2007 On Site Review Report

by Naima Chabbi-Chemrouk

Conservation of Djenné

Djenné, Mali

Architect
Cultural Mission of Djenné

Client
Ministry of Culture and Tourism

Design
1996

Completed
2001 - Ongoing
Conservation of Djenné

Mali

I. Introduction

Djenné is located on the internal delta of the Niger in Mali, at the crossroads of the major trade routes of West Africa. It was a prosperous trading centre from the Middle Ages, when it was first mentioned in the chronicles of travellers and historians, right up to the end of the nineteenth century, when the French occupying powers established Mopti as their new administrative and trading base. Around this same period, just as Djenné’s fortunes were in decline, the unique style of its earth constructions became the source of inspiration for new buildings in different contexts. The French reproduced the great mosque of Djenné in Mopti, and made its particular form the subject of countless drawn and photographic records and monographic descriptions.

Research interest in the area started in the 1950s and has continued up to the present. This has demonstrated the early occupation of the site and the historical importance of the urban structure, and confirmed the architectural quality of both the great mosque and the ordinary houses. In 1988, the city was inscribed on UNESCO’s list of World Heritage Sites.

A ten-year restoration project began in 1996, funded by the Dutch government and based on a programme formulated by scholars who had researched the archaeology, urbanism and architectural character of Djenné. A local team led by the Mission Culturelle de Djenné (henceforth Cultural Mission) has implemented the project.

II. Contextual Information

A. Historical background

Traces of occupation dating back to the third century AD were recently found at a site a few kilometres inland from Djenné. This first settlement, Djenné-Djeno, reached its peak between the eighth and eleventh centuries, when it had a population of about 20,000. The move to present-day Djenné on the Bani, a tributary of the Niger, was largely complete by the thirteenth century, when Koy Konbоро, the twenty-sixth prince of Djenné, converted to Islam, destroyed the city’s palace and built the first mosque in its place.

Throughout the ensuing centuries of political change, when the region was dominated by a succession of different ethnic and cultural groups, Djenné continued to prosper as a trading centre. The nineteenth century, however, saw the beginning of its decline: the 50 years preceding the arrival of the French were marked by drought, civil war and cholera. In 1893 the French demolished the city wall with its 14 gates and dealt a fatal blow to
Djenné’s commercial importance when they decided to establish a new trading centre 100 kilometres downstream in Mopti, at the junction of the Bani and the Niger. In more recent years, periodic droughts have caused the migration of significant numbers of farmers and fishermen. By the mid-1980s, there were strong signs of decline and the city that had withstood the larger part of a millennium seemed in danger of disappearing.

B. Local architectural character

Though the city’s walls no longer exist, the houses that overhang the Bani river are so tightly packed, and so similar in their architecture, that they seem to form a kind of fortress. The view from the Bani offers a unique image of a singular monument of a rare plasticity and sobriety.

The singularity of the city and of its buildings results from the plastic quality given by mud. Indeed, the major construction material of the whole region is banco, the local name for the mud used in blocks, mortar and plaster.

Wood is used for the construction of floors, ceilings and roofs, doors and windows. It is also used for toron, those natural architectonic elements so specific to the region. Toron are bundles of palm-tree trunks that project some 60 centimetres from the facades of taller buildings, serving simultaneously as decoration and as scaffolding for the periodic rendering of the walls.

The city itself is organised around ethnic/professional quarters along a major axial system, at the centre of which the mosque and the market square form an imposing urban space. Different ethnic groups coexist in the region and have different occupations and specialisations. Hence, the Bozo are fishermen, the Peul raise cattle, the Bamanan are farmers, and the Marka are merchants. It is mostly the Bozo, the fishermen, who also provide the masons. This ethnic diversity is very clear on market days, when each guild has its own place. Each Monday, Djenné market draws large numbers of people from the neighbouring villages and even from Mopti.

Djenné’s great mosque – built in 1907 on the ruins of the first mosque – is still considered as an intellectual pole for the learning of Qur’an and is visited regularly by scholars from around the region. It is also thought to be the largest raw-earth building in the world, and provides an architectural model for other mosques in the region.

Three major typologies can be identified in the city houses: ‘Moroccan’, ‘Tokolar’ and ‘Plain’. These typologies relate to a certain extent to different historical periods and socio-economic levels, but they refer specifically to the way the main facade of a building is treated and how this corresponds to the spatial organisation of the house.
It is quite interesting to note that most masons in the region start by first ‘drawing’ the facade. The type of facade is the first issue for the mason and the client to agree on, since it seems to determine the whole spatial organisation of the house.

Most houses are two-storey, with roof terraces that are actively used not only for domestic activities but also as an alternative street network. As there are no major separations between roofs, neighbours use the terraces to go from one house to another. Roofs may occasionally have a thatch-covered area to provide shade.

In all three house typologies, the spatial organisation reflects a strict separation of the sexes and the relative social positions of the inhabitants – for example, the second floor is reserved for the male head of the family.

The Moroccan and Tokolar styles have a special place in the old urban fabric, as ‘monumental houses’ that belonged to the important families of the city. The most striking formal element of these two-storey courtyard houses is the potige, the ensemble of pilasters and ornamental features that appears above the door in the main elevation.

The Tokolar elevation differs from the Moroccan mostly in having a canopy (gum hu) above the main door and very small openings. There is usually only one window, above the entrance, the other openings to the street being reduced to ventilation holes. Moroccan-style windows have latticed sections carved so as to form voids of eight-sided stars, and horseshoe-shaped wickets. Doors may be decorated with incisions or, more commonly, with large round metal nail-heads, occasionally shaped as crescents and stars.

In the second half of the twentieth century, new types of houses appeared. The first type can be found alongside the older forms from which it seems directly derived. Like the Moroccan and Tokolar styles, it has two storeys and is also organised around an interior court. The second type, which has developed on the fringes of the historic heart of the city, looks more like an adaptation of a common model found in the villages, and consists of a one-storey compound built around a large central yard. Both of these types, and especially the latter, may be designated as ‘Plain’, since their facades have no decorations.

Nevertheless, the taste for traditional ornamentation still seems to prevail and can be seen in many new houses. The introduction of new materials has been discreet and so far mostly limited to concrete blocks for yard and ancillary-construction walls, as well as pre-cast grilles used commonly for parapets. The major exceptions are the institutional buildings built in concrete in the late 1990s, such as the school in the centre of the city and the hospital on its periphery.

Recently, private initiatives seem to have favoured rendering in concrete or facing the mud walls with baked tiles made locally, jointed with cement. The Cultural Mission does
not recommend these techniques. While they reduce the need for periodic rendering, they are in the long term quite inefficient as the adhesion between the mud wall and the concrete or mortar is not good. Furthermore, the use of these materials alters the buildings’ formal appearance and plasticity, undermining their distinctive character. For these reasons the restoration project has helped many people to improve the quality of the banco that is traditionally used for rendering.

Rendering is also a kind of ritual ceremony that brings together neighbours and other members of the community. The rendering of mosques with mud is a communal affair in the city and in the villages, with all inhabitants helping to the best of their capacities.

In this region the construction process itself is a kind of family and community affair shaped by the special ties that bind the masons and the families that own the houses. A family has ‘their mason’, as much as the mason has ‘his family’. The relationship goes from father to son on both sides (the son of the house-owner’s mason is the mason of the house-owner’s son) and lasts for the whole of their life: the mason of the house also builds the house-owner’s grave. For a mason to work for a different client requires the agreement of both the family and his fellow masons.

Masons (barey) are organised by a professional body, the barey ton, which guarantees their professional training and establishes codes of conduct and support with other professions. Apprenticeship begins at the age of seven. The apprentice goes through a clearly codified structure of training during the course of which he becomes familiar with tools and materials, building techniques, building conception and the supervision of construction, until finally, in his mid-twenties, he is officially accepted as a barey.

Magic plays an important role both as a means of protection against professional risks and as part of the code of relations between all the participants in the creation of a house.

C. Climatic conditions

The climate in this region is semi-arid. The annual precipitation in Djenné barely reaches 580 millimetres a year. These precipitations are irregular and are concentrated in just three months: July, August and September. In the three following months, the flooding of the interior delta moderates the temperature, and although it does not rain the temperature barely reaches 30°C. From January onwards, as the flood beds dry out, temperatures rise steadily to reach 40°C by April or May. The dry season is also the time of the harmattan, the harsh desert wind that brings sandstorms.

D. Site context

Djenné covers some 50 hectares on the banks of the river Bani in the interior delta of the Niger. Its development is strongly tied to the specific characteristics of this harsh context.
Like most settlements built by a river, Djenné stands on the most elevated parts of the flood plain. This strategic situation allows it to adapt to the river’s natural cycles. In the rainy season, Djenné becomes an island, barely accessible but able to profit from abundant fishing. As the water recedes, rice is planted in the swampy areas, which in turn dry out and are progressively replaced by grazing fields. These areas are finally transformed into pits for the preparation of banco, the mud that forms construction blocks and rendering mortar.

This pattern of space appropriation and integration with the context is repeated in most villages around Djenné. These villages may have their own architectural vernacular, but they have one constant feature – a mosque that looks like a scaled-down version of the great mosque of Djenné.

III. Programme

A. History of the inception of the project

Scholars from the Netherlands – specifically Dr Rogier Bedaux, Chief Curator of the Ethnology Museum of Leiden, and Dr Pierre Maas, an architect from Eindhoven – have shown an interest in this region since the late 1980s. Their published research has helped to raise awareness of the site.

In 1995 and 1996, joint missions between Mali and the Netherlands were formed. Dr Bedaux and Dr Maas represented the Dutch side, while the Mali side was represented by Dr Boubacar Hama Diaby, archaeologist and Chief of the Mission Culturelle de Djenné, Dr Samuel Sidibé, Director of the National Museum of Mali, and Dr Mamadou Konoba Keita, Chief of the Division of Cultural Patrimony, National Direction of Arts and Culture.

The Cultural Mission acknowledged the special quality of the built environment of Djenné, but also recognised that the city’s preservation was mainly a result of its isolation and its stagnant economy. Economic decline had led the collapse of a large number of older structures; to counteract this, a short-term project was launched to ‘conserve this unique monument for the present and future generations’. It was to focus on the rehabilitation of 168 major houses that were considered to be the most representative of the ‘national cultural identity’.

B. General programme objectives

The main objectives of the programme were twofold:

- The conservation and safeguarding of the city of Djenné as a living cultural patrimony. Tied to this was the need to give the inhabitants – who currently number
12,700 – a decent life in an environment threatened by different forces of change and poverty.

- The conservation and promotion of a specific ‘know-how’ on earth architecture.

Further objectives included:

- Raising the local population’s awareness of the value of their cultural heritage
- Increasing the sense of responsibility towards the vulnerable site
- Promoting Djenné as a centre of cultural tourism
- Raising the prestige of ‘earth architecture’
- Training young people in local construction techniques
- Improving local government structures, enabling them to undertake restoration and conservation operations on their own
- Boosting economic development by creating job opportunities in the fields of construction, restoration and cultural tourism

C. **Functional requirements**

Ensuring a decent life for the local people should be the main objective of any restoration project: raising their level of satisfaction also increases their awareness and sense of responsibility. Involving the local population in the project was therefore one of the main priorities here. The project itself was divided into four phases:

- In the first phase (1996-98), through the coordination of the Dutch Ministry of Foreign Affairs and the Rijksmuseum voor Volkenkunde (Ethnology Museum), funding was established and an administrative structure was formed, consisting of a Scientific Committee, an Executive Office and a Steering Committee. Site surveys were carried out to identify the houses to be restored. A pilot project consisting of two groups of houses was launched to raise the population’s awareness and gain their trust. The guild of masons, the barey ton, was directly involved.

- The second phase (1998-2001) expanded the restoration project to the 12 groups of houses and 16 free-standing houses that appeared to be the most important structures in the city. An assessment of the first works was also done during this phase and the previous restorations were maintained (with mud rendering). The agenda for this phase also encompassed the training of the members of the Executive Committee and the barey ton.

- The third phase (2001-2003) covered the conservation and/or restoration of 73 significant houses; maintenance and rendering of previously restored houses, and further training for the Executive Committee and the barey ton. Public interest in the work was stimulated by consolidating and disseminating the results of the project in preparation for its transfer to the government of Mali and final evaluation.
• The fourth phase (2003-2006) involved the maintenance and rendering of all houses previously restored, as well as the restoration of six more houses.

As part of the whole scheme, the Cultural Mission engaged a consulting architectural firm to work out the technical restoration details, submit these to the Scientific Committee and supervise the execution of the approved projects. The mission also had to ensure that the by-laws concerning the classified monuments were observed, and had to keep the population informed and convince them of the necessity and the interest of the project.

The Cultural Mission has emphasised the income generated by the project, first through the employment opportunities provided by the restoration process itself, then through building maintenance (mainly the regular rendering of the walls with banco), and ultimately through the stimulation of cultural tourism.

IV. Description

A. Project data

The buildings treated by this project are two-storey houses with one or two interior courtyards. The initial target of 168 houses was reduced to 100, a more feasible figure for the proposed timescale and budget. Interventions vary from minor repairs and wall rendering to total reconstructions based on existing documents (photographs, drawings) or people’s descriptions and memories.

During the pilot phase of the project (1997-1998), eight houses were restored. They covered a total of 4,950 square metres, of which 3,735 square metres was built.

The momentum increased after the pilot phase, with 20 sites opened in 2000. Of these, five were complete reconstructions, seven partial reconstructions, and eight schemes of simple mud rendering.

As part of the project, a systematic survey of houses was undertaken to enable the construction of a database on the city’s architecture. An architect and a draughtsman from a local firm were contracted to cover three fields: a survey of the existing condition of the targeted sites, the elaboration of the respective ‘restoration files’, and the supervision of the construction work.

B. Evolution of design concepts

The main aim of the project is the conservation of the city’s special architectural features. This requires the closest possible matching of the original forms, with the restitution of traditional motifs – pilasters, pinnacles, canopies, mouldings, toron, balustrades and
openings – as well as a biannual rendering with mud. The biannual rendering is a necessary ritual that has helped to preserve the homogeneous quality of Djenné’s architecture through the centuries. It also promotes and encourages the use of the local building material, banco.

The project allowed minor adaptations such as the possibility of widening some openings and creating new windows. Considerations such as optimising climatic conditions or plot ratios were also looked at very carefully.

There is no landscaping project as such; however, trees have been planted to improve public spaces that are defined by a group of houses.

C. Structure, materials, technology

Mud blocks are used for all the load-bearing elements: foundations, walls, pillars and pilasters. Roofs, ceilings and floors are constructed of wooden joists that are crossed with branches and then covered with fine mud. The foundations are about 1.00 metres deep and 0.80 metres wide; walls are reinforced with pilasters and wooden planks (domba) intermittently laid over the courses.

There are two types of mud blocks. The older type, now no longer used except for specific restoration work, is called Djenné ferey, and consists of roughly cylindrical pieces moulded by hand – which explains the tapered appearance of the oldest houses and the softer modelling of their pilasters and decorative elements. From the 1930s, however, it became common to shape the mud into rectangular forms, producing blocks of about 40 x 20 x 10 centimetres (toubabo ferey). This gives the houses a more angular and less tapered form, although mud rendering and weathering usually help them to develop the softer contours of the original buildings.

The earth used for blocks, mortar and rendering usually come from the site. ‘Recycled earth’ collected from collapsed buildings is also used, but is selected according to its ultimate use. Earth from pits excavated in the flood beds is also used. Complete ‘production sites’ can be seen on the banks of the river Bani, with mud pits for the blocks, blocks already prepared, and pits for the ‘fermented earth’ used for rendering.

Rice or barley straw is mixed with the mud for the blocks in a proportion described as ‘for one cart of earth, 30 bags of straw’, a bag being the size of a 100-kilogram sack of rice. The mortar is about three centimetres thick for the horizontal joints and two centimetres thick for the vertical.

The mortar for rendering is made by mixing mud with rice husks (‘ten carts of earth for five bags of rice husks’) and the mixture is then covered with water and stirred
occasionally, the same quantity again of rice husks being added gradually. The mixture then rests for two to three weeks.

Rendering the walls is part of the routine maintenance of a house; three layers of mortar are necessary before the rendering of a new wall is considered to be complete. For rendering and, to a certain extent, waterproofing roofs, a different composition of banco is needed which incorporates earth with a high content of organic material and ashes from firing pottery. This is applied in a layer 10 to 20 centimetres thick.

Mortars for the interiors contain fine sand in the mixture and the interiors are usually finished with whitewashing or painting with a water-based emulsion. The floor and stairs are often of compacted earth, although earth tiles are increasingly used. These tiles are baked in piles using cow-dung and rice straw as fuel. Once the fire has gone out, the pile is left to cool for up to 15 days. The quality of the resulting tiles is very uneven.

Ceilings and floors are of three basic kinds, depending the span to be covered:

- Fata taki (literally, ‘four wings’) consists of laying four beams that connect the midpoints of adjacent walls; on top of these, two beams connect the midpoints of the sides of the resulting quadrangles (each quadrangle uses two beams). Branches are used to fill in the voids between the beams.

- Fata hinka (two wings) is similar, but needs only two main joists. It is used for narrower and more elongated spaces.

- Dar fo (single placement), which is used for smaller spans, consists of parallel joists laid between the narrower sides. A variation of this, chetiguegum (transverse ceiling), uses two main beams in the middle and across the smallest dimension of the compartment, with thinner joists being laid between these and the top of the walls.

Drainage from roofs is ensured by ceramic waterspouts that project from the walls at regular intervals. However, the spouts are only 60 to 80 centimetres – which is not long enough to keep heavy rains away from the walls – so they often have additions made from corrugated sheet metal or plastic.

The restoration work is based on the respect of the local structural and textural traditions. Whenever necessary, excavations are made to identify the primitive original form. Existing walls are maintained and completed as needed by exposing the first sound layer of blocks and binding the old and the new parts with wooden joists (domba).

Carved woodwork is restored and reused wherever possible, but wood for new or replacement doors and windows is unadorned. Traditional baked clay tiles are used for floors and stairs.
Local masons carry out all restoration/reconstruction work, supervised by the family mason. The Executive Committee establishes a budget for each house; this is then discussed with the family mason. The family masons are in turn supervised by the project mason. Architectural conformity is controlled by the resident draughtsman, under the supervision of an architect who oversees all the work.

The introduction of certain utilities has somehow altered the cityscape. Electricity arrived in 1996, but the generators are in constant need of repair and do not produce enough electricity for the population (supply is rationed among the different neighbourhoods depending on the day of the week). In March 2007, the local authorities managed to install a higher electrical tension system (220 volts) and new electrical transformers are being built. Electricity poles and aerial cables seem to run all over the place.

Fixed telephone service is quite limited, but cell phones – and posters encouraging their use – are proliferating across the city.

The worst problem, however, concerns the evacuation of waste liquid from houses that have a water supply but no corresponding sewage network. The traditional sanitary system was based on a low consumption of water and the separation of solid and liquid waste. Toilets were located on the roof. Liquid waste went directly to an outside receptacle at ground level, while solid waste dropped through a shaft to a chamber that was periodically emptied by breaking open the foot of the shaft and removing the sludge. Washing was done on the roof terrace by the toilet. In recent years, an enclosure for the washing area has been added, in the form of a new structural element – a pillar of variable thickness – set next to the toilet shaft.

The introduction of running water totally disrupted the system and, as a consequence, open sewers are now a constant feature of the city’s streets; things have been only marginally improved by directing the liquid through open concrete-lined troughs. In 2000, the visible deterioration of the situation prompted the Dutch Embassy in Bamako to commission a study from the Technical University of Delft. This study concluded that:

- the problem of solid waste was being resolved locally
- the existing type of toilet was adequate and required no adaptation
- rainwater could continue to be treated in the existing way
- domestic liquid effluent – ‘dark waters’ – needed to be collected and treated

The main problem, then, was the disposal of the domestic effluent. The authors of the study recommended a controlled local infiltration of liquid effluent. In a pilot project in March 2007, 50 houses were equipped with local infiltration devices. It is expected that a total of 1,800 will eventually be installed. Each device costs about 55,000 FCFA; the inhabitants’ contribution is fixed at 27,000 FCFA, payable over 27 months.
The central government has also proposed a comprehensive programme for the installation of storm and domestic sewers, with treatment plants, to be financed by international aid through the World Bank. This plan also considers the disposal of rubbish, which is a major new problem.

The impact of motorised traffic is still negligible; however, the roads in the city could hardly accommodate any amount of traffic.

The master plan for Djenné was approved in 2005. It included provision for sewage disposal, waste collection and disposal, underground electricity cables and street paving. As of late March 2007, none of these provisions had been met. In the interim, the Cultural Mission has implemented remedial measures including the setting up of rubbish collection points and organised door-to-door collection of domestic waste by donkey-drawn vehicles.

D. Origins of technology, materials, labour force, professionals

The technology, materials and labour force are local. The architect was hired under a contract between the government and a private firm. Originally, the resident architect was on secondment from a firm in Bamako (BEAU, Bureau d’Études d’Architecture et Urbanisme), but since 1999 a firm in Mopti (Atelier Inter-Architectes) has provided assistance, with a draughtsman living on site to survey the buildings and a weekly visit from an architect from Mopti. The consultants are two Dutch scholars, Dr Rogier Bedaux and Dr Peter Maas.

Other partners of the project are:

- in Bamako: the Ministry of Culture; Ministry of Education and Scientific Research; Ministry of Public Works, Urbanism and Construction; Ministries of Tourism and of Foreign Affairs; the Dutch Embassy
- in Mopti: the Regional Directorate of Urbanism and Construction
- in Djenné: the mayor, the ‘Commandant de Cercle’, the town chief; the Imam; the barey ton; the local development committee and local associations such as the Youth and the Women’s Associations, and the Djenné-Patrimoine Association
- in Paris: UNESCO
- in the Netherlands: the Ministry of Foreign Affairs; the Rijksmuseum voor Volkenkunde; and the architectural and urban planning firm Rothuizen, Van Doorn’t Hooft
V. Construction Schedule and Costs

A. History of project

The project has been regularly monitored, with successive written evaluations. The first report noted a late start and consequent delay in the number of buildings and construction sites surveyed. It proposed to reduce the scope of the restoration work – from 168 to 100 houses – to reconcile the increased costs of materials and labour with the set budget. While only eight houses were completed in 1998, the following years compensated somewhat for the initial delay, with a total of 43 houses being completed by the beginning of 2001. Another 40 houses were programmed for the period 2001-2002. By March 2007 a total of 98 houses had been finished.

B. Total costs and main sources of financing

The project was entirely financed by the Dutch government. The total cost of c. USD 562,000 (FCFA 394 million) was lower than the initial estimate of USD 595,000. The rendering and maintenance of the restored houses is estimated to have cost c. USD 45,300 (FCFA 32 million). Cost per square metre is USD 4 (FCFA 2,800).

VI. Technical Assessment

The implementation of the project has responded to the methods and objectives of the programme. The completed houses have set an example for their neighbours. Observation of the ongoing work showed that the choice of materials and the level of technology follow principles that guarantee a quality not less than that of the existing, unrestored buildings.

Ageing and maintenance problems are so far the same as those demonstrated by the existing buildings and will be checked by the regular inspection and rendering of the buildings as stipulated by the programme. The evaluation made by the Dutch parties involved is very positive, concluding that great progress has been made in the implementation of the programme’s objectives and in registering a reasonable budgetary adjustment with only slight delays in relation to the initial dates.

The restoration of Djenné was first evaluated by a reviewer for the Award in 1998. Since then, the number of head masons has increased from 24 to 50, and now nearly 300 people, from assistants to carpenters and blacksmiths, are involved in the project.

After a slow start, the project reached and maintained a regular rhythm of about 20 houses being surveyed and renovated in a year. It was also noted that a certain number of houses had been added to the yearly restoration programme, not because of their architectural merit but for social reasons: these are houses for the destitute.
In spite of very poor condition of administrative logistics, especially for reproducing and copying drawings, all the restorations are documented with a graphic record that includes the existing plan, the pre-intervention situation and the restoration plan of the house.

A major early problem was the refusal of some owners to have their houses restored. At first the intentions of the project may have been poorly understood (it was even feared that the mission wanted to take the houses away from their legitimate owners).

Other owners did not allow any reorganisation of the interior to conform to the original plan, as they considered the spaces too small to accommodate modern furniture and appliances.

The most common difficulty was to get the joint inheritors of the oldest houses to come together and agree on a plan for restoration. Gradually, however, as the positive impact of the restoration work is felt, the number of reluctant owners has dwindled.

The evaluation report of February 2000, compiled by Professor Dr Gerard van Zeijl for the Dutch Embassy, underlined the need to establish a transparent decision-making process to safeguard both the collective cultural patrimony and the interests of the individual inhabitants. The report suggested possible approaches to adapting the restoration to the needs of the population without sacrificing the features that give character to the houses. Thus, three strategies were proposed: a pure homogeneous restoration (in cases of evident purity of style), a heterogeneous rehabilitation (applying mostly to the adaptation of the building form to existing conditions of use), and replacement with a new construction (when the original building is in a state of ruin). The report emphasised the need to reconcile the good intentions of the restoration team with the strict enforcement of standards by the local administration, and strongly recommended that a land-use plan should be drawn up, with a subsidiary plan of classified views to be protected.

One of the clearest achievements of the project lies in the development of the masons’ skills, not only by increasing their contact with the banco material, but also in relation to their capacity to read drawings. However, the success of the project has engendered its own problems: because of the masons’ hereditary attachment to households, they were often required to work simultaneously on too many sites. An agreement was reached in 2001 stipulating that family masons could delegate work to other masons who were not previously associated with houses in the project.

A few foreign students have been involved in research and documentation for the project. In March 2007, one student was doing his final year project on developing eco-tourism in Djenné. So far no students from Mali have been involved – Mali has no school of architecture.
VII. Users

The beneficiaries of the project are the community in general, though the houses that have been the primary focus of attention are the ‘monumental’ houses that belong (or used to belong) to the important families of Djenné.

Another benefit stems from the jobs that have been created by the project. Three hundred people have been regularly employed.

The users appear satisfied with the results, and seem to be proud to inhabit a newly restored building.

Private initiatives to restore houses have maintained the traditional detailing, although this is sometimes covered with cement rendering or baked tiles.

VIII. Persons Involved

- Mission Culturelle de Djenné with its executive director, Dr Boubacar Hama Diaby (replaced in 2006 by Dr Yamoussa Fané)
- Dr Pierre Maas, architect, Eindhoven
- Dr Rogier Bedaux, Chief Curator, Ethnology Museum, Leiden
- Architect: Idrissa N’Diaye, Atelier Inter-Architectes, Mopti
- Draughtsman: Gouro Bocoum, GIE (Groupement d’Interet Economique) Djenné
- Site foreman and master mason: Boubacar Kouroumansé, GIE (Groupement d’Interet Economique) Djenné
- Owners of the houses selected for the project
- Steering Committee (city authorities and associations): the Mayor, ‘Commandant de Cercle’, Chief of the city, Grand Imam
- Barey ton
- Local Development Committee
- Djenné-Patrimoine Association
- Women’s Association
- Youth Association

IX. Bibliography


Naima Chabbi-Chemrouk
May 2007
Typical dwelling plans, sections and details.
A general view of the city with at the background the main landmark of the city, the Great Mosque. Most houses are two-storey and have flat roof terraces. These terraces are actively used for domestic activities.

A Mason’s sketch. The sand is used as a drawing board to sketch and discuss the different housing schemes. The type of facade seems to be the main argument to be agreed on, with the future client. The facade defines the house typology: Tocolar, Moroccan or Plain.
A “Tocolar” house type. It is characterised by the ensemble made by the pilasters and ornamental elements above the main door (potige). The Tocolar elevation differs from the Moroccan mostly for having a canopy (gum hu) above the main door and very small openings.

A “Moroccan” house type. The “Moroccan” and the “Tokolar” styles have a special place in the old urban fabric. They represent the monumental houses.
A “Plain” house type. This typology had appeared in the second half of the twentieth century. As Moroccan and Tocolar houses, it’s a two-storey high house, organised around an interior courtyard. Their name comes from their facades without any decoration.

The interior of a monumental house.
The main gate of the colonial part of the city. The administrative tone, with the civic centre (mairie and other dependencies as the hotel camp) are inside this area.

Detail of a staircase. All the bearing elements of the house are made of banco. The staircase is reinforced by wooden joints that are crossed with branches then covered with fine mud.
Detail of the main architectonic elements used in the composition of the facade: Moroccan window, the pottery made gutter, and the toron which are bundles of palm-tree trunks that project out some 60 centimetres from the facades and serve simultaneously as decoration and as scaffolding for the periodic rendering of the walls.

A Moroccan window.
The latticed sections carved so as to form voids of eight-sided stars. Wickets are horseshoe shaped and the opening can be regulated.
Djenné’s main public space. The great mosque, the new manuscript centre and in the future the new museum will make this place one of the most visited places in Mali. Indeed, this place is already used each Monday for the market that draws visitors as far as Burkina Faso.

The toilets are usually situated on the first floor and have a direct relation to the main facade. This facilitates their evacuation.
During the dry season builders transform the river banks into pits for the preparation of banco, the mud that forms construction blocks and rendering mortar.

Rice or barley straw is mixed with the mud for the blocks in a proportion described as “for one cart of earth, thirty bags of straw”. The mortar for rendering is made by mixing mud with rice husks and the mixture is then covered with water and stirred occasionally, the same quantity again of rice husks being added gradually. The mixture then rests for two to three weeks.
Wood is used for the construction of floors, ceiling and roofs. It is also used for toron, this natural architectonic elements and details so specific to the region. The toron, which are bundles of palm-tree trunks that project out some sixty centimetres from the facades of taller buildings serve simultaneously as decoration and as scaffolding for the periodic rendering of the walls.

Rendering is a kind of ritual ceremonial, gathering neighbours, and even children.
The introduction of new materials has been discreet. Recently, private initiatives seem to have favoured rendering in concrete or facing the mud walls with baked tiles made locally, jointed with cement. Nevertheless, the taste for traditional ornamentation seems to be prevailing and could be seen in many new houses.

There are two types of mud blocks. the older type, now no longer used except for specific restoration work, is called Djenné ferey and consists of roughly cylindrical pieces. From the 1930s, it became common to shape the mud in rectangular block forms (toubabo ferey).