

Development Workshop

Box 133
238 Davenport Road
Toronto, Ontario
Canada M5R 1J6

project

client

STUDIES OF INDIGENOUS HOUSING



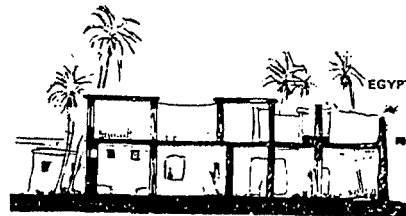
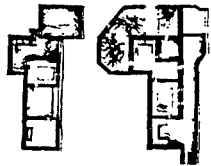
OMAN

Palm frond stem house suited to the hot humid climate, allowing ventilation, shade and reduction of glare. Since the material is cheap, houses can be extended easily. Three generations are accommodated in separate parts of the house. Double thickness walls are used for bedrooms, and single panels for day rooms adjoined by shaded open sitting areas.



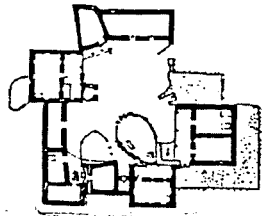
SUDAN

The Sudanese round house cluster reflects the social family grouping. Thatch is an excellent roofing material against rain and is a good heat insulator. Buildings, particularly store houses are often raised to prevent flooding damage and to protect against insects and animals. The easily constructed houses also reflect the shifting type of agricultural economy. Settlements are normally scattered.



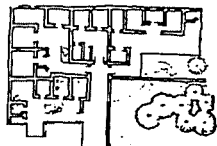
EGYPT

The house is one of several that opens out from a cul-de-sac. The Mastaba, the traditional outside seat, forms an alcove off the street. The lower floor has an entertaining room, kitchen, store and small garden. Bedrooms are upstairs, each with its own patio. The house is of mud brick with mud and timber roof.



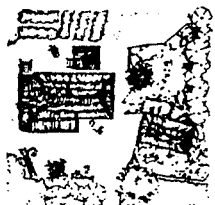
LURISTAN, IRAN

The extended family grouping is expressed by a cluster of individual household units, facing towards onto a common courtyard. Animals are kept beneath the house, and the roof is used for storage of grains and fodder. This tightly grouped extended house is surrounded by open agricultural land. The pattern is a social reflection and partly for protection of possessions and animals.



ZARAND, IRAN

Typical of Hot Dry areas, the compact village exposes few walls to the sun. Houses are made of mud-brick, a good thermal insulator, with vault and dome roofs, as timber is scarce. The southerly living rooms open onto a deep porch ('avon'). Kitchens, latrines and stores are around the courtyard. Some houses have water channels running through; others use a public washing area.



NEPAL

The house illustrated is a recent owner-built house on reclaimed jungle land in a new settlement area of Southern Nepal. Wood, bamboo and thatch are the indigenous building materials. The house is elevated and open to catch cooling breezes in the hot humid summer. A meeting place is cleared in the front of the house and a smaller kitchen yard is situated at the back. Animal shelters and stores are built nearby. The house is often located within the garden plot.

Development Workshop has studied indigenous housing and settlements in numerous developing countries in order to know in what way one can best assist people in meeting changing needs and confronting new problems.

These studies have helped to show how indigenous systems have frequently provided an efficient response to the local environment, society and economy.

They have shown how people have used their locally available resources to meet their building and planning needs.

Studies include: Angola, Comores, Dubai, Egypt, Guinea, Iran, Lebanon, Morocco, Nepal, Niger, Oman, Pakistan, Sudan...

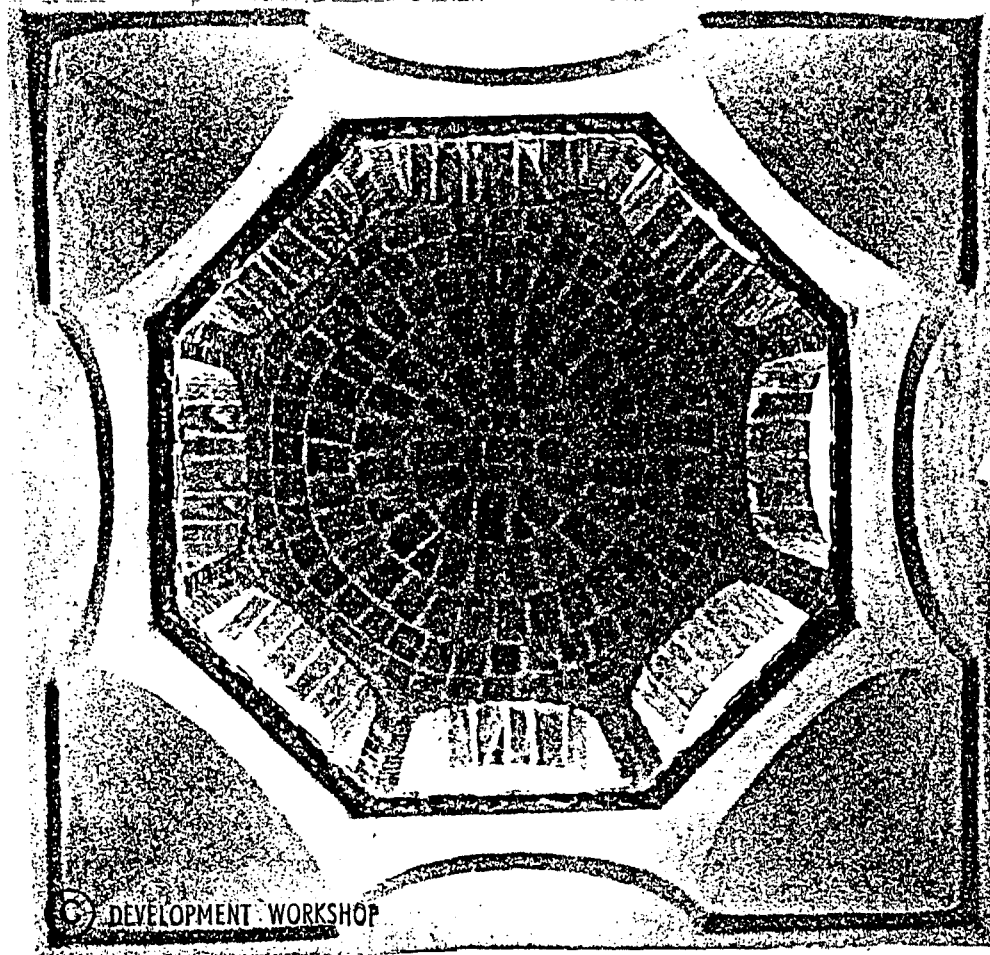
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VAULT AND DOME ROOFING TECHNIQUES:
Research and Construction.

client



Since 1972, Development Workshop has worked on the research, construction and application of vault and dome roofing systems.

This has involved:-

- study of buildings in the Middle East, Africa, and Europe;
- working as apprentices with master masons in Egypt and Iran;
- testing possible configurations for different spaces and with different materials: mud brick, fired brick, stone, plaster;
- constructing a variety of buildings using vaults and domes in the Middle East and Africa;
- training building technicians, builders and architects in vault and dome construction techniques in North America, Europe, the Middle East and Africa;
- publications on techniques and projects.

Opposite:

View upwards: two-tier dome, Kindergarten, Alashtar
Development Workshop design and construction

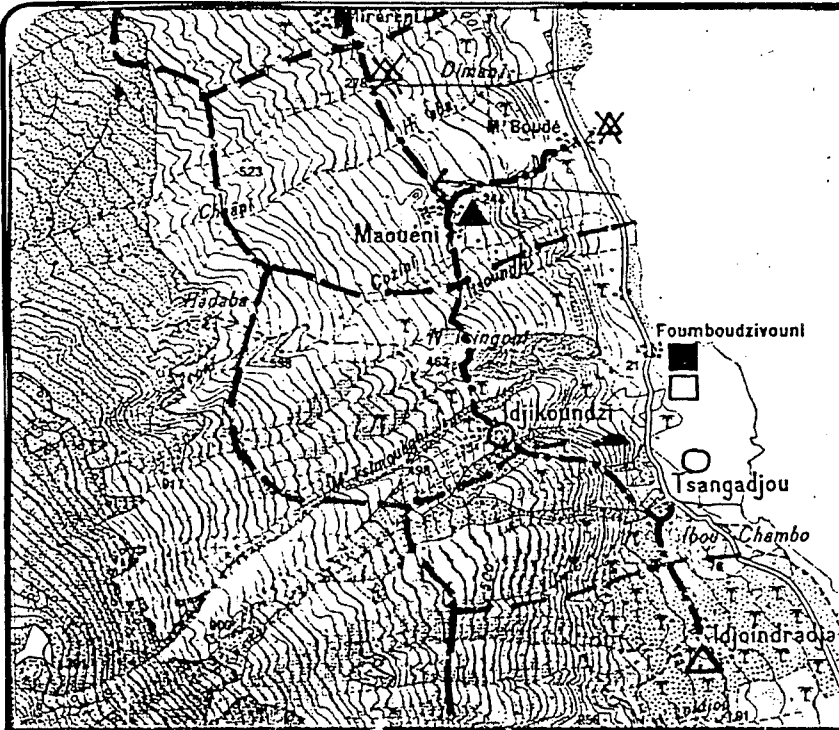
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EDUCATIONAL GUIDELINES

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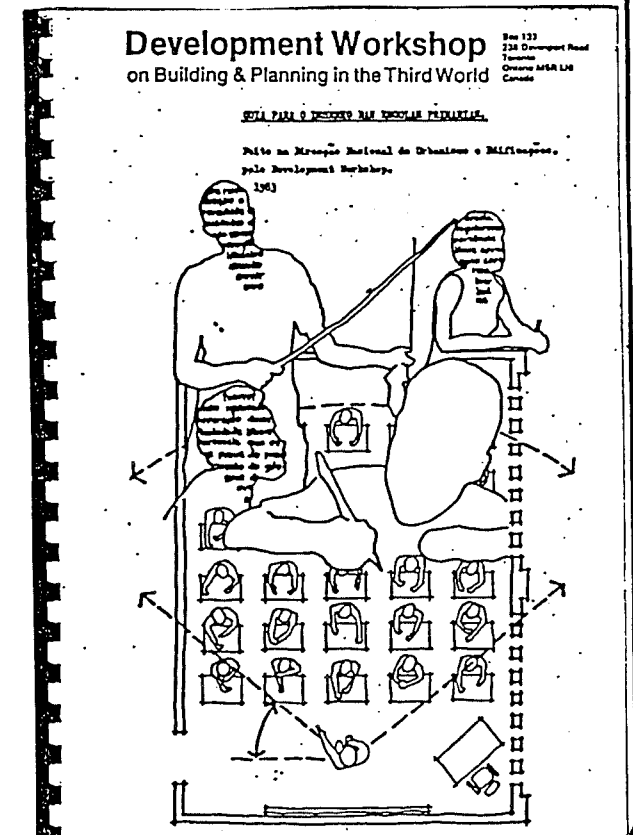
- △ Extension & Repair to Existing School
- ▲ Build new Primary School
- ⊠ Close un-used school
- Repair & Upgrade Existing Buildings
- Repair & Equip Rural College
- Repair road & provide school bus

Extract from "Basic Concepts of Educational Facilities Planning", 1980.

On behalf of UNESCO, in 1980, Development Workshop co-authored, (with El Jack and Almeida), "Concepts of Educational Facilities Planning."

Sections included Diagnosis and Analysis, Research and Documentation, Planning and Organisation, and Implementation.

Guidelines for the construction of educational facilities have been produced by Development Workshop, on behalf of the Ministry of Education, Angola, for use throughout the country, and in particular for a school building programme in Luanda.

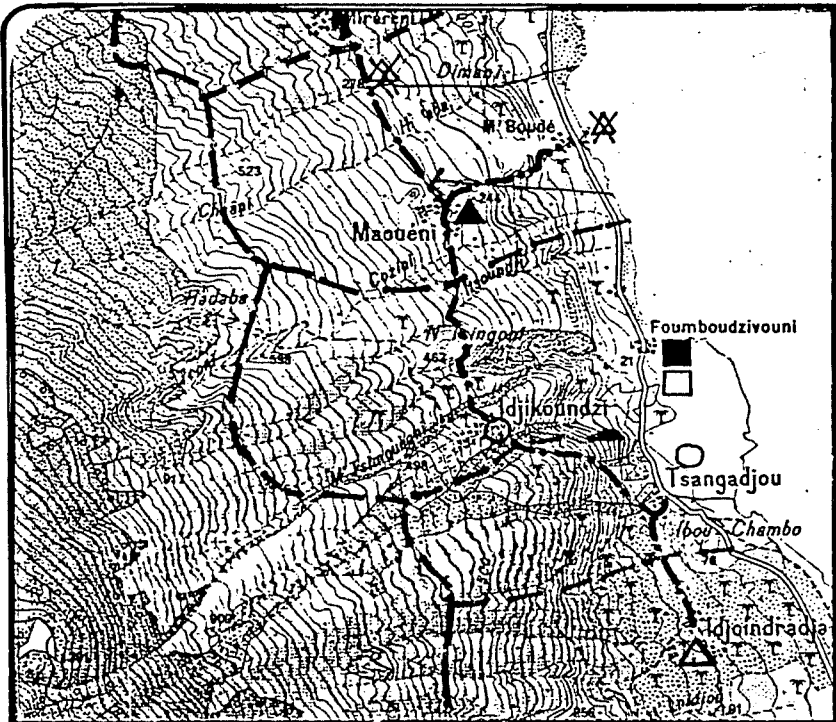


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project (EDUCATIONAL GUIDELINES)

client UNESCO



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Extract from "Basic Concepts of Educational Facilities Planning", 1980.

Co-authorship of manual:

"BASIC CONCEPTS OF EDUCATIONAL FACILITIES PLANNING".

(With El Jack and Almeida)

Sections covered:

- Diagnosis and Analysis
- Research and Development
- Planning and Organisation
- Implementation

Prepared for UNESCO, Paris, 1980

Authorship of paper:

"INTRODUCING APPROPRIATE TECHNOLOGY INTO THE DESIGN OF EDUCATIONAL BUILDINGS AND FURNITURE".

Prepared for UNESCO, Paris, 1979

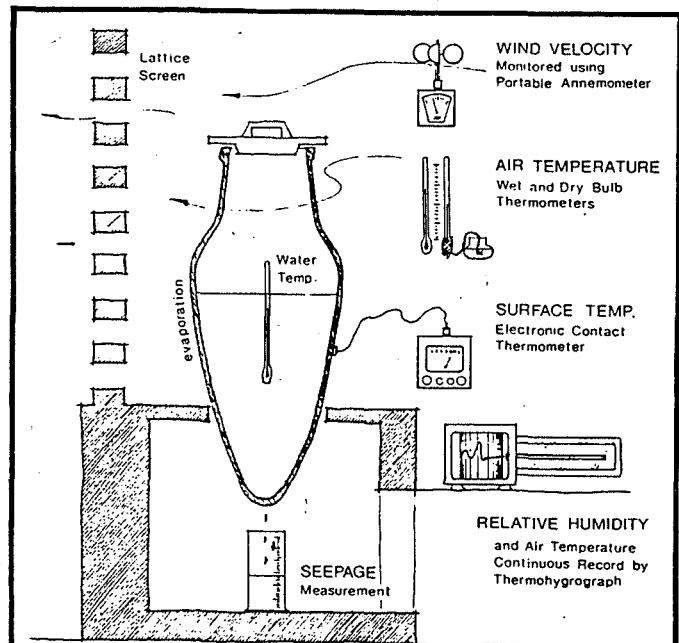
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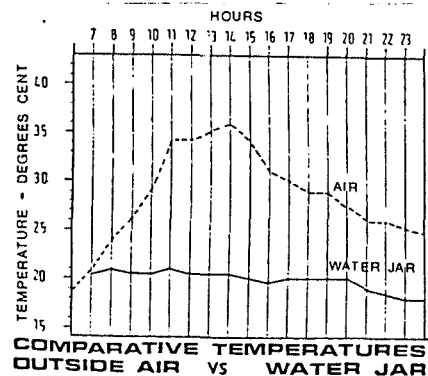
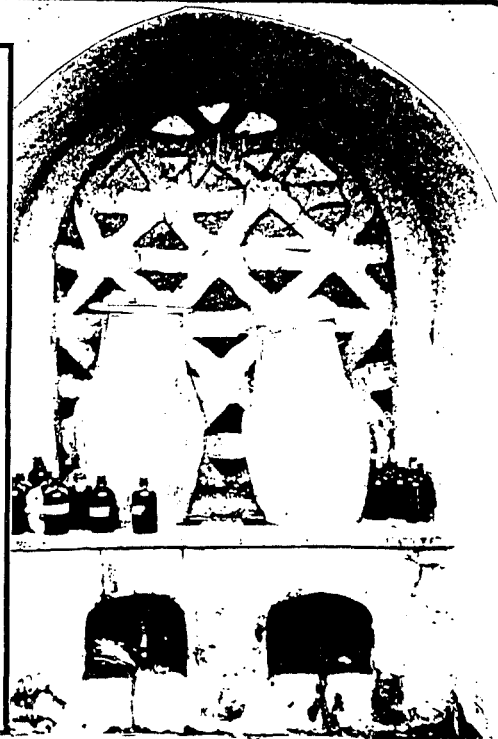
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TRADITIONAL COOLING SYSTEMS IN III WORLD:
(1) Maziera Cooling Jars

client

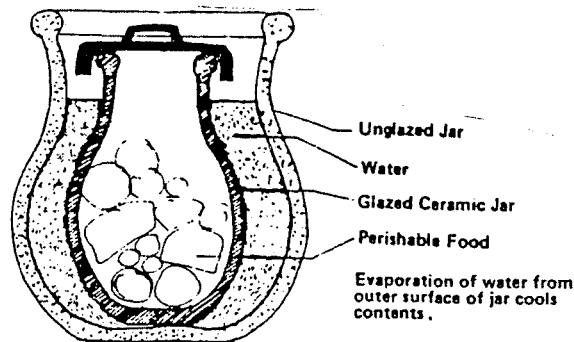


MAZIARA WATER JAR TESTING METHOD



COMPARATIVE TEMPERATURES
OUTSIDE AIR VS WATER JAR

FOOD COOLER



Development Workshop has carried out experiments on traditional cooling jars. Earthenware water-cooling jars are left unglazed, so that water can seep through and be evaporated from the outer surface. The process of evaporation absorbs heat, thus keeping the jar's contents cool. When the jars are placed in a breeze, they also cool the air passing over their surface. Water filtering through the porous jar is also cleaner, and when collected below the jar provides a clean water source.

Development Workshop tested Maziera jars in Egypt and Iran. Results showed considerable cooling, up to 165 K.cal/hr.

Polluted water from the Nile was declared pure by Egyptian drinking water standards after filtration through the jar.

Tests have also been done using the same principle for food storage. (Details available on request.)

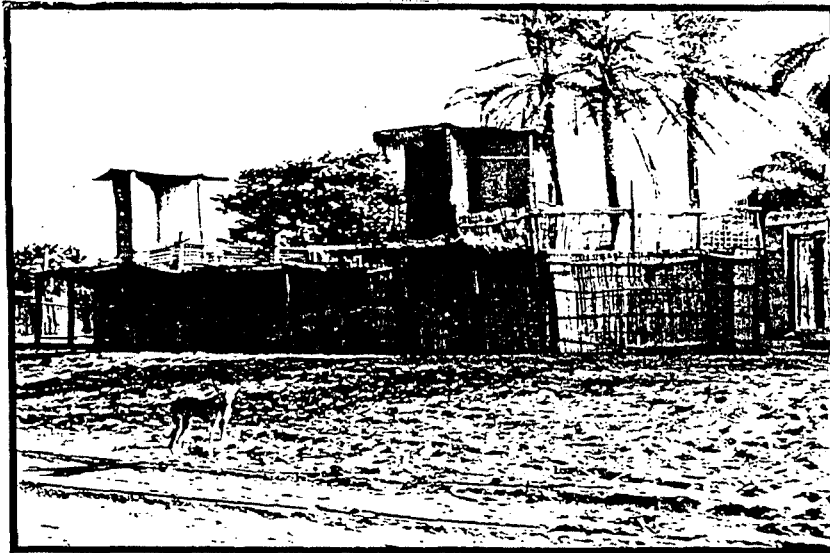
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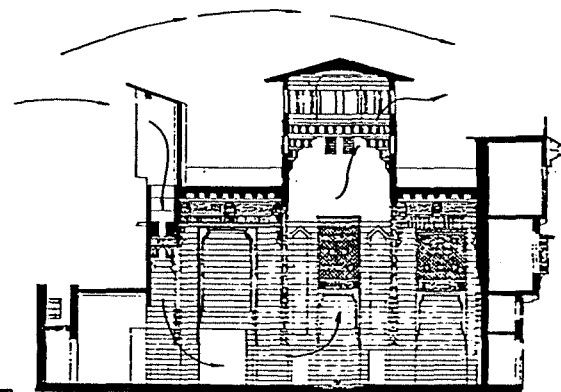
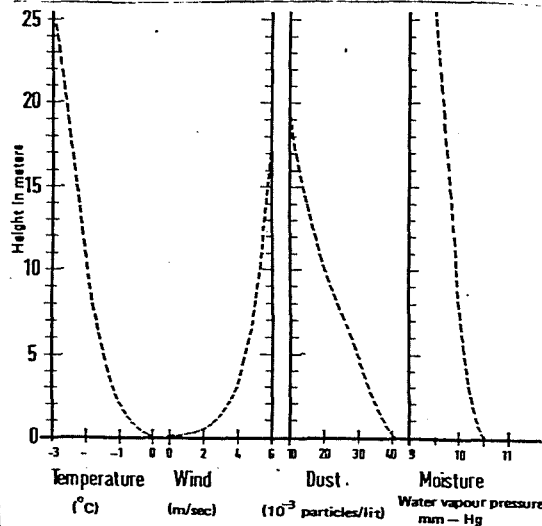
TRADITIONAL COOLING SYSTEMS IN III WORLD:
(2) Windcatchers

client



Demountable hessian wind-catchers,
Batinah coast, Oman.

High level air is -
cooler... cleaner... and drier.



Uni-directional wind-catcher
Ka Mohib al Din, Old Cairo.

A common feature of housing in the Middle East, windcatchers have been studied by Development Workshop, and their cooling effect analysed. Understanding how windcatchers work has enabled us to use the same natural cooling methods in modern building design.

Windcatchers exist in various forms: uni-directional in the Sind and the Malkaf of Cairo; ornate multi-directional in Dubai or Yazd; or simple, multi-directional windcatchers made with wood poles and hessian sacking on the Batinah coast of Oman.

Windcatchers permit the passage of clean cool high level air down into the building below, to replace warmer air inside.

Windcatchers do not work purely through the wind's ability to force its way into the house. The house and the windcatcher act together to provide a natural self-regulating thermostat based on air-pressure differentials. Cool air is heavier than warm air. The windcatcher allows air in only when it is cooler than the air in the room below. All windcatcher systems have an air outlet where the warm air can escape.