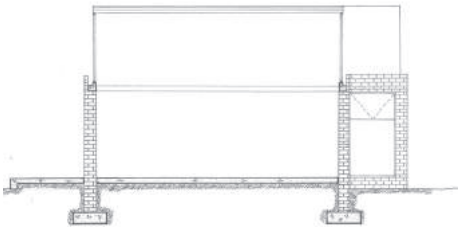
The design of this school explores the possibilities of brick construction, which though entirely foreign to the local vernacular is quickly making inroads even in very remote areas. A number of buildings surround a courtyard dominated by two large existing trees: three attached classrooms on one side and the kitchen and pre-primary classroom on the other. Open shaded areas and permeable walls enclose the courtyard on the sides. Catalan tiled domes create a recognizable silhouette and allow ample natural light to enter the otherwise solid rooms that have only small openings for ventilation.

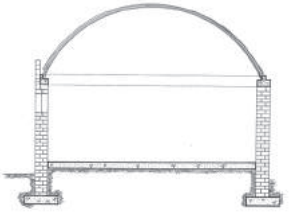
< Top and middle: concept models 1 and 2
< Bottom: final model
> Top and middle: elevations 1:200
> Bottom: sections 1:200







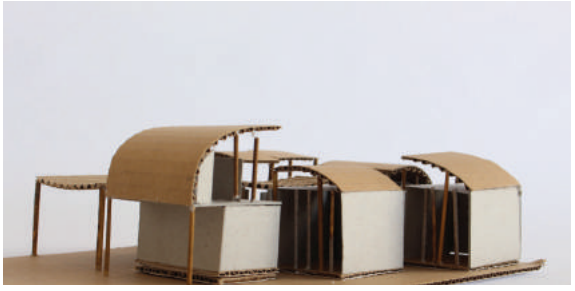


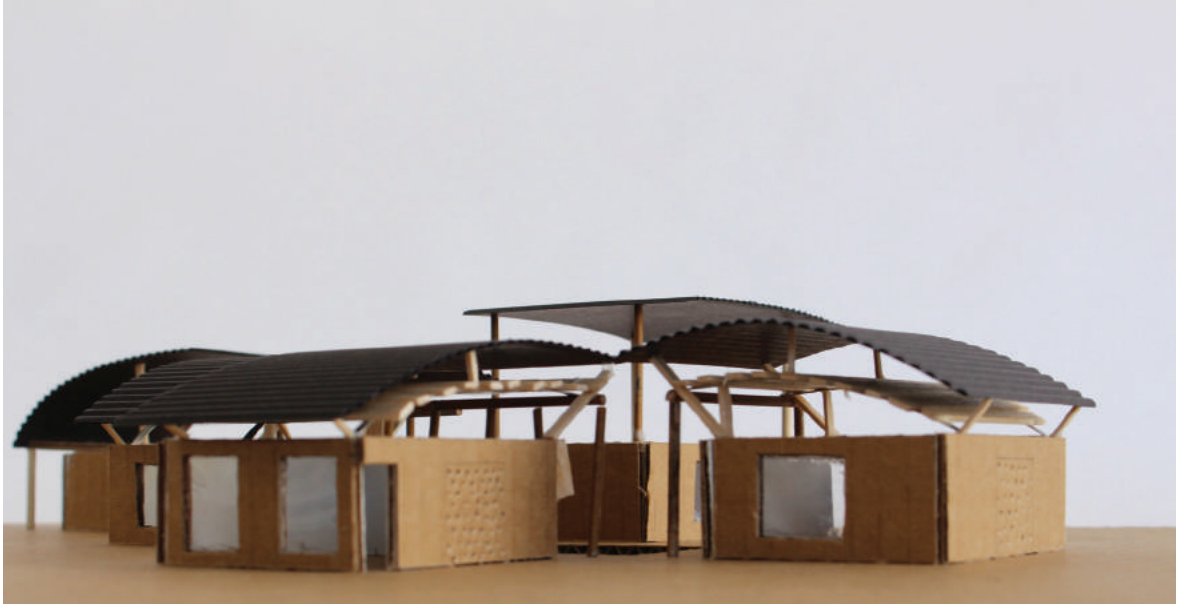


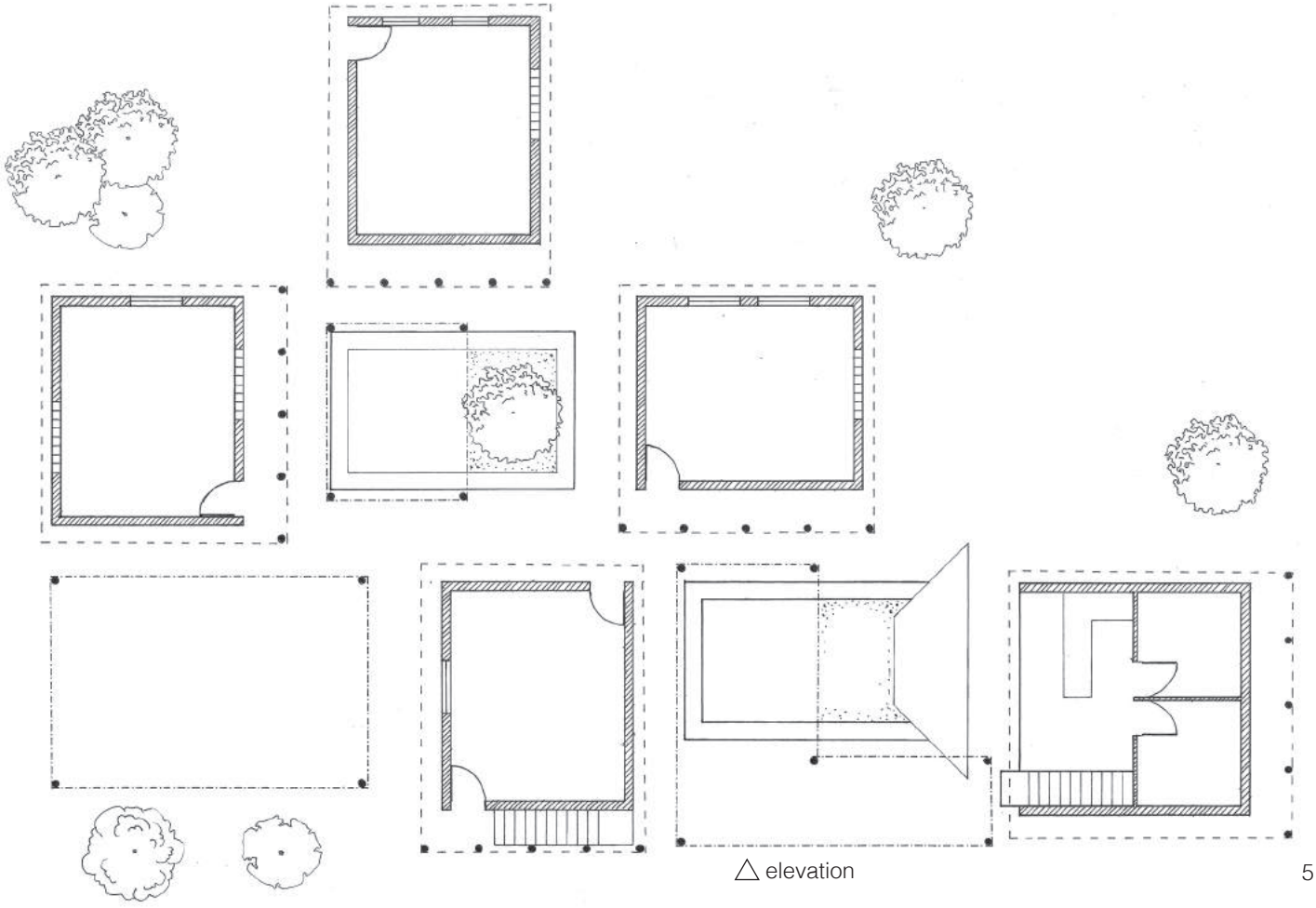
A tightly clustered school
Magdaleena Hango

This design responds to the open landscape by clustering buildings closely around the existing classroom, which is covered with a concrete slab and high steel roof to create a terrace on the first floor. The new classrooms are situated such that they create a courtyard. Between the buildings three stand alone roof structures act as verandas functioning as playing areas for pre-primary children, for lunch and other gatherings. The walls are made of the local stones gathered from the nearby mountains, similar to the construction of the existing classroom. Openings in walls are made with perforated blocks and here and there interspersed with glass windows allowing a view outside.

< Top: concept model
< Bottom: final model
> Top: elevation 1:200
> Bottom: plan 1:200







△ elevation

Living makes architecture… and architecture is a living history… Although phenomenally on different time and space dimensions, architecture and history can be read as synonymous. In any case, it is in living that humanity makes history… and architecture ……

This publication, Making Architecture… is a reflection of the work of 2016 Year One cohort of architecture students' Architectural Design Studio course (ARD 501Y) guided by a team of staff including Phillip Lühl as coordinator and author of this publication, Waseela Parbhoo and Conrad Stoffberg. Of special focus is the final year project, for which the brief is set on the simple, rural community living of the people of Ombaka in the Kaoko Region of Namibia. The publication is not only a record of the naïve experience of beginners in architectural education, but a true, spontaneous documentation of the seemingly socio-logical accord between living, history and architecture.

In his work: "The Spatial Turn in Architecture", Jo Guldi (2011) made reference to Seebohma Rowntree's (1954) assertion, that in understanding the shape (read spatial planning and architecture) of ordinary village communities, some sacred format of community identity would be disclosed. One may therefore regard this documented reflection on a first year architecture students' design adventure as the beginning of some passion by staff in search of identity in design pedagogy, and by students, in the making [of] architecture… Indeed, the students' design inquiry into Ombaka's livelihood and socio-spatial architecture in time and space, deserves positive endorsement. Whereas not all learner's proposed architectural expression may be entirely justifiable on the basis of the discernible oral history and living culture and architecture, considerable level of design aptitude is displayed in its functionality, passive design and structural integrity. The school project by Denzel Awaseb is a case example.

For a young architectural school as ours, this is a conscious attempt to articulate and disseminate its hither-to loosely defined unique characteristics as an embodiment of pragmatism through case study, site specific projects and a problem solving design approach. This trend is expected to spread to other design studios and lead the NUST architectural school into the annals of regional history of architectural education.

Sampson Umenne
Head: Architecture and Spatial Planning
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Photo essay: traces in the land

Photographs by Phillip Lühl

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