

The Timber Frame Building Tradition in Sri Lanka

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Timber Frame Buildings

The timber frame used with a simple plan has long been the basis of Sri Lankan architecture. Even when Buddhism arrived in the Island from the mainland of India in the year 250 B.C., there probably were the simple timber framed buildings, a tradition which later helped to develop the timber roofs of the stone and brick monastery buildings, the ruins of which we see in Anuradhapura, Polonnaruwa and other historic cities.

The existence of several well preserved timber buildings in the Kandy district shows the continuation of this tradition and is evidence of a highly developed system of carpentry. The simplest timber building has been a rest hall, *Ambalama*, of four pillars beams and a roof. These rest halls, *Ambalamas*, located on roadways close to villages and temples served several purposes: as a meeting place for the village folk, as a place for the government officers to transact official business or as a resting place for the visitors to the village.

Many fine examples of these *Ambalamas* restored by the Archaeological Department in recent years are in easily accessible locations to visitors. *The Tampita Vihara or Temple on Pillars*

The temple building with an enclosed

room for a Buddha image and a verandah all round is usually built on a grid work of beams and a timber floor placed over boulders or stone pillars at the intersections of the beams. The *Ambalama* rest hall, also built of beams is set over boulders probably in its earliest form or had a boarded floor for sitting and sleeping. At Panapitiya *Ambalama* a wide plank set over the floor beam provides a wide sitting or sleeping area. The shrine room at Tampita vihare at Bihalpola is set on beams placed over large boulders and is a continuation of the *Ambalama* tradition. The *Vihare* at *Medawala* is a more elaborate structure where the beams are set over carefully chiselled stone pillars. The building on pillars has several forms, from a low structure, to one of two levels where the lower ground floor is often used as an open hall or *bana maduwa*. The mud walls of the shrine room are protected by the pillared verandah. The inner face of the shrine has paintings which are thus protected by the wide roof of the verandah. The examples illustrated help to give an indication of the variety and suggest the evolution of a simple timber tradition of building.

Wood Work

Over the years woodwork and wood joinery has been followed and imitated in stone. The back-rest of a stone couch

in the western monastery of Anuradhapura has the shape of the back rest of a timber couch.

The stone ceiling of a room in the baths at the Royal Pleasure Garden has been detailed to suggest beams and timber boards with an overlap as in a wood floor.

Carved as a decoration in the Nilakama Bodhigara are rock beam ends forming a decoration. At the top of Sigiriya rock dove-tail grooves cut vertically suggest places where timber was used.

The tops of large pillars have been cut to receive large beams in the *Poyage* of Abhayagiri Vihara. The mortice and tenon has been used in stonework as is done in woodwork. Doors and windows of stone are taken from wooden types. The above mentioned example bear ample evidence of the technique of carpentry with very clear joinery, technique of carvings and methods of assembly.

The preparation of the timber usually of very large size was done with the axe and the adze; the beams were hewn to size from large tree trunks.

The common carpentry tools in use were the adze and chisels of different sizes. A master carpenter would have his own chisels specially designed for the job he had in hand.

Building Types

In a study of Sri Lanka's woodwork we can discuss a few outstanding buildings which are restored to their original design in the traditional manner.

Ambalama

The Ambalama is the simplest of these. An *ambalama* or rest hall had been a feature of every village and temple. Its design varied with the location. The simplest structure had four pillars while the larger had two or more

of pillars.

The structure sat on a boulder or on beams placed over four boulder-supported carved pillars and had a roof. The rafters on the roof radiated from a central pin. These were carved. The pillars containing carvings depicting scenes from village life or traditional designs. The beams too were carved.

The Tampita Vihara Temple on Pillars

This is another type of building. This is the pillared hall which really is an extension of the *Ambalama* type of construction. Here there was the opportunity for carvings to be done on beams as well as on the pillars.

Wattle and daub buildings with plastered walls were provided with wide verandahs and roof supported on timber columns. The ceiling beams were painted and the verandahs provided with lacquered and turned balusters.

A few examples of restored timber buildings would help in an understanding and appreciation of the timber architecture of Sri Lanka. The Buildings of special interest, a library, a temple pillars, on *ambalama* and a timber bridge.

Padeniya Shrine Room

Padeniya is situated on the old Anuradhapura road about 4 miles from Wariyapola and a mile or so from the Ridi Bendi Ela. The shrine room at this site is built wooden pillars with a heavy mud wall on the outside and four inner painted walls partitioned for a small shrine room; The outer wall has figures of seated lions moulded in mud clay and painted made to appear carrying the weight of the roof on their heads. As a matter of fact the walls are all decorative and not load-bearing whilst the wooden pillars carry the beams which support the roof.

Padeniya Library

The most interesting buildings at the site is a mediaeval library. The building is simple and is entirely built on the sloping rock with heavy walls of stone in mud construction. This is a rocky site and stone is available in plenty. The timber work is confined to the few doorways, small windows and the roof. The roof slopes on two sides. The building is built on two levels following the slope of the rock. On the two gable ends two smaller roofs like sun-shades have been projected from the wall plate with the help of wood-pins.

This interesting detail is not seen elsewhere. Within the building a hollow of the rock has been boxed out with a timber deck to serve as a paddy store. This is yet another ingenious method of storing paddy in a dry underground store. Boxes containing ola books line the sides of one room.

The roof being the only section of timber construction is of particular interest here as it contains many interesting types of tiles. Of interest is a vallance tile which is beautifully carved and gives the gable end of the roof a finish very much like the end of a straw thatched roof where the straw gently curves downwards.

There is clear proof that all materials used in this building were obtained at site and tiles and timber work done by the village potter and carpenter. The building which does not appear to have been disturbed till a few years ago when the Archaeological Department chose for restoration contains a wealth of Sinhalese carpentry and joinery. Of particular interest is the joint on large beams and wall plates. Rafters in this building are wide planks with neatly finished undersides serving as a ceiling as well.

Tampita Vihara at Medawala

This temple is situated in the village of Medawala (which gets its name from the temple) a distance of 8 miles from Kandy town on the Ranawana road off Katugastota town.

The shrine housing a seated Buddha image is built on a platform of timber construction erected over low stone pillars. There are many temples of this type built on low and high platforms in various parts of Kandy, Kegalla and Kurunegala districts. To example are the temple on high pillars at Anbulugala in Mawanella, and at Dorabawila in Panduwasnuwara.

Medawala Vihara is a simple building but affords one a very clear idea of ancient timber construction. A series of heavy timber beams have been laid over low stone pillars 3' 6" in height. The reason for raising the building off the ground may possibly be to keep the timber free of white ants and woodrot. On the wood boarded floor a room of wattle and daub construction serves as the shrine. There is a verandah all round with a lacquered turned railing of timber.

The shrine room has paintings of a Jataka Story on its plastered walls. The Timber ceiling fixed at a height of 8 feet has also been painted. The roof is of the two-slope type seen in most buildings of this period, covered with flat tiles.

There is historical evidence to prove that there had been a two-storeyed temple at this site which was later replaced by this shrine on pillars about the year 1755 during the reign of King Kirthi Shri Rajasingha. This King is credited with the repair, renovation and restoration of many temples of this period.

The entrance to the shrine is through a small heavy wooden door which too is heavily carved and painted.

Poets of the period have sometimes preserved for us complete descriptions of these temples. Middelawa Korale describes a shrine at Nikaveratiya thus:-

“Fixed to the ground are dressed stone pillars. On the pillars rest the grid of woodwork made up of extra large beams etc.”

It is not certain how the temple on pillars originated. However, it is possible that just as the *bissa* or barn built of timber was raised on stone pillars as protection from weather and white ants, so originated the shrine on pillars.

Timber Architecture

The architecture of the Kandyan period consists mostly of heavy timber construction with the wood protected from the elements by a large roof and the floor raised well above ground level.

The Temple of the Tooth, Kandy, is one of the finest example of the temple on pillars with a balcony, a lower roof, as well as a two-pitch upper roof.

Conservation

The Department of Archaeology has been engaged over the years in the conservation of many timber buildings, some very simple rest halls - *Ambalama*, to elaborate temples on pillars - Tampita vihara, Devala, and Dig - gé pillared halls. The author who, during over thirty years of service in the Department, had been associated with some of this work was able to gather the material that forms the basis of this article as well as gain experience connected with the conservation of timber buildings. This chapter is intended to be a record of such experience for the benefit of those who will attempt similar works in the future in the restoration of many other timber buildings yet to be restored in various parts of the country.

Building types

Timber buildings are not altogether

of timber construction. The main structural units in these buildings are of timber. The buildings are of a variety of types. There are the simple paddy bins large and small; the *ambalama* of 4 parts to those with 2 or 3 rooms with posts and beams; the temple on pillars, simple and small to the ones on high pillars with the ground floor serving as an assembly or preaching hall.

Where a room has to be enclosed, it has been done with wattle and daub construction. Whilst the timbers have been carefully carved, the mud walls plastered over contain paintings depicting *Jataka* stories, some of very special interest. Of a special type is the library building at Padeniya built over a large rock built entirely of wattle and daub walls, and a timber roof covered with tiles.

1. *Ambalama at Mangalagama*

Many rest halls or *ambalamas* have also been built in the same tradition of timber construction.

The most interesting example of an *ambalama* is found at Mangalagama, a village one mile from Kegalle on the Colombo - Kandy road. The site when discovered by the Archaeological Department contained a few pillars and some fragments of beams from the woodwork of the old roof. By a careful study of the site and the fragmentary remains, it was possible to conjecture the entire building and restore it to its original form. Some sketches and a very old photograph in “*Medieval Sinhalese Art*” helped in no small way in arriving at a correct conjecture of the roof and its joinery.

The building now fully restored serves its original purpose of a shelter for the village folk who come there to travel to town. Its location on an ancient footpath leading from Mawanella to

Rambukkana makes it an important landmark.

2. Wooden Bridge at Bogoda

The only existing example of an ancient timber bridge with a roof is found in the village of Bogoda off Hali-Ela in the Badulla district. The bridge consists of three large beams (three trunks) placed across the stream supported in mid stream by a pier of two tree trunks.

One may call this a large *edanda* or foot bridge. It has a timber deck, wooden pillars supporting a roof and an outer railing on two sides with beautifully turned balusters. The roof protected the timber and also gave shelter to the tired villager on his difficult climb up the hill to his village.

Condition on Discovery:

A timber building is usually found in a state of disuse and decay, completely abandoned, with a lot of evidence of its original form destroyed, by the time it is discovered and considered important to be restored. In most cases all that remains would be a few pillars and fragments of beams. In one particular instance the only evidence of a timber roof was found in two pieces of carved timber, a bracket and a post, decayed beyond use, preserved by a nearby shopkeeper as a souvenir, the site of the buildings itself indicated by a few isolated stone pillars. It served in its dilapidated condition as a cattle shed, the pillars being used to tether cattle for the night. A careful study of the site revealed the plan of the building and a photograph taken before its collapse related the roof form to the bits of timber which were available. It is thus that research in the restoration of a timber structure had to be done beyond the building itself with information from neighbours and from records at the archives.

Building Problems:

Sometimes a timber building, the walls of which are in wattle and daub is found restored with brick walls, and new posts, in a way that its original form remains completely obscured. The decayed floor beams are removed and replaced with a heavy rubble foundation and the timber floor with a brock paved and cement rendered floor. In such cases conservation is attempted only on the roof structure. Timber buildings go through many changes over the years. It is important to discover accurately the original form of the buildings. This involves both a careful study of the building at site as well as in the records of the archives. This helps to date the building and place it in the correct context of the history of the place.

In most buildings at the outset itself it would be clear that the roof of the building could not stand without the many props of timber posts and brick pillars which have been added from time to time. Very often timber posts have decayed and been replaced with brick pillars of a later period design. The floor and foundations too have undergone changes whilst the roof itself becomes a mixture of carved old rafters and new ones covered partly with flat and partly with half round tiles. With these changes the roof shape too has changed to a single slope roof or one of two levels. It is, however, this roof structure that provides the best clue to the age of construction of the building and its design.

In the study for conservation, the architect's type of record in measured plans and sections is essential. This gives the necessary details for placing the building in the context of its history and the conjecturing of its original form

in relation to existing examples of similar building. A careful study of all joinery forms and cuts in beams and rafters indicate how they were originally used. By a study of design of a rafter it can almost accurately be placed in its original position as all rafters which radiated from a central pin were individually carved.

A list of some of the timber buildings restored in recent years by the Department of Archaeology appears at the end of the chapter. For purposes of this study, I have described the special problems which were peculiar to some of them.

Medawala Tempita Vihara

The Medawala Vihara situated in the village of Medawala off Katugastota is a temple of the 18th century, built on a timber floor constructed over short stone pillars. Heavy beams placed over the stone pillars supported a timber floor with a central room of wattle and daub construction. The walls of mud with a fine coating of smooth lime plaster finish contained paintings of Buddhist (Jataka) birth stories. The roof and outer verandah had decayed and all that remained were a few old rafters and two turned balusters to give an indication of its old construction. The rest had been replaced from time to time. There was sufficient evidence and with the assistance of the village craftsmen whose ancestors had build this vihara it was possible to restore the building to almost its original design and now serves as the shrine room it was intended to be when first built.

Panavitiya Ambalama

The *ambalama* at Panavitiya is situated in the village of Panavitiya off Metiyagane in the Kurunegala district. It had totally collapsed by the time it was taken up for restoration. A series of

photographs taken before its collapse with its cadjan cover over the old decayed timber frame gave all details for its re-construction. At the outset itself it was clear that the only way for its restoration was to totally dismantle the whole structure and reassemble it with new units replacing all decayed posts and beams. The roof was of particular interest with carved rafters meeting at a centre pin on the two ends. With the units all drawn out and recorded in plans and taken out, it was possible to prepare identically carved new ones to replace all decayed ones. The old decayed rafters and beams were sent to the museum whilst the new ones took their place. It was thus possible to give life to an old meeting place which once more serves the village and its neighbourhood. Here again craftsmen with traditional skills in the craft were able to restore the decayed carvings in great detail and accuracy adding their own name to the list of old craftsmen who constructed the *ambalama*.

The Mangalagama Ambalama

The *Ambalama* at Mangalagama is located on the Kandy / Colombo road about four miles from Kegalla town. When it was taken up for restoration there were only the stone pillars of the original structure at the site. Since many pillars were in their original place it was possible to conjecture the plan of the building accurately placing the missing pillars in their original positions. A piece of a bracket from a pillar gave a clue to the size of beams whilst a post which supported the intermediate purlins gave the indication of the slope of the lower roof. A record was available in "*Mediaeval Sinhalese Art*" which gave a sketch of the roof, a joint of a beam, as well as a photo taken with the roof intact, all of which gave the details

required for a conjecture for its reconstruction. Once more a search beyond the building proved useful in a restoration achieved with success.

Padeniya Library

The ancient library building of the Padeniya Vihara is an unique example of ancient carpentry and craftsmanship. It is situated at the Padeniya junction on the Wariyapola / Anuradhapura road. The wattle and daub building built on a large rock has a stone foundation, a timber floor and wattle and daub walls with a timber roof. The roof which slopes on the lower side of the site follows the slope of the rock and is stepped down to two levels. The entire woodwork has been done without the use of any iron nails, using wood pins wherever necessary.

There is thus a wealth of ancient joinery in the carpentry and very clever construction of intermediate roofs. The tiler and potter too have done their bit to enhance the beauty of the building by producing tiles for the roof, valance ridges as well as the sides of the roof. The beautifully curved valance tiles on the sides give it the effect of a thatched roof with the straw smoothly falling over the edges trimmed off neatly.

Among other buildings which have been restored there are many of special interest, These include a wooden bridge in the village of Bogoda at Badulla, the vihara at Ambulugala and Dorahawila, the audience hall at Kandy, the Embekke Devale, Badulla, Ratnapura Devale and the Ridi Vihara at Kurunegala.