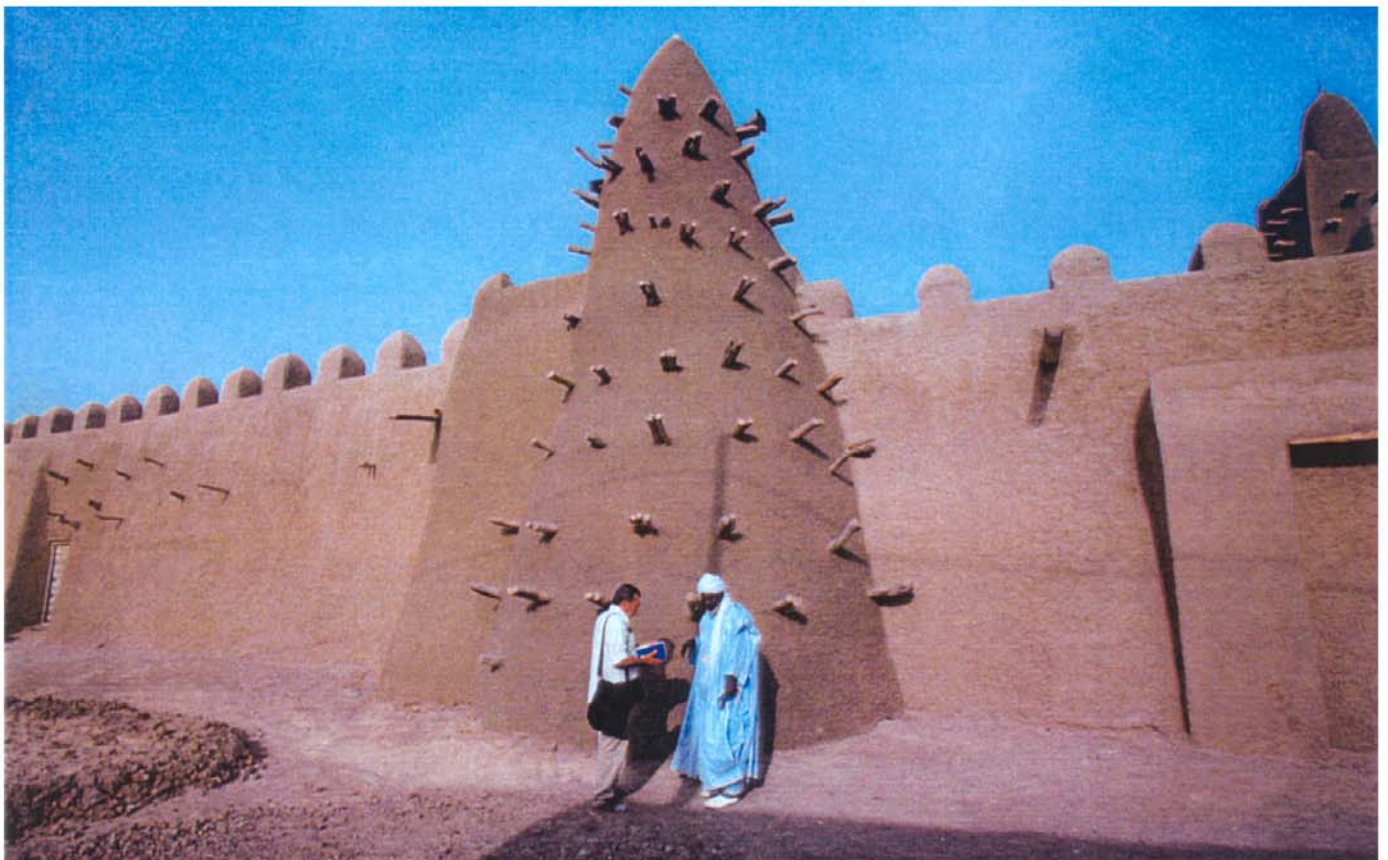




by Fernando Varanda

Djingareyber Mosque

Timbuktu, Mali



Conservator

Cultural Mission of Timbuktu

Client

Association Yerkoy Hou Yerkoy Bania

Design

1996

Completed

1996 - 2000

Djingareyber Mosque

Timbuktu, Mali

I. Introduction

Djingarey Ber, 'the Great Mosque', is Timbuktu's oldest monument and its major landmark. Located at the western corner of the old town, the mosque is almost entirely built in *banco* (raw earth), which is used for mudbricks and rendering. The exceptions are the northern wall, reinforced in the 1960s in *alhore* (limestone blocks, also widely used in the rest of the town), and the minaret, also built in limestone and rendered with mud. The mosque's maintenance, consisting mainly of repairing the mud rendering, is regularly undertaken upon appeal by the *imam* to the population, whose contributions take the form of money, materials and labour.

The town of Timbuktu and its monuments were included in UNESCO's World Heritage List in 1988, and in 1989 the three mosques of Djingareyber, Sankoré and Sidi Yahia were included in the List of World Heritage Monuments in Danger. As a result, in 1996 the World Heritage Centre financed an operation for the emergency restoration of these mosques. In December of that year, the architects of the GAIA Project (ICCROM/CRA Terre-EAG) put together a training programme, which actively involved not only local committees and experts in indigenous techniques but also the population itself.

The mosque of Djingareyber is the oldest, largest and most complex of the three mosques. The intervention was crucial to prevent a process of decay. These works cannot be entirely separated from the work done in the other two mosques, yet its added symbolic value is indisputable. The restoration of a building of this type, however, is a continuous process. After the intervention of 1996, minor repairs and maintenance have been regularly carried out, the most important being the consolidation and rendering of the minaret in 2000. It is evident, however, that the mosque will soon need to enter another phase of structural restoration.

II. Contextual Information

a. Historical background

Local tradition dates the founding of Timbuktu to around the year AD 1100, at a seasonal nomad camp based around a well, maintained by an old woman and her slaves. The woman's name was Buktu and '*tin*' means well, hence 'the well of Buktu'. Whatever the myth of the town's origin, by the twelfth century Timbuktu was already an active trading post on the routes crossing the Sahara into West Africa. In the fourteenth century the town was absorbed by the Mali Empire and enjoyed a period of prosperity, of which the Djingareyber Mosque is the symbol. The mosque was built in 1325 by the Andalucian architect and poet Abu Ishaq Es-Saheli on the orders of the legendary emperor, Kanka Mousa, who had just returned from Mecca.

After a period of control by the Tuareg, Timbuktu fell under Songhai rule in the middle of the fifteenth century. Until the Moroccan invasion at the end of the sixteenth century, this was

Timbuktu's most brilliant epoch as a centre of Islamic learning, and the town housed more than 150 Islamic schools, with students coming from as far as North Africa and the Middle East.

In 1578, the year work on the Sankoré Mosque was initiated, the *qadi* (judge) of Timbuktu, Al Hadj al-Aqib, organized extensive remodelling of Djingareyber. This included the addition of the southern part of the present building, which is distinguished by the use of arches instead of wooden lintels for arcades between the aisles.

After the Moroccan invasion, raids by the Bambara, Peul and Tuareg tribes and drought and famine caused the decline of Timbuktu. The Tuaregs ruled the town from the eighteenth century through most of the nineteenth century, until the Tukular took over for thirty years before the arrival of French troops in 1893.

Seen as a remote outpost of the desert by the French, Timbuktu remained isolated after Mali's independence in 1958. In 1990 the 'Tuareg Revolt' broke out to the north. An insurrection with complex causes, the revolt brought unrest to the region for almost six years and focused attention on the problems of development in the area. On the fringes of the town, a large open space and the beginnings of a park mark the site of the 'Flame of Peace', a conciliation ceremony in March 1996 between the conflicting parties, celebrated by the public burning of all weapons and the planting of trees.

In 1992, the old town of Timbuktu, with its mosques, scholars' and explorers' houses, university, tombs and mausoleums, was declared a World Heritage Site. The recognition of Timbuktu's importance to the cultural patrimony of Mali and the whole world has shown the town in a new light. The material advantages of this new role are mostly based on expectation of income generated by tourism.

Local architectural character

In the 'vacant' lots of the town, particularly on the periphery, are semi-spherical constructions, made of branches covered with straw mats, of the type used by the semi-nomadic populations in the region. The predominant construction material, however, is raw earth – *banco* – which is used for blocks and rendering and comes in two forms. The oldest, now in disuse except for specific restoration work, is called *Djenné ferey* and consists of roughly cylindrical pieces, moulded by hand. Since the 1930s, however, another technique has become more common, whereby the mud is shaped in rectangular moulds to produce blocks measuring about 20 by 10 by 40 centimetres or 25 by 10 by 50 centimetres. These are known as *toubabo ferey* – 'the white men's bricks'.

Another material also widely seen, particularly in more recent constructions, is *alhore* limestone, quarried some 20 kilometres away from the town. These blocks are used clad *banco* walls. Sometimes they are applied as construction progresses, so that the stone blocks appear partly embedded in the mud wall; at other times they are applied after construction to improve or protect the *banco* walls. The blocks are held together with mud mortar, but a final jointing in cement, introduced in the 1950s, is now a generalized practice. Marking of the

joints with the tip of the trowel is seen as an aesthetic improvement – although this opinion is not held by those responsible for restoration of the mosques. Over the years, *alhore* has been widely used in the reconstruction and extension of the mosques, particularly at Sidi Yahia, where the walls were almost entirely lined with stone in 1939. Cement blocks can also be seen but, particularly in the old town, they are still rare. More common is the use of cement grilles for parapets.

The houses are generally two-storey buildings with roof terraces, constructed from palm trunks, twigs, straw mats and earth. Palm trunks are also used as lintels and used as extensions to drainage pipes to keep water away from the walls. Both the width and height of the floors in Timbuktu houses are substantially more generous than those found in Djenné. The loftiness of the rooms on the ground floor was explained by one tenant as a response to the progressive raising of the floor level due sand-dune encroachment.

A few houses remain with *banco* pilasters on both sides of the main door, which, in combination with a regular disposition of windows, call to mind simple, unadorned versions of the Moroccan houses in Djenné. When clad with *alhore*, these pilasters, crowned by a cornice at first-floor level, become imposing elements on façades, which are further enhanced in their symmetry by regular disposition of windows above and at the sides of the main door. Sometimes only the pilasters are in stone, the rest of the building being left in *banco*. New buildings in *alhore* often have pointed arches – a feature that seems to have its roots in the past (it is seen in the sixteenth-century addition to the Djingareyber Mosque) and which common taste overtly favours at present.

Wooden doors and windows are typical, with decorations, applied in metal or carved into the framework, frequently having a symbolic significance. The main door should never face east or west – an interdiction based in mythology but probably justified by the strong east–west winds. The door is usually kept open during the day and this partly explains the disposition of the interior space. The entrance hall usually has a staircase to one side, leading to the first floor, and a central column, which adds privacy to the interior of the room and partly hides the door to the rest of the house. This is organized around an interior court, preceded by a porch, where most of the house's activities take place, including the preparation of food – although there is also a covered kitchen. Access to the toilets, in a more secluded area, is from the court, and a separate staircase for women leads from the court to the first floor. The ground floor is almost exclusively the realm of women during the day. The top floor is the main floor for men and their visitors, who climb the direct staircase from the entrance hall to reach a central covered space, which overlooks the court below and opens onto the other rooms.

The use of the rooms is often dictated by climatic comfort, with different spaces being used at different times of the day or year. The first floor is usually paved with clay tiles. The flooring at ground level is often made of fine sand, although there is a tendency to use sand in the court and cement or tiles in the rooms.

The architecture of the various mosques, which share many common points despite the transformations wrought by successive repairs, represents a regional style. The Djingareyber

Mosque features all the typical elements of this style, with the relative grandeur appropriate to its role as the congressional mosque. The prayer hall is made of nine elongated aisles, parallel to the *qibla* wall and connected by regular openings in thick load-bearing walls. These aisles descend in stages towards two courts of different sizes. Strictly speaking there is only one minaret – the large truncated pyramid that rises from the north court – but a smaller conical construction, indicating the *mihrab* (niche in the *qibla* wall) and somewhat repeating the convention seen in the Djenné mosques, is also used to support loudspeakers. The application of *toron* – tree trunks sticking out of the walls, serving both as built-in scaffolding for the rendering and as decorative device – is sparse, except on the minarets, where it appears more deliberate in form.

The mosque is a stocky structure. Buttresses, added after the sixteenth century to reinforce the walls, strengthen the impression of a volume gripping the earth, a strong horizontal counterpointed only by the minaret. Djingareyber could be seen as the opposite of the Djenné Mosque, where vertical elements are emphasized throughout. Decorations are reduced to a minimum. In the interior, the *qibla* wall, extending both sides from the *mihrab*, is decorated with elementary reliefs. In the small courtyard, a radial pattern of bricks in the *qibla* wall has an indicative and decorative value. The ribbed treatment of the corresponding wall and doorways in the large courtyard performs a similar role. A stair to the roof in the small court has a sculptural value of its own, but it is difficult to say if this is a result of deliberate design, lucky accident or instinctive enjoyment of form.

Topography, climate and settlement patterns

Timbuktu is set in a hollow where the Saharan sand dunes meet the marshy banks of the Niger River, 10 kilometres to the south. The temperature ranges from a minimum of 6°C in January to a maximum of 45°C in May. Rain is scarce, falling for three months in the middle of the year with a maximum of 80 millimetres in August. The desert wind, particularly the seasonal *harmattan* (hot, dry wind that blows from the northeast or east in the southern Sahara, mainly in winter), aggravates one of Timbuktu's main problems – sand-dune encroachment, which raises the level of streets and the interior floor level of buildings.

Timbuktu is still difficult to access by land – from the country's main tarmac roads, visitors must travel for six to twelve hours mostly on sand tracks, which become impassable in the wet season. However, it has a new airport connecting it with Mopti and Bamako several times a week, and there are plans to make this airport international.

The town extends in a north–south direction, with the old nucleus clearly distinguishable and separated by a periphery road from the regular grid patterns that mark actual and planned twentieth-century expansion. Narrow streets connect small squares or openings, frequently punctuated by the small domes of bread ovens belonging to house owners.

The three main mosques mark three focal points in the oldest parts of the settlement – Djingarey Ber in the south-west, Sidi Yahia in the centre and Senkoré to the north. The population is organized by neighbourhoods, mainly according to ancestry. For example, the families of the Senkoré neighbourhood are mostly of Saharan origin and the predominant

element in the Djingareyber neighbourhood is the Alpha, part of the local learned nobility. Lineage is an important factor of social organization and people derive their origins from as far as Andalucia, Fez and Yemen. In the same way, professional organizations may also claim ancestral roots. Carpenters, for example, place their roots in Yemen, and masons descend from families such as 'Hamame Hou' or 'Attabou Hou'. The professional guilds are responsible for ensuring that no one, regardless of social origin, is excluded from the local economic system.

III. Programme

a. *Conditions of programme formulation*

In 1993 the Mali government created the cultural missions of Bandiagara, Djenné and Timbuktu to assist the Ministry of Culture in making attributions for the preservation and honouring of sites on the World Heritage List.

The Timbuktu Cultural Mission allocated a yearly fund to subsidize the periodical maintenance of the Djingareyber Mosque. However, major works were carried out in 1996 under the auspices of UNESCO's World Heritage Centre, which financed an operation for emergency restoration of the three mosques of Senkoré, Sidi Yahia and Djingareyber within the project *Chantiers Pilotes de Formation à la Conservation des Mosquées de Toumbouctou*. The Cultural Mission was the agent of a contract between the World Heritage Centre and the UNESCO National Commission in Mali, with the collaboration of the GAIA Project (ICCROM/CRA Terre-EAG). A CRA Terre architect carried out a preparatory study in July 1996 and a training programme took place from 4–17 December 1996, when two CRA Terre architects worked on site with local craftsmen, the Timbuktu Cultural Mission, the mosques' steering committees, municipal authorities and regional technical services.

b. *General programme objectives /c. Functional requirements*

The main objective was to improve and complete the knowledge and practice of those responsible for the conservation of the Timbuktu mosques. The programme was especially aimed at the traditional masons who have been responsible for the mosques for many generations, and the various authorities and groups mentioned above. This fell within the World Heritage Centre's general goal of improving restoration through proper training of those who deal directly with the maintenance of the monuments.

On the basis of the preliminary studies carried out by the director of the Cultural Mission and the CRA Terre architect, it was decided that the best way to work with the traditional masons, who had an entirely practical training, was to give the training programme a strongly operational character. This took the form of pilot construction sites for the three mosques and accordingly received the name '*Chantiers Pilotes de Formation à la Conservation des Mosquées de Toumbouctou*'. A one-day seminar with a site visit was envisaged for the more 'white-collar' public.

As far as the Djingareyber Mosque was concerned, it was understood that the 1996 programme would be the first of several successive phases addressing the many problems associated with a structure of that size and age. Accordingly, in the year 2000, the Ministry of Culture and the local government organization Agetiye-Mali asked the mosque's executive committee to undertake further conservation. Project design and site supervision were entrusted to an architecture and urban planning office based in Bamako and called BEAU (Bureau d'Etudes d'Architecture et Urbanisme). The millennium celebration formed the pretext to present these works, to be carried out under the supervision of the *imam* by the masons who had participated in the 1996 training programme. Other works are programmed to follow, the most important being the repair of the roof – which has been weakened by age, termites, bats and nesting birds – and the total revision of the electrical installation.

A further issue is the need for additional facilities for the mosque's users, including proper ablution and toilet facilities and a small guest house. Buildings neighbouring the mosque are being considered to house these facilities, while space for a much-needed library has been found within the confines of the mosque.

IV. Description

a. *Project data*

The 1996 project is well described in the final report presented by the CRATerre architects and quoted in the References section below. At Djingareyber this consisted of emergency work on the structure and surrounding environment, as follows:

Structural interventions

- Reconstruction of the acroteria and tops of columns and pilasters on the west wall, including replacement of sixteen palm-tree joists
- Repairs to the stone footing of the north and west street elevations of the enclosure wall
- Consolidation of the stone skirting of the north-west corner of the building
- Repair of the staggered courses of *alhore* stone on the north wall to prevent infiltration
- Various repairs and reinforcements on the west elevation
- Reconstruction on the court side of the west wall
- Reinforcement of the enclosure wall on the north side
- Re-jointing of the *alhore* stone on the north elevation
- Reinforcement of the enclosure wall of the north-west side
- Construction of a stone buttress at the end of the *alhore* north wall
- Reconstruction of the acroterium at the south-west corner of the prayer hall
- Repair of decorations at the central entrance, next to the external *mihrab*
- Rendering in mud of the north face of the internal north wall
- General repair of the roof, with replacement of joists
- Rendering in *bourem* (a type of earth) of the external *mihrab* in the west wall of the large court

- Replacement of the drainage pipes on the south elevation and repairs to the roof at the south-west corner, with replacement of joists, branches and straw mats
- Installation of an improved drainage system on the south elevation
- Rendering of the interior of the enclosure wall of the large prayer court
- Construction of four skylights with incorporated ventilation, of the type used in Sankoré
- Raising the wall of the small north court
- Rendering of the interior of the enclosure wall on the cemetery side

Environmental interventions:

- Filling and regularizing the steps of the south elevation
- Drainage of the north-east
- Drainage of the enclosure wall on the west street elevation
- Reconstruction of the drainage on the east street elevation
- Peripheral drainage on the north street elevation
- Laying clean sand on the mosque's courts
- Planting trees to protect the structure of the mosque from vibrations caused by heavy lorries and other traffic on the adjacent periphery road of the *medina*. The planting of trees also creates a gap between traffic paths and the mosque walls.

The second phase of conservation, completed in 2000 as described above, consisted mainly of consolidation and rendering of the minaret and *mihrab*, reconstruction of the roof on the minaret's left side, and fine rendering of the small court.

b. Evolution of design concepts

The techniques employed for the restoration were the result of a constant interaction between the architects and the masons. Traditional approaches to construction were guided by the architects' design and management systems. Several innovations were made: for example, in the insulation of the roof areas around the drainage pipes, with the introduction of a plastic sleeve around the pipe itself to minimize infiltrations. Drainage of water from the roofs, courts and walls required special attention. This was addressed by correcting slopes and creating a slope along the external walls to keep street-level drains away from the building. *Alhore* stone was used for consolidation and reconstruction of certain elements, in keeping with long-established practice. The need for improved lighting and ventilation in the prayer hall was recognized, and a new type of skylight was devised and installed in both the Sankoré and Djingareyber mosques.

This work has enabled Djingareyber to continue in its role as the congressional mosque. It is the centre of the *mouloud*, the yearly feast and procession, which brings devotees from far away and is one of the high points of the town's religious and social calendar. Although the Saudis offered to build a new congressional mosque (in 'Saudi Style', as seen elsewhere in the country), the idea was resisted on various grounds, one of them being that the symbolic importance of the mosque as a centre of the Islamic culture of Timbuktu could not be dissociated from its material form.

An additional issue was the question of climatic control: in the hottest months the interior is too hot, as are the courts if they are not shaded. The solution in the larger court was to use a shading device of straw mats supported on wooden poles, similar to the structures used in markets. In the smaller court one of six canopies offered by Morocco for the millennium celebrations was adapted by stretching it from ropes anchored on the surrounding roof. These precarious solutions seem to have satisfactorily resolved the problem, although they form a strong contrast visually with the permanent structure and the straw mats need to be frequently replaced.

The objectives of the project implied restoration and conservation of the special architectural features of the building using local materials and techniques, thereby restoring not only the building but also the practice of masonry itself. This was successfully achieved in both the 1996 and 2000 interventions. It should be noted, however, that instead of palm, eucalyptus wood was used for replacement of joists and, most importantly, for the *toron* of the minaret and the *mihrab*. The reasons presented for this were the increasing scarcity of palm trees, leading to concerns about deforestation and cost, and the increasing availability of eucalyptus, which is being extensively planted around the town as protection against sand encroachment. It was felt by both the *imam* and the director of the Cultural Mission, however, that final restoration should be carried out with traditional palm-tree trunks, not only to retain formal coherence but also because palm trunks appear to be more resistant to termites.

There is no landscaping in the strict sense. Trees were planted around the mosque with the combined objective of defining a protection zone for the monument and involving women in the restoration process by asking them to plant and nurture the trees – women, according to custom, have no part in construction.

Structure, materials, technology

The foundations are made of stone. Otherwise the materials and construction methods are very similar to those at Djenné. Load-bearing elements are generally in mudbrick with wooden tie-beams laid at intervals at the courses. Reinforcing layers of *alhare* stone have been added at various times to walls, buttresses, parapets and the minaret. Roofs are made of palm-tree joists crossed with branches and covered first with palm matting and then fine mud. The branches are left exposed in some parts of the ceiling and rendered in mud in others, probably reflecting different periods of maintenance work.

The mudbricks used in the construction of the mosque are of two types, *Djenné ferey* and *toubabo ferey*, as described above. The earth comes from pits excavated on the flood beds of the river a few kilometres away, but earth from collapsed buildings is also used. The mud is mixed with rice husks and kneaded on the site.

Mud used for rendering is enriched with Arabian gum and shea-butter to make it more resilient. The rendering can be coarse enough to be textured with the fingers – as on the minaret and *mihrab*. Alternatively, it can be very fine, mixed with sand and finished with a trowel, as seen on the walls of the courtyards and interior of the prayer hall. *Bourem* earth is

preferred for this type of finishing but its use is becoming rare and is reserved for special areas.

The roofs are drained via regularly disposed holes equipped with ceramic drainage pipes that jut out of the walls. Extensions to the pipes, made of hollow palm-tree trunks, keep the water further away from the walls. Some improvements, as described above, have been made to the traditional system.

The floors are of packed earth inside and fine sand in the courts. Keeping the sand clean is one of the routine maintenance tasks. New doors repeat the traditional models and decorations, although locks of a standard chromed steel design were added to some doors and do not fit well visually.

The building is equipped with electricity for lighting and fans but, as is often the case, the installation is unsound. One of the priorities of the next phase of repairs is a proper installation with protected and visually hidden wiring.

Ablution and sanitary facilities do not exist in the mosque. It has been proposed that proper facilities should be installed in a neighbouring building. Public utilities suffer from the same problems experienced at Djenné, water having been provided without a corresponding network of sewers. The fact that most streets are made of sand makes open sewers look somewhat less dramatic than they do in Djenné, but the real consequences are present nevertheless: unsanitary conditions for the population and a risk of corrosion of the foundations of buildings, to which *alhore* stone is vulnerable.

The town is the subject of a conservation plan – ‘*Plan de Revitalization et Sauvegarde de la Vieille Ville de Tombouctou*’ – contracted by Agetipe-Mali and elaborated by BEAU. The scheme’s Phase 1 report was recently issued, with a fairly detailed analysis of the situation and preliminary proposals for space organization and conservation policies, including those relating to principal monuments such as Djingareyber. The sanitation plan has not yet produced visible results.

d. *Origin of technology, materials, labour force, professionals*

The technology, materials and labour force are local. The chief of the masons was Alhasane Adtabou; the chief of the carpenters Al Hadj Bouka.

The masons’ claim to be descended from two families (*hou*), the Hamané Hou and the Koba Hou. The training of a local mason is similar to that followed in Djenné – not surprisingly, since in the sixteenth century several hundred masons were called to Timbuktu from the Djenné area (Dia). Masonry is a hereditary occupation, with apprenticeship from the age of seven, and initiation into the secrets of the profession being granted as the apprentice’s skill grows and the master begins to trust his ability. The apprentices come from the same general family. Apprentices of other origin are also accepted, but only those of the family may take leading roles. The head of the present guild is a Koba Hou, as was his father before him, and he inherited the responsibility of maintaining Djingareyber. Ritual plays a very important role

and the head of the guild's main responsibility is the proffering of incantations at the beginning of any works to protect the building and the masons from accidents.

The periodical rendering of mosques is a collective work. The *imam* makes a call for contributions, carefully timed so that the works can be finished before the rainy season. Materials are assembled and the *imam* tells the masons to be prepared. So that everyone can participate in helping the masons, the *imam* informs the congregation on a Friday that work will begin the following Sunday. In the meantime *banco* is kneaded and allowed to rest for several days. The occasion, which is the pretext for a festival and confraternity meal, must be attended by all the population. Some disadvantages to this process have recently become evident: for example, the concentration of helpers on the mosque's delapidated roofs worsens their state – during the last works around one hundred roof beams were broken in this way.

Since the year 2000 architectural design and site supervision have become the responsibility of Agetipe-Mali, which was given responsibility for contracting the work and hired BEAU as architectural consultants.

The partners of the 1996 project were:

ICCROM/CRA Terre-EAG, Grenoble (GAIA Project)

UNESCO World Heritage Centre, Paris

UNESCO National Commission of Mali

Ministry of Culture/Timbuktu Cultural Mission, Mali

V. Construction Schedule and Costs

a. History of the project

The project began with a preliminary visit from the CRA Terre architect in July 1996 and training workshop between 4–17 December 1996. The second phase took place in 2000, without direct technical assistance from the 1996 consultants.

b. Total costs and main sources of financing

The cost of tools and materials for the 1996 project (involving all three mosques) was CFA 4,326,000. No data was found for the individual costs in each mosque, but it can be reasonably assumed that the costs of Djingareyber did not exceed one-third of the total, i.e., around CFA 1,400,000. Twelve masons and thirty-four helpers worked on the Djingareyber mosque, bringing the estimated total of salaries to nearly CFA 1,360,000. This gives, for this mosque, a total of CFA 2,760,000 (USD 4,900, at the exchange rate of the time). The costs were covered by the World Heritage Centre.

The total cost of the interventions on Djingareyber alone up to the year 2000 have been estimated at CFA 7,000,000 (USD 10,000 at the current exchange rate. Professional fees for the architects are paid directly by the contracting organization, Agetipe-Mali.

VI. Technical Assessment

The mosque is a work-in-progress – a state that is integral to the very nature of the building. A comparison of photos made before and after the 1996 works shows that the programme was effective in halting the building's degeneration. The works of 2000 have also restored spaces, forms and textures in continuity with the various accretions over the mosque's long history, to form a coherent whole. The fact that problems no smaller than those already solved loom in the near future does not detract from the importance of the work already carried out.

The mosque's role at this time is highly symbolic. As the congressional mosque of a growing community, its space and facilities may already be insufficient. However, the idea of building a new congressional mosque appears to the religious authorities as a betrayal of the very fundamentals of Timbuktu's approach to Islam.

Earth construction is renowned for its thermal regulation capacity, and this mosque is no exception. However, it may become uncomfortably warm during the hottest season, hence the utilization of electric fans and the transfer of prayers to the courts, covered with the shading devices described above. Inside the mosque, ventilation shafts in the roof, made from oil drums with holes cut in their sides, improve conditions but let in rain. The skylights with built-in ventilation installed in 1996 seem to be working well.

VII. Users

a. Beneficiaries of the programme

The beneficiaries of the project are 'the community in general' and the mosque's executive committee. Employment generated by the project also benefits local people.

b. Response to project

The users appear satisfied with the results so far, but insist that the continuation of work is an urgent matter, especially for reasons of security and structural soundness.

VIII. Persons involved

Client:

The steering committee of the mosque (Association Yerkey Hou Yerkey Bania)

Executives:

Timbuktu Cultural Mission: executive director, Dr Ali Ould Sidi of the Ministry of Culture and Tourism, Bamako

Architects:

Thierry Joffroy and Sébastien Moriset, CRA Terre

Abdoulhaye M Tandina, Agetipe-Mali

Baba Cissé, BEAU (Bureau d'Etudes d'Architecture et Urbanisme), Bamako

Master mason:

Alhasane Adtabou, Timbuktu

City authorities:

The governor of Timbuktu

The mayor of Timbuktu

The 'Commandant de Cercle'

The *imam* of Djingareyber Mosque

Representatives of the mason families

Fernando Varanda

April 2001