Styles of vernacular buildings among the Tetum: An architectural field research report from Central Timor, Indonesia.

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Abstract

This article is based on field research conducted in 2004 and 2011 among the Tetum people of the Belu region in Central Timor. As descriptions of Tetum houses and settlements are rare in scientific literature, the author attempts to fill the existing gaps and summarize the present situation. It shows the development of a new vernacular style based on newly-available materials such as concrete, processed timber and corrugated iron, whereas the older vernacular building style mostly used unprocessed natural materials including round wooden elements, plaited palm leaf and grass. While the old style features only a few wooden elements which were shaped with hand tools and most materials were obtained locally, the new vernacular style, although keeping many elements of former layout and design, relies mostly on elements which have been obtained through trade or import or have to be processed by machine. Currently, Tetum settlements have a mix, featuring many old-style vernacular buildings, interspersed with some new-style vernacular, and a few modern buildings, which completely break with all traditions and are built on the ground, orienting themselves on uniform architectural models widely used within Indonesia.

Keywords: Vernacular Houses, Timor, Indonesia, Tetum, Wooden Architecture, timber construction.

Introduction

The Tetum people, who speak an Austronesian language, live in central Timor and number around 950 000 (Grimes et al, 1997). They have settled both in parts of Indonesian West Timor and also in large parts of East Timor. The West Timor region they inhabit is also referred to as “Belu” (Cunningham, 1967), while in East Timor, Tetum-speaking areas include the surroundings of the town of Suai and most of Viqueque (Vikeke) district. The northern half of Belu is hilly, while the southern half, where field research was conducted, is relatively flat, allowing villages to spread out. The climate of Timor can be described as dry in comparison to other parts of Indonesia. The average temperature is high and the climate generally hot, except for higher mountain altitudes, where it can be cold, especially during the night. Important also for agricultural activities is the marked dry season caused by the monsoon climate, with the wet season usually lasting from December to April:

> “In Nusa Tenggarah Timur, most of which lies south of the equator, the wet northwest monsoon winds start in December […] maximum rainfall occurs normally in January and February. March and April are unsettled, as the monsoon winds die and the trade winds reassert themselves. From April, the dry southeast continental trade winds blow from the cooler Australia mass, picking up little moisture as they cross the Timor Sea. July and August experience the strongest and coolest dry winds, while September and

> November *are again unsettled. […] Because the northwest monsoon winds pass over west Indonesia before reaching Nusa Tenggarah (including Timor) the winds have already lost much of their moisture before reaching this area."*
> Monk et al 1997: pp. 70-71

The climate has also an impact on house building. Large trees are scarce and are a valuable commodity (probably also due to the human impact), but also because there is no dense rainforest cover in the island. In the mountain regions, the cold nights can be an issue, and buildings have thick, thatched roofs that almost reach the ground. They very probably do help to keep the interior warm. Sometimes local people consider durability against strong winds as an explanation for rounded house parts (roof form) in the region. It is true that strong winds initially break up and then damage thatch on the corners of a building. Conical and rounded forms show more resistance against such effects, but these explanations are probably only a part of a larger truth. The occurrence of round(ed) house forms as such in Timor can probably be explained by several other reasons, too, so a mono-causal explanation would be doomed to fail anyway. In this article, the question will not concern us very much, as Tetum houses are rectangular, with only slightly rounded roof and thatch.

Not much ethnographical work has been done on the Tetum: the most concise work is probably Vroklage´s work on Belu from 1953 (Vroklage, 1953), which contains very valuable information and covers many aspects of lifestyle, material culture, customs and beliefs. Unfortunately, it is written in an outdated style, as it is the product of its time, with a mostly pre-WW II and colonial approach. A definitive study on a group of the Tetum called "Carabaulo Tetum" has been done by Hicks in a part of Timor which now belongs to East Timor in 1976 (Hicks, 1976). Since then, not many ethnographic studies have been conducted, an exception being work on issues relating to the emergence of the Republic of East Timor, where the Tetum language is recognized as one of the country´s official languages.

Tetum houses are described by Hicks (1976: 56-67) and in Cinatti (1987: 163 – 204), although both sources focus on the situation in the Eastern part of the island. Thus, their findings seem to slightly diverge from houses observed during the author's fieldwork in the more central regions of the island (this is apparently due to small regional variations in house design). The author´s fieldwork was conducted in 2004 and 2011. The situation in 2004 largely corresponded with the sources from 1976 and 1987. As far as materials and building technology were concerned, by 2011, modern materials and new technologies had arrived in central Timor. A noticeable number of houses were built on concrete piles (instead of wooden piles buried in the ground) and the frame of the building had changed in some cases to sawn, square timber instead of round wooden parts

Objectives

The aim of the research was to obtain source material for the author´s work on structural aspects of Indonesian wooden architecture (for other research areas see also Doubrawa & Zámolyi, 2007, Zámolyi, 2013 and 2018 – in print preparation). The most important goal was to provide an overview on the state of vernacular architecture in the region. A few objects were selected for more detailed investigation. These objects were selected either because they were typical (representing features shared by many other buildings) or because they were unusual for some reason. Of all villages visited a general photo-documentation was done, which meant that almost all buildings were photographed from the outside. Further research concentrated on architecturally important features, especially the structural systems of the buildings. This article presents a more general approach, which tries to show trends in the change of vernacular architecture in the region.

Fieldwork and Methodology

Fieldwork was conducted in 2004 in Besikama District, in the area of Ikumuan village, and in 2011 again near the 2004 location, in the settlements of Haeitemu, Kamanasa, Dato Oan, Moto Ulu and Harekain. Besikama (the district centre) and the small villages are situated on a river plain relatively close to the southern coastline of Central Timor. Overall time spent in the area was in 2004 four days, and in 2011, approximately ten days.

Focus of the fieldwork was architectural survey, photo-survey fit for photogrammetric analysis[1] and general photo-documentation. The results of the classic architectural survey, which was conducted manually on one building in Ikumuan village is presented in this article. The survey was conducted by measuring the building with the help of a handheld distometer, measuring tape and levelling staff and documenting the results on paper. Plans were drawn 2D in a CAD programme. Apart from this object, approximately 5 other buildings where recorded for photogrammetric analysis.

In case of those buildings of special interest recorded for later photogrammetric analysis, a semi-structured interview was conducted with a set of questions prepared on the construction process, materials and building tools. Questions about ceremonies conducted during the building process and the use of the building were asked, but did not constitute a focus of research. The reason for not concentrating on them was their complexity and the difficulty to interpret these answers without the possibility of a longer observation period in the field.

In 2004, the author was aided by a translator from Atambua, who was Bunaq, but could speak Tetum, while in 2011 the guide and translator was a relative of the Raja of Nikiniki, and thus of Atoni Meto descent. He seemed to be recognized by the local communities as a person of respect and was known to them, but of course he himself did not have an inside perspective of the communities visited. The Atoni region is bordering on the Tetum-speaking areas, but is culturally quite distinct from the former. On both trips, the author was the only foreigner, with the guide and translator originating from a neighbouring district. Access to the villages was in 2004 by a rented car, in 2011 on moped.

The interviews were conducted after documenting the building, usually in the time of an hour, which was spent with the inhabitants before moving to the next object, or resuming the walk through the village. The persons answering the questions were usually either the head of the family or senior persons within the household and typically men. In a few instances also women acted as informants, e.g. in case of the carved house in desa Kamanasa. Usually the questions were asked in a situation where most inhabitants of a house (and often also neighbours) were sitting together and sometimes contributing to answers as well. The time was also used to explain the purpose of the visit and to socialize. On these occasions, usually men, women and children residing in the household took part.

Although quite a lot of information was obtained with the help of the interviews, the statements could not be always fully counter-checked or set in a wider context, as the time spent with the villagers was always short, and sometimes also the translation of the guide slow or vague. The data extracted from the interviews was meant to aid architectural survey, but not as a research in its own right. Mainly it was used to be able to provide a base for technical description of the buildings, but not as a source of anthropological data proper. However, the informants often sidetracked in their narratives. This revealed aspects of vernacular architecture in close interrelation with many other aspects of life and local spiritualism. This information was noted down, but the author was unable to follow up on these aspects properly, as time was very limited. Where such additional information

[1] With the help of photogrammetric analysis a subsequent production of point clouds and a 3D – model is possible. This model has a higher precision than manually conducted architectural survey.

seemed coherent, it was used in this article although much of it still has to be re-evaluated in a future field research.

In all villages visited, a walk through the entire villages was conducted, in which almost all buildings of the settlement were photographed to be able to judge typical features or special and unique buildings. Sometimes buildings under construction could be observed, which provided opportunity to document construction process and tools used, albeit only in that current state of work, as almost every day a different village was visited. Mostly new vernacular buildings were under construction, no work on old style vernacular buildings could be witnessed.

Old-style Vernacular:

The old-style vernacular houses in the visited villages all had a relatively uniform shape, with only one or two exceptions in certain villages, where the proportions of the buildings were somewhat squatter, and the buildings were erected on higher piles. Usually, houses had a more elongated appearance. There were some special ritual buildings, “uma lulik”, which had a very low wall zone almost completely covered by the roof and its thatch, and these were generally smaller than the dwelling houses. The appearance of these ritual buildings could reflect an older, more archaic dwelling house style. A discussion of this topic would go beyond the scope of this paper. However, given the general trend for older buildings to have smaller wall zones in Indonesia, the possibility should not be dismissed. At the same time, there are also modern interpretations of *uma lulik*, which preserve the appearance and proportions of the old-style version, but are built, for example, on concrete piles and use square sawn timber for the building frame.

Fig. 1 and 2. Tetum “uma lulik” or sprit houses are smaller than the dwelling house and have a roof which extends almost to the ground. Desa Naas, Besikama district.
Source: author, 2011.

Fig. 3 and 4. Surveyed Tetum house in Ikumuan village
Source: author, 2004.

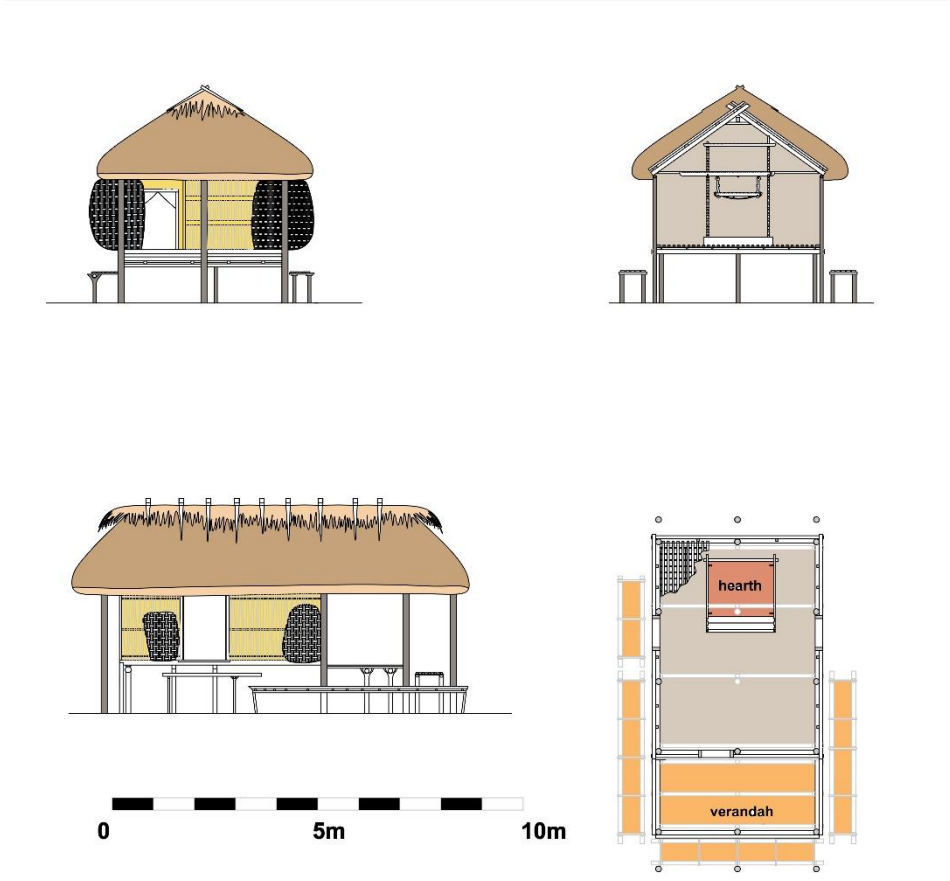

Fig. 5. Plans of Tetum house surveyed in Ikumuan village
Source: author, 2004, editing of plans: Annamária Koncz.

House surveyed in Ikumuan village

In 2004, a house in the village of Ikumuan was surveyed: since this was found to be quite similar to all other dwelling houses of the village in question, and will be described below in detail.

The ground area of the house is approximately 4m x 8.6m, with an overall height of 4.8m; of which 1.2m is taken up by the piles, 2m by the wall zone and 1.6m by the roof. However, on the inside of the building, the roof volume is not separate from the living area (i.e., there is no attic).

The house has an elongated hipped roof, and a verandah in front (on one of its shorter sides), which is situated 15cm lower than the inner floor and is 1.8m deep. There are smaller, around 20cm lower, platforms in front of the verandah and to the side of the building. The house has one entrance from the verandah: this is called 'Lor', and can be found on the left hand side of the crosswall, not centrally situated. One entrance is in the middle of the right[2] longitudinal wall (this entrance is called La Sae) and one entrance on the left longitudinal wall (called Rae). The house itself consists of a single (undivided) room, with a hearth situated centrally on the 'back' end opposite the entrance from the verandah.

Hicks (1976: 57) describes the Carabaulo Tetum houses as having a size of 10.5 x 3.6m, with an overall height of 4.5m, standing on 0.9m high piles above the ground. A distinct difference described

[2] When standing facing the verandah

by Hicks is that these houses apparently have a front and a back verandah, each being around 3.6m deep. The house has a front and a back entrance, but no side entrances. According to Hicks, the back entrance is usually used by women and the front entrance is used by men. In Ikumuan it was not stated explicitly whether one entrance was for men and the other for women, although Lor was the main entrance and Rae the "kitchen door". It was added that the La Sae entrance was used in connection with rituals; e.g. when the hair of a new-born child was cut for the first time, or when a dead person was carried out of the house.

According to Hicks, the building is like a buffalo for the Carabaulo Tetum, with several very explicit analogies with the animal´s body used in the nomenclature of the building. During research these topics were not enquired specifically. They belong to the field of symbolic meaning, which was not an explicit objective, but it would be certainly interesting to explore whether the same analogies are used in central Timor, and whether they are applied in a similar way. The slightly different configuration in terms of the verandahs and the different placement of entrances in the two regions might modify such analogies. Interestingly, Cinatti (1987: 184, 185) also describes very similar houses in East Timor, with what seems to be an identical three-entrance configuration (as found in the author's field research) quite near to Hicks's research area.

The structural system of the Tetum house is based on piles buried in the ground. There are piles, which support parts of the roof and at the same time create the walls, and there are piles which support the floors of the inner part of the house, the verandahs and different smaller platforms. The expression "piles" are used to indicate that these vertical elements are in contact with the earth. In Ikumuan village, they are buried one klili deep, a klili being the distance from the endpoint of the outstretched fingers of a hand up to the shoulder (around 0.7m). All piles are round and unworked in cross-section, with the smaller ones usually chosen with a slightly forked end, which will receive horizontal floor beams. The piles which hold up the roof are usually somewhat larger in diameter, around 15cm, whereas those which support the floors are around 10cm thick. The larger piles often do not have naturally forked ends, and in this case, a slit is cut into the ends large enough to receive the wall plate or the ridge plate. The two highest piles which carry the ridge plate have a ritual significance according to Hicks (1976). In Ikumuan, their length was determined by locals to be 3.5 roa. Roa is the Tetum expression for the length encompassed by a man´s outstretched arms, measured from the fingertips of the left hand to the fingertips of the right hand. This unit of length is usually referred to as fathom in English language. The specification would make the house (excluding the part buried in the earth) a little over 5m high, a building somewhat higher than that is described by Hicks (4.5m) and the house measured during fieldwork in 2004 (4.8m). However, during the author's visit to several villages in 2011, a slight variation in both the height of the substructure, and the proportional height of the roof was noticed. Thus, there were houses which had a relatively high "heap of thatch" as a roof, and others, which had a lower, elongated appearance. The height of the piles carrying the wall plate was given as two roa, which would make the wall zone with substructure (if one subtracts the 0.7m which goes into the ground) around 2.5m high. The large piles in the middle of the houses have ritual significance and there betel-nut offerings are placed in front of them[3].

[3] Offerings are placed usually near the front middle pillar, which is near the entrance from the verandah, as the other middle pile is usually behind the hearth.

Fig. 6 and 7. Houses within villages are built with wide open spaces in between, Besikama district, Desa (village) of Kamanasa
Source: author, 2011.

Piles are sometimes decorated with simple carved patterns. *Aksisi* wood is used for the piles, *lontar*-palmwood or *aknase* wood for parts of the roof, and for the doors, a wood called *kanukur*. Small laths of *pinang* or *lontar* (both palmwood) are used for covering the floors. The walls themselves are plaited from *gewang* palm (this plaiting is called *gajan* in Bahasa Indonesia and *klenimane* in Tetum). *Gewang* is also used to thatch the roof. Beside the plaited walls, large fans plaited from palm leaves are used to temporally close off the open parts of the verandah or to cover the entrances. Hicks states that the piles of the buildings are made of teak: unfortunately, it has not been possible to ascertain the English (or scientific names) for *aksisi*, *aknase* or *kanukur*. What is known as *pinang* is the areca palm (*Areca catechu*) and *lontar* is also called Asian Palmyra palm (*Borassus flabellifer*). The *Gewang* palm (*Corypha utan*) is also called the cabbage palm in English (Monk et al, 1997). *Aknase* may be some species of mangrove tree, as indicated by informants in Ikumuan, but this is not verified yet.

Although the structural system of the building would make it possible to have the entire building constructed from round parts of wood held together by lashing, there are usually quite a few elements which have square cross sections or are connected with some sort of carpenter´s joints. However, we should keep in mind that at least the simpler versions of the houses are not dominated by square elements and carpenter´s joints, and thus a 'historical' version of this building with lashed connections only is very likely to have existed.

Some of the wooden elements are decoratively carved, especially the hearth – which consists of a 'box' assembled of boards, usually with special corner joints, and four posts reaching upwards, holding a two-or-three-storey shelf made from horizontally-jointed elements. This seems to be a focus of workmanship and carving. Both its structure, essentially a post-and beam construction, its joints always being carpenter´s joints (never lashings), as well as its decoration, which is carved, testify to its importance. Different building concepts apply to the hearth than with the main structure of the house. It is also interesting to note that although the superstructure of the most modern versions of the Tetum house in the area is made with concrete piles using sawn timber, and with many joints nailed, and boards as floor and wall material, the hearth has not changed even in these houses. Sometimes a hearth of an older, ruined house is re-used, or an exact replica of the old designs is made. The re-use seems in most cases more probable, although no conclusive investigations have yet been made.

Fig. 8. Sprocket at the eaves of a Tetum house carved in the shape of a human head**,**
Source: author, 2011.

Fig. 9. Hearth inside a Tetum house
Source: author, 2011.

New style vernacular:

Two versions of a newer vernacular style have been found in the region. The first to be described seems so far to be a unique project, only one building of this style can be found in the region (house Uma Lalor in the desa Kamanasa). The reason why it is discussed here at length is, that it shows closeness to the old style vernacular, while being very innovative in certain aspects of structure. The second style of new vernacular seems to have established itself as a modern alternative to the old style vernacular, is built in many villages with very similar properties and relies very much on imported or processed materials.

Fig. 10. Wooden house with elaborate carvings and a modernized structural concept, Kampung Dato Oan, Desa (village) of Kamanasa
Source: author, 2011.

Fig. 11. Wooden house with elaborate carvings and a modernized structural concept, Kampung Dato Oan, Desa (village) of Kamanasa
Source: author, 2011.

The carved house in Desa Kamanasa

The house is situated in Kampung Dato Oan, a part of the Desa Kamanasa, and is called *Uma Lalor*. According to an inscription above the door, construction was started on 15.09.2003 and it was completed on 29.06.2007.

In the opinion of the family hosting the author during field research in the nearby village of Haeitemu the building in desa Kamanasa was a new, modern interpretation of 'older ways' of building, and they were of the strong opinion that "the ancestors did not approve" of such ways. They did relate deaths in the house owner´s clan to the ill-will of the ancestor spirits. The belief in ancestors and spirits in this region is often practised alongside Christian beliefs. Many houses contain images of Jesus Christ displayed in prominent locations, and people usually attend mass on Sundays. Nevertheless, a very strong spiritual and everyday influence is still attributed to ancestors and spirits. There was not enough field work time to find out whether such interpretations were shared by other families or members of other villages nearby. However, the reception of the building is important, as it is a unique reinterpretation of the older vernacular style in a modernized form. It can be characterized as still relying much on local materials and old forms. The design would provide a very appealing additional alternative local building variety to all those very modern buildings emerging at the moment. Maybe it was the fact that the large number of applied carvings all carried important symbolical meanings which made the building controversial. Elsewhere, the use of modern materials was observed in more than one *uma lulik* (sacred / spirit house), and no negative comments concerning them were made.

Another aspect of the case is that it demonstrates, that Bali as a tourist centre occasionally quite unexpectedly shapes the interpretation of cultural heritage within the wider region. The building was funded by a member of the clan (*suku*) living in Bali and working in the art trade, either selling antiques in a tourist shop ("primitive art shop"), and /or (also) producing new "antiques" by traditional handicraft methods like carving and carpentry. Apparently, he taught members of the clan to carve (probably by inviting them to Bali) and afterwards the building was erected in a joint effort. The person initiating the project had had "a dream of the past" in which it was revealed to him how he should build the house. After that, the old people told him which motifs to carve.

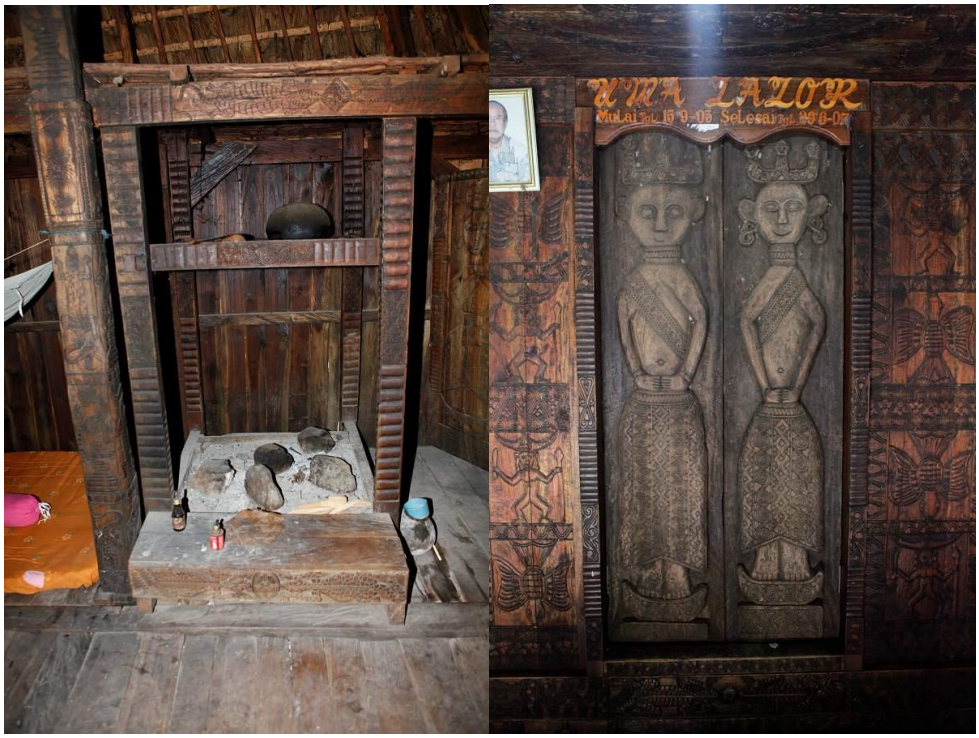

Fig. 12 and 13. The hearth in the elaborately carved house named "Uma Lalor" in Kamanasa followed a slightly different concept than usual designs (left) and also the doors, posts and surrounding panels were intricately decorated (right), which is unusual in more traditional houses, Kampung Dato Oan, Desa (village) of Kamanasa
Source: author, 2011.

The house itself is built of square timbers, and is built as a post-and-beam structure. The posts are set on small concrete foundations. It is thatched with organic material, and its size and layout correspond to the usual vernacular pattern. The big difference is in the structure of the building: the square posts support both floors and walls (elements which are supported by separate piles in the more common design) and near the joints of posts and wall plates there are small diagonal struts to make the building rigid enough to stand. Although the wall plate is set into slots at the top end of the vertical posts, it is secured by wooden pegs, which is unusual for traditional buildings. The walls and floors are made of planed boards. This is unusual, as the walls in the traditional design would be made of plaited palm leaves or palm fronds. The house is higher than other buildings, whereby it is possible to walk between the posts comfortably, whereas the substructure of other houses is so low that one would have to crawl or at least bend down if wishing to enter that space.

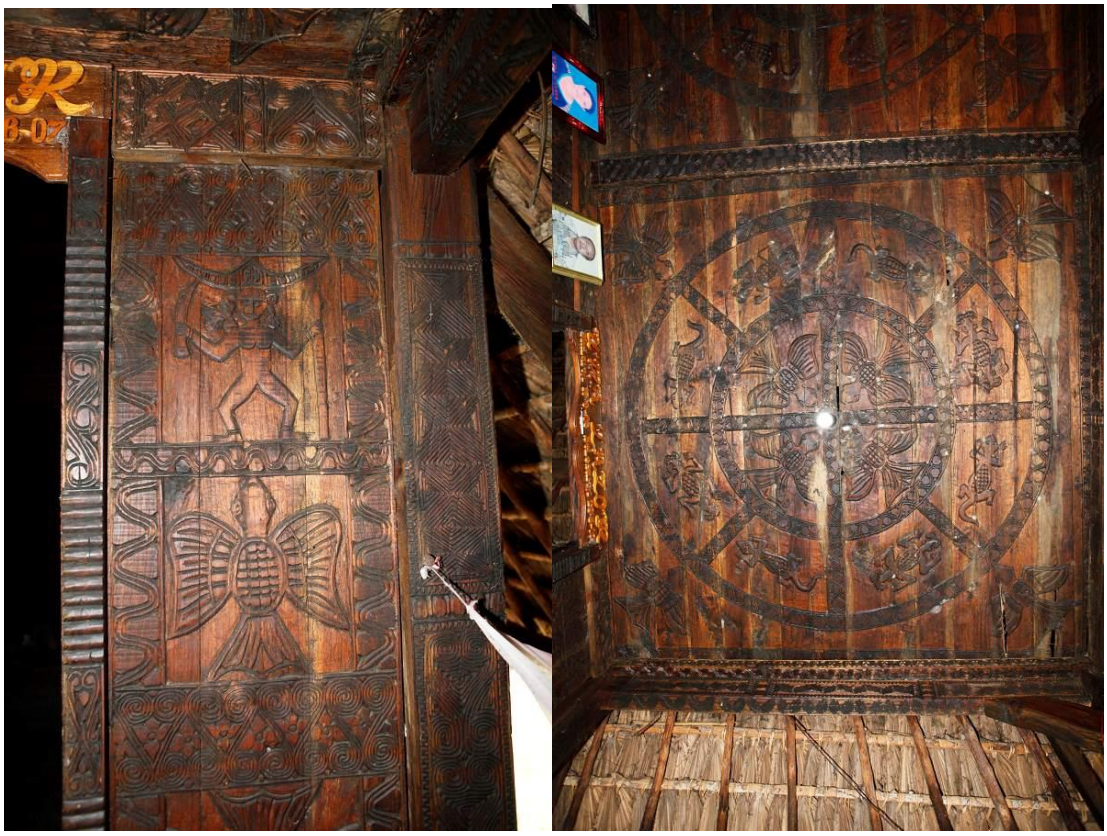

Fig. 14 and 15. Posts were carved in different designs in house "Uma Lalor" in Kamanasa than infill panels, thus the decoration followed structural functions of the building (left). On the ceiling above the verandah a mandala-like arrangement of motives could be found (right).. Kampung Dato Oan, Desa (village) of Kamanasa
Source: author, 2011).

Most parts of the structure are decorated with carvings, the building seems to have been made specifically as a vehicle to display this large amount of decoration. In fact, whereas other vernacular buildings nearby usually have carvings or decoration only on the ends of sprockets (as figureheads), the frame of hearths, and only a few structural members of the building, nearly every part of this house is embellished. In houses of the old vernacular style, the edge of the elements is cut to a specific decorative form and their surface is marked only by a few incised lines at most. In *Uma Lalor*, the surface of the elements is heavily decorated, but only the edges of the posts are shaped, edges of other elements are left without decoration. Actually, the decoration is more reminiscent of other parts of Western Timor (Atoni and Bunaq region) than of the immediate surroundings. This might also be due to the fact that the art shop owned in Bali by the initiator of the project sells "Timorese art", and not "Tetum art". It is possible that this shows that the way local culture is marketed to tourists might have repercussions even in quite remote regions.

Fig. 16.A chest was used to store family heirlooms in house "Uma Lalor". Chests are almost never used as furniture in the region, again very probably the concept was imported from Bali, were in the art trade chests decorated with Timorese motives are made for and sold to tourists, Kampung Dato Oan, Desa (village) of Kamanasa
Source: author, 2011.

Some carving motifs did not exist before and they definitively were transferred from textile motifs to the building. Many Timorese carvings show a remarkable similarity to motifs used in traditional textiles, there is a general tendency within the region to transfer textile motives to wood. In this specific case, local people deliberately decided to adapt motifs used in textiles and use them to decorate their houses. The style of some of the carvings is unusual, and is not encountered elsewhere in the immediate surroundings. Although other motifs can be seen on nearby houses, their use is usually much more restricted and they do not cover large surfaces. The ceiling of the verandah of the carved house at Desa Kamanasa incorporates large, round, almost mandala-like carvings, depicting birds and lizards arranged within circles. This use of decoration is clearly unprecedented in local tradition, and is probably inspired by Balinese culture, which often features mandalas, especially in the context of handicrafts for tourists (not so much in a genuinely original indigenous context). The structure of the hearth, too, differs from usual patterns: although the size and the division into shelving above the cooking place are similar to other houses, the elements (posts, beams) it is constructed from are larger in cross-section and are jointed differently. Of course, it also bears different decoration. Another interesting object is a carved trunk or chest used to store heirlooms (china, traditional jewellery, etc.). Chests are not used as furniture in the area – if anything is used as furniture, then cabinets and cupboards. The chest is probably something that sells well to tourists in Bali[4], and therefore is an item which is produced there, in "Timor style", and from there it found its way to this specific house.

[4] See the a range of chests in the shop belonging to the 'initiator' of the house: http://istanaprimitive.com/category/best-collection/chest

Conclusions for the carved house in Desa Kamanasa

It can be said that while the carved house retains a traditional spatial layout, approximate traditional size, organic thatching, and traditional ritual attributes such as the importance of the ritual pillars, there are several crucial alterations. These are the much higher substructure, the post-and-beam construction principle, the use of small diagonals, the use of wooden boards as walls and floor and generally the use of square wooden elements for posts and beams. The extensive use of carvings also introduces great changes to the building. Sometimes, the way the building is used as a display for decoration is somewhat reminiscent of buildings of the Toraja in South Sulawesi, although there is no strong box-like structure here (unlike the Toraja case). Of course there is no direct connection to Toraja architecture, the example is mentioned only to point out similar concepts within the wider Indonesian region.

The construction still bears strong signs of the original Tetum concept (joints with slits, etc). However, somewhat towards the north, in the Timorese village of Umut Nana, a very interesting variation of house was documented, which is closely related to the Tetum buildings, but already has a box-like superstructure, and thus seems to be a different step in a similar direction. In desa Kamanasa, the carved house has absorbed quite a lot of external influence, but the developments in Umut Nana seem to be local (such a house will be described later on in this text).

Compared to other building styles in Indonesia which use extensive carving on their buildings – mainly the Minangkabau and the Toraja (there may be others, but these two demonstrate two different approaches very well) – the Timorese example shows a structural approach to decoration. In the case of the Toraja, the carving is used as integral part of their built structure (i.e., both load-bearing parts and infill elements are decorated) while the Minangkabau use carved panels as 'add-ons' to cover the load-bearing structure. This concept goes so far that nowadays, many new Minangkabau houses have a load-bearing structure made of concrete, but imitating in shape and form the traditional one made out of wood, and with wooden carved panels applied to it. Our Tetum example uses the structure to apply a certain kind of carving, which is usually more abstract, and on the non-loadbearing infill areas (board walls, ceiling) usually applies larger, figurative motifs. Thus, there is a distinction between the marking of load-bearing and non-loadbearing elements. Interestingly, this distinction is much more visible here than in the Toraja case, were sometimes only a much smaller difference can be seen between the treatment of structural elements and infill elements. However, in the Toraja case, the infill elements are very much integrated into the load-bearing frame and thus have stabilizing and sometimes maybe even load-bearing functions. Thus, we can see that decoration often follows the structural functions of elements. However, it is worth noting that the Minangkabau example also shows that the load-bearing structure can be almost ignored and almost visually overridden by the decorative elements. Furthermore, it is interesting that, whereas Toraja and Minangkabau carvings (at least the recent ones) make use of very vivid colours, Timorese carvings are never, or at least, not *usually* painted: coloured carvings were encountered in exceptionally rare cases – most carvings are left untreated (uncoloured), even in other areas of Timor.

Fig. 17. A good comparison to developments in the Tetum area is provided by Toraja architecture. Toraja buildings also display extensive decoration, usually, as in the presented Tetum case, differenciating loadbearing and infill elements by applying different patterns or motives to them (building near Rantepao, S-Sulawesi, 2005,
Source: author

Fig. 18. Different treatment and application of structural load-bearing and (former) non-load bearing infill elements on the side façade of a Toraja house (Sillanan village, S-Sulawesi, 2012,
Source: author

Fig. 18. Different treatment and application of structural load-bearing and (former) non-load bearing infill elements on the frontal façade of a Toraja house (Sillanan village, S-Sulawesi, 2012,
Source: author

Modern Tetum houses: Houses placed on concrete pillars

Fig. 19 and 20. A new house built on concrete pillars and from squared timber (left). Another modernized Tetum house design with corrugated iron roof, concrete pillars and a frame made of square, milled, timber elements. (Haeitemu village, 2011.
Source: author.

The newest houses examined in the Tetum villages during the field research were all placed on concrete pillars and had a frame made of square cross-section sawn timber. Although the buildings were in appearance very similar to the older vernacular type, while the older vernacular type is more organic in appearance (the often irregularly-shaped round piles, plaited wall elements, and the palm leaf thatch making these buildings appear irregular, 'organic'), the new buildings are more straighter and more regular. The roof is made of corrugated iron sheets applied in a geometrically clearly defined

form, and every wooden element of the house structure is straight and neat. Thus, while size and spatial layout of the buildings usually remains the same, the appearance changes. In addition, the concrete piles make a different visual impression than the wooden ones used in the older vernacular house types, even though, in the most cases, they integrate fairly well into the structure. As the building is now placed on top of these piles, it is no longer stabilized by them (in the older construction method, the walls were stabilized by piles reaching into the wall plates), and thus the wooden structure has to have small diagonal struts applied to make it stable. Also, most of the joints are now made using carpenter´s joints, rather than being lashed together as they were in the more archaic building variations. The duality of piles supporting the floors and piles supporting walls and roof (as is the case in the older house type) of course ceases, and only the wooden posts creating the walls remain. These posts terminate on top of the concrete piles, which are not only found below the walls, but often also below the floor.

These modern houses are usually painted, while the more archaic type of vernacular buildings are not painted, or are only rarely painted. The load-bearing structural parts are painted in different colours than the infill walls, which are most often made of wooden boards (and sometimes out of palm-fronds, but I did not see any of these walls painted). The posts and beams are in many cases painted brown, red or even pink, while the walls were painted in beige, and often in different shades of green or blue. Apparently, the inhabitants intentionally apply contrasting colours to the timber frame and to the infill, so as to clearly distinguish these two building elements. Regarding another aspect of the new buildings, concrete pillars are sometimes not cast as rectangular blocks, but rather as round forms. It would seem that corrugated iron sheets are regularly used as formwork, as the concrete piles often have fluted surfaces resulting from the undulating structure of the iron sheets. This produces a startling effect, which calls to the mind of the European observer an echo of the shaft of Greek columns, although this effect is surely not the locals' intention. In addition, nails are often used within the wooden structure and the carpentry work sometimes is executed somewhat sloppily, which just shows that this building is a very new concept. The beams and posts and boards are probably cut by chainsaw and planed by hand. People do not generally have electric tools such as planing machines, electric drills, circular saws, etc. It could not yet be verified whether wood used in recent construction work is local, or whether it is imported (maybe already in some processed form). A new custom, most probably linked to the modern version of the vernacular house, is the attachment of a red piece of cloth at the ridge purlin of a newly-erected modern vernacular house. The explanation given was that it was done for good luck, but that it is a foreign custom. A similar piece of red cloth is sometimes attached to the tops of posts of wooden buildings around Yogyakarta, Central Java, apparently for similar reasons. Where the custom comes from exactly and how it spread to Timor is not clear.

Fig. 21 and 22. Modern Tetum house designs with corrugated iron roofs, concrete pillars and a frame made of square, timber elements. (Desa naas, Kampunk Uma Kaik Mesak, 2011.
Source: author.

Coloring is applied, which was never applied in more traditional designs. The differently coloured painted surfaces differentiate and contrast the load bearing structure (posts) from (former) non-load bearing infill panels (now made of wooden boards).

The change from houses made entirely of wood to houses which incorporate concrete elements seems to have also occurred in a comparable way in Malaysian villages, were houses changed from being buildings built on wooden stilts to houses built on concrete stilts. Such developments cannot be observed in other Indonesian areas: in most cases, the vernacular wooden (stilt) house design is simply abandoned and new houses are built on the ground, usually from concrete and bricks.

Houses in the mountains – an unusual box frame design in Umut Nana

Moving north from the Central Timor lowlands into the mountains, the building style changes somewhat. Also, this area is already different in that it is settled by people who speak Uab Meto, not Tetum. The houses though, at least in the mountains near the lowlands have the same structural design and spatial layout as Tetum buildings; it is further away that the building style changes and becomes the round, conical or domed design built directly on the ground which is typical for other Atoni Meto regions (on Atoni Meto houses see Müller, 2013: 187-194, Cunningham, 1964: 34-68 and Dima & al, 2013: 28-36). Here, in the borderlands, the houses still resemble Tetum buildings, the only differences being that they are squatter and shorter in appearance, and their roofs are somewhat higher in proportion to the overall measurements of the building. There is one significant change in design though: whereas archaic Tetum vernacular buildings have walls made of plaited palm leaves, these houses have walls made out of wooden boards and posts inserted into strong sill beams. The overall construction is in every detail still strongly connected with the lowland Tetum design. The sill beams, which in the lowlands are very thin elements and are not connected strongly at the corners become here large pieces of timber joined at the corners. Their protruding ends are shaped like large hooks or in some cases even like horse's heads.

Fig. 22 and 23. Houses in the mountains in the border regions towards Atoni Meto areas do have a layout closely related to lowland Tetum buildings, but feature a wall-structure built onto a "box" of sill beams, which end in hook-like endings. This strong wall structure I not connected to the house piles, the main load-bearing elements of the building. . (village of Umut Nana, 2011.
Source: author.

At the same time, the roof is nevertheless supported by separate piles buried into the ground, and the walls, which form a box (with the sill beams as base) are not connected to the roof, but sit on the floor joists, which are supported by their own set of shorter piles. This is very peculiar, as it shows clearly that a new wall design was introduced (which is very strong and stable), but no connection to the roof or the pillars supporting the roof has been yet made, to use the extra strength this structure produces. The boards and posts, which are inserted vertically into dados of the sill beams are not even connected by any kind of wall plate at the top, as the original wall plate rests on the top of the piles supporting the roof, which are structurally almost completely separate from the wall structure. The

wall surface retains a division into rather thin post elements (which are usually carved or painted a different colour (or colours) than the infill areas) and large areas of vertical infill boards. As the infill boards are also inserted into the sill, and are around 2-3 cm thick, they also would provide a very strong and stable support: however, neither the wall posts nor the wall infill are connected structurally to the load-bearing system of the house. This shows that their origin must have been other, non-loadbearing material, like the plaited infill of the lowlands. We can assume that, over time, people of this region would realise that the wall elements can and should be integrated into the entire load-bearing structure. Unfortunately it is very probable that this housebuilding tradition will not have that time, as houses made of concrete and brick have begun to appear in the village. These new houses are built on the ground and have nothing in common with the old wooden house design. Interestingly this village also has a *lopo* (Atoni granary), with a corrugated iron roof, which was converted by walling off the free space below its roof with iron sheets to be used as a kitchen.

Fig 24. The wall structure of houses in Umut nana consists of strong sill beams with vertically inserted boards, which do not terminate in a wall plate. This shows, that the load bearing capacity of the newly developed wall structure was not realized yet, and the wall elements not connected to the load bearing system of the building. On the inside of the wall the main load bearing structure of the house can be seen. (village of Umut Nana, 2011.
Source: author.

Fig 25. An Atoni granary, a so-called “lopo” converted to a kitchen building by walling up the usually open, lower areas with corrugated iron sheets. (village of Umut Nana, 2011.
Source: author.

Fig 26. Such houses made of concrete bricks, with a corrugated iron roof are replacing more and more former wooden vernacular buildings. Unfortunately they are not linked in any way to former traditional building concepts. (Haeitemu village, 2011.
Source: author.

Conclusion

Only small changes were noticeable in 2004 compared to descriptions found in literature (Hicks, 1976), in 2011 there had clearly been much more building activity which had produced a considerable number of new-style vernacular buildings. These developments will not stop in the years to come, but rather speed up considerably as modern materials will become more affordable and easier to obtain. Unlike the old-style vernacular, which uses mostly wood in its natural, round state, and organic material such as plaited palm-leafs for walls and grass or palm leaves as thatch, new vernacular houses use concrete, processed timber and corrugated iron sheets. Another new feature is that paint is applied to the buildings. Although, fortunately, the overall layout and design of the house has been preserved, the use of the new materials makes the appearance of the new house type more regular and less haphazard and organic. Concrete is used for piles, and the frame of rectangular beams and posts is placed on it. The walls are made from wooden boards, which can now be made easily with the help of modern equipment such as chainsaws. And since corrugated iron cannot easily be bent into a round or organic form, regular roofs have been introduced. Thus, the use of modern building materials changes the appearance of the village perceptibly. Also houses with brick or concrete walls have been erected, built on the ground, although so far fortunately only a few can be seen in the settlements. However, there is no doubt that their number will increase. While the 'new vernacular style' retains many properties of older buildings, and can be regarded as something characteristically Tetum, modern houses built on the ground are oriented on examples found throughout Indonesia. Importantly, given that the field research area is prone to flooding, the modern Indonesian house type cannot be considered as especially practical compared to houses with raised floors, which is one of the defining features of vernacular Tetum architecture. In this respect Central Timor is no exception to other Indonesian regions, where local vernacular style is often left behind, abandoned for new modern uniformity. Let us hope that the Tetum will recognise the uniqueness of their vernacular designs and settle on a new style utilising modern materials but retaining local characteristics.

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