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### **Ovalna suhozidna *mošuna* s vegetalnim krovom s dugoljastim središnjim otvorom – drevna preteča, ali i suvremenik modernih “staja s vanjskom klimom”**

*Mošuna* je tradicijsko jednostorano pokriveno suhozidno sklonište za stoku, većinom za ovce, na hrvatskom dijelu Sjevernog Jadrana. Tipična tamošnja suhozidna staja je pravokutnog tlocrta i pokrivena je biljnim krovom (*slon*), u pravilu dvostrešnim, koji leži na drvenom krovištu. Na južnom dijelu otoka Krka ima i drugačijih *mošuna*, iznimnih po tome što su više manje **ovalnog tlocrta** i imaju **dugoljast otvor** (*zjalo*) duž sredine krova. Otvor ima tri funkcije: **(1)** pojačano zračenje, da bi se spriječilo pregrijavanje stoke, naročito noću; **(2)** vlaženje izmeta (kišom), radi boljeg sazrijevanja stajskog gnoja; **(3)** prirodna rasvjeta pri mužnji u *mošuni*.

Ovdje predstavljena ovalna *mošuna* jest najvjerojatnije jedina preostala od svoje vrste, koja je potpuno očuvana i još u uporabi. Nalazi se “Pod Svetim Jurjem”, na sjeverozapadnom rubu sela Draga Baščanska na otoku Krku.

Najdojmljivija značajka je konstrukcija krova. Na četiri vertikalna stupa (*stabar*), s rašljastim vrhovima, leže **dvije** paralelne uzdužne krovne grede (*žrde*), koje omogućuju središnji otvor. Zbog njihove iznimne duljine (7 m), krovna je konstrukcija pojačana dvjema poprečnim gredama, savijenim radi povećanja nosivosti (što danas poznajemo kao “nosive grede od armiranog betona”). Na tu se konstrukciju polažu grede (*limezi*), i to vrlo gusto, te pokrivaju biljnim pokrovnim materijalom, vezanim savitljivim izdancima bijele vrbe (*Salix alba* L., *žukva*).



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**Oval dry stone thatched sheepcote with an oblong central opening in the roof – an ancient precursor as well as contemporary of modern “open cattle sheds”**

*Mošuna* is a traditional monocellular roofed dry stone shelter for livestock, mostly a sheepcote, in the Croatian part of the Northern Adriatic. A typical local dry stone sheepcote is rectangular in the ground plan and covered with a thatched roof (*slon*), supported on a wooden frame, mostly a double-slope one. In the southern part of the island of Krk one can also find sheepcotes that are rather exceptional for being more or less **oval in the ground plan** and having an **oblong opening** (*zjalo*) along the middle of the roof. The opening serves three purposes: (1) ventilation, to prevent overheating of livestock, especially during the night rest; (2) moistening (by rain) of manure, to promote its fermentation; (3) skylight for natural illumination (for milking inside).

The oval sheepcote presented here is presumably the only and the last one of its kind that has been fully preserved and still in use. It is located “Pod Svetim Jurjem” (“Below St. George’s”), at the NW edge of the village of Draga Bašćanska on the island of Krk.

The most remarkable feature is the construction of the roof. On four vertical posts (*stabar*) with forked ends lie **two** parallel longitudinal roofbeams (*žrda*), to enable the central opening. Because of their extreme length (7 m), the roof construction is reinforced with two cross tie beams, bent for enhanced load capacity (what we today know as “reinforced concrete girders”). This construction supports the rafters (*limez*), laid very tightly, covered by the roofing material fastened with pliable shoots of white willow (*Salix alba* L., *žukva*).





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## Oval dry stone thatched sheepcote with an oblong central opening in the roof – an ancient precursor as well as contemporary of modern “open cattle sheds”

### INTRODUCTION

*Mošuna / mašuna / mošunja / mušunja* is a traditional monocellular roofed dry stone shelter for livestock, a cattle shed, mostly a sheepcote, in the Croatian part of the Northern Adriatic. This dialectal term, in all its variants pertaining to different regions, originates in the Latin word *mansio*, meaning “dwelling”.

A typical local dry stone cattle shed is rectangular in the ground plan and covered with a thatched roof (*slòn*), supported on a wooden frame, mostly a double-slope one. However, in the southern part of the island of Krk, the largest island of the Adriatic Sea, one can also find cattle sheds of a surprisingly different type. They are rather exceptional for being more or less **oval in the ground plan** and having a roof in form of a **shallow oblong dome**, with an **oblong opening** (*zjalò*, literally: a gape) along the middle of the roof. The opening serves three purposes: (1) ventilation, to prevent overheating of livestock, especially during the night rest; (2) moistening (by rain) of manure, to promote its fermentation; (3) skylight for natural illumination while working (milking, shearing, marking etc.) inside.

The most remarkable feature is the construction of the roof. In order to have a roof in form of a shallow oblong dome, with a central oblong opening, one must employ **two** parallel horizontal longitudinal **rooftrees** instead of a single central one, spaced out to allow for the opening in between, supported by **four vertical posts** instead of only two, and supplemented by **two** additional horizontal **cross tie beams**, or auxilliary rooftrees, perpendicular to the main ones.

The oval sheepcote presented here in detail is presumably the only and the last one of its kind that has been fully preserved and still in use. It is located “Pod Svetim Jurjem” (“Below St. George’s”), at the northwestern edge of the village of Draga Bašćanska (in vernacular: *Bàška Dràga* or just *Dràga*, in further text referred to as Draga) on the island of Krk. Draga is one of the four settlements of the Baška valley in the southern part of the island of Krk. This region is in many respects a world of its own, separated from “the rest of the island” (as the locals see it) by the col of Treskavac, 315 m above sea level, which makes a geomorphological barrier as well as a cultural and even linguistic borderline.

The owner and the (still active) user is **Antòn Gùlešić** nicknamed *Loparàn*, born 1934, a native of the village of Draga, now living in the nearby town of Baška. He remembers that his grandfather and namesake (in accordance with local tradition) **Antòn Gùlešić Loparàn** (1856 – 1941) already had and used this sheepcote and presumes that it was built either by him or, more likely, by an even earlier forefather. So one can safely date its construction back to the second half of the 19th century at least. The **tradition** of building cattle sheds of this type, however, has no reason to be as young as that, and presumably reaches far, far back into the times immemorial, possibly Illyrian (Pre-Roman) or even Paleomediterranean.

Now, since  
**complete architecture = function + construction + aesthetics,**  
let us take it one by one and see:

## (I) FUNCTION

### (1) Ventilation

Big animals like cows and oxen are prone to overheating, the more so in a small and closed space. Due to their large body mass they have a low surface to volume ratio, and therefore need cooling rather than heating, “so as not to get cooked up inside” (**AJP**). Sheep suffer from the same problem because of their fleece. In addition, the fermentation of manure inside a cattle shed produces considerable heat and contributes to overheating of livestock (**AJP**).

If livestock get overheated during the night rest in the shed, they can catch cold when they leave it in a chilly early morning.

Moreover, appropriate cooling promotes thriving of sheep considerably, and that is the reason why sheep are also sheared a few weeks before being sold “for meat”. Freed from their fleece, superfluous in summer, they put on weight more quickly and their skin becomes thicker and more suitable for tanning. So, good ventilation is not just to make sheep more comfortable for their own pleasure – comfortable sheep are healthier and grow faster, bringing more money to the owner! And this know-how was not invented only recently by the designers of modern “open cattle sheds”, it has obviously been present among the shepherds for millenia and passed down by word of mouth or practice as a valuable “trick of the trade”. (Incidentally, **AGL** did not learn the trick with shearing from his father or grandfather, but from a butcher and a tanner instead! Tradition sometimes moves in strange ways.)

The solution of the overheating problem is the “open cattle shed” with enhanced ventilation, with the entrance of the building serving as the main inlet for the outside air and the opening in the roof (*zjalò*, pl. *zjalà*) as an outlet. To that end the gate (*zàtoka*, pl. *zàtoke*) closing the entrance is just a thin grid made of wooden poles, typical of the region, which lets the air stream freely through. The whole dry stone walling of the base is the secondary inlet itself, its porousness enabling constant streaming of air through the free interstices among the stones.

Only donkeys have **the opposite problem** and require a shed with a fully closed roof for two reasons: in winter, to keep them warm, and in summer, to keep them in the dark and thus reduce the number of flies that come to pester them. That is why donkeys are normally kept in “more classical” cattle sheds, those with double-slope roofs.

And what about flies molesting cows, oxen or sheep in an open shed? Well, one can hardly have **everything** taken care of with a **single** constructional solution, so one deals with the **main** problem, in this case the one of overheating, and sacrifices the less pressing ones. In addition one also gets a bonus of items (2) and (3) described below.

So, the **two types** of cattle sheds **coexist** in the same region, each having its specific purpose.

A naive guess would then be that the relative frequencies of the two types of cattle sheds in a region reflect the true ratio of large livestock and sheep to donkeys. Life is, however, seldom that simple. Some people would make an ordinary, double-slope and fully closed roof where it was inadequate and even disadvantageous, for the

**only** reason that it is **easier to construct**, that is, out of personal lack of skill, ignorance, or even sheer laziness (**AJP**). Factors like that are hardly ever taken into account by investigators in the field trying to make sense out of their empirical field data and explain them neatly away by underlying general reasons. On the other hand, this funny detail indicates that constructing an oval roof with the central opening **is** a more demanding constructive task and something one should respect.

(2) Rain falling through the central opening in the roof moistens manure on the floor of the shed, promoting its fermentation. This is a very clever trick in a climate where the summer half of the year is hot and dry and water is scarce. In times when chemical fertilizers did not exist, manure was very precious as the only means of fertilizing the land, which is very scarce on this stony island and very far from being rich.

(3) The opening also serves as a skylight for natural illumination while working (milking, shearing, marking etc.) inside the shed. And to realize that this is no minor advantage, one should simply try and see for oneself, or try and imagine, at least. It is pretty dark in a cattle shed with a fully closed roof, and a *zjalò* is very helpful indeed.

## (II) CONSTRUCTION

### THE BASE – in dry stone

In the **ground plan** “oval” cattle sheds range from almost rectangular, with more or less rounded corners, to almost neatly circular, yet the majority of them fall somewhere in the middle of this range, being actually **oval** in shape. The particular one presented here is rather an exception for being almost rectangular in the ground plan, with rounded inner corners. However, the oval shape of the roof helps to conceal and soften this outside “angularity”.

**The walls of the base** are in uncoursed dry stone masonry. They are rather low, rising to barely 1.1 m, since this shed was constructed and has always been used as a **sheepcote**, not as a cowshed.

**The entrance** is located at the corner of the front elevation. Its “door posts” are two wall heads constructed with massive half-dressed stones. The lintel is a piece of oakwood, nicely arched in form of a bow, as befits the local traditional building aesthetics. In this particular case this form has little to do with enhancing load capacity, since here the lintel does not bear any considerable load and has a predominantly ornamental role.

**The gate** (*zàtoka*, pl. *zàtoke*) closing the entrance is typical of the region, a thin grid made of wooden poles. It consists of two thicker vertical poles on each side (*skrànjica*, pl. *skrànjice*), connected with several (seven in this case) thinner horizontal rods (*zbica*, pl. *zbice*) reinforced by a third vertical rod in the middle. Gates like that are normally used for closing passages in dry stone walls in the open. Here its airiness facilitates the ventilation of the shed, keeping the inlet for the outside air as free as possible. However, if one wants to keep the entrance “at half throttle”, one makes a gate with a grid of horizontal laths instead of thin rods. These laths used to be carved in an elegant, bow-like shape, similar to the wooden (and stone!) lintels. Nowadays they are extremely difficult to find around.

A traditional *mošuna* / *mašuna* / *mošunja* / *mušunja* does not have a loft. The dialectal term *štàlja* (on the island of Krk at least), presumably originating in the standard Croatian word “štala” with the standard meaning “cattle shed”, has been reserved for **non-traditional** cattle sheds **with a loft** for keeping hay.

## THE ROOF – in wood and thatch

A thatched roof of any form is locally termed *slòn*, pl. *slòni*.

### (i) The truss

Irrespective of the roofing material, the supporting framework is always made from hard oakwood, which is very durable, usually from **downy oak** (*Quercus pubescens* Willd., *dubàc*, pl. *dupci*), the locally available Mediterranean species.

In order to construct the roof in form of a **shallow oblong dome**, with a **central oblong opening**, one must employ **two** parallel horizontal longitudinal **rooftrees** instead of a single central one, spaced out to allow for the opening in between, supported by **four vertical posts** instead of only two, and supplemented by **two** additional horizontal **cross tie beams**, or auxilliary rooftrees, perpendicular to the main ones.

**Vertical posts** (*stabàr*, pl. *stabri*) are usually complete downy oak trunks, with forked upper ends to accommodate the rooftrees. There are **four** of them, to support **two** main rooftrees needed for this particular construction.

**Rooftrees** (*žrda*, pl. *žrde*) lie horizontally on vertical posts, nested in their forked upper ends, running along the main (longer) axis of the building. They are parallel and spaced 1.3 m apart from one another, to allow for the central opening of the width of 1.1 m.

Because of the extreme length of the rooftrees (7 metres in this particular case), the roof construction is reinforced with two horizontal **cross tie beams**. To the best of our informants' knowledge, they have no special name and are referred to simply as “auxilliary rooftrees”. They are bent for enhanced load capacity (what is known today as “reinforced concrete girders”), as well as to enable the nice domed shape of the roof.

**Rafters** (*limez*, pl. *limezi*) are oakwood logs coarsely trimmed to more or less flat shape, resting with their lower ends on top of the dry stone walling of the base and with the upper ends on the rooftrees and cross tie beams. They are preferably laid very densely, unless one suffers from lack of oakwood.

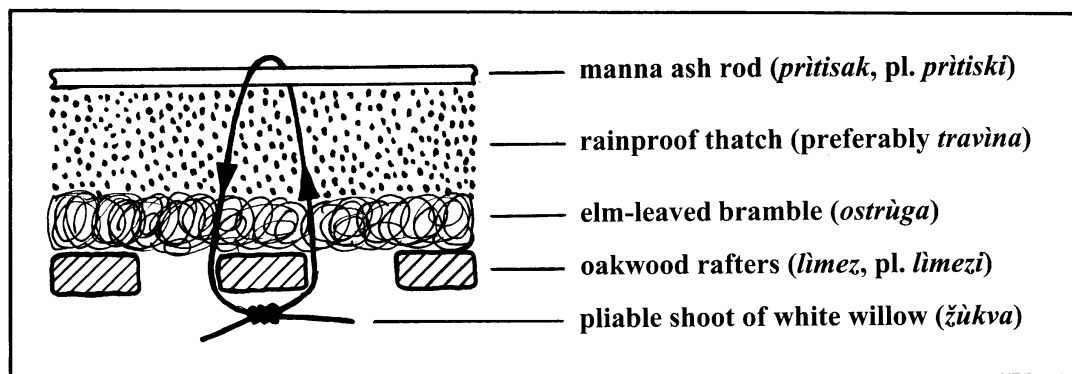
### (ii) Thatching

**The first layer** of thatch that is laid over the rafters must be something **thorny** and **inedible** to livestock. Usually one puts **elm-leaved bramble** (*Rubus ulmifolius* Schott., *ostruga*), a species locally abundant on the whole island. It is not meant to be rainproof, but rather to deter the livestock inside the building from eating the roofing. However, if the rafters are laid so densely that animals can not help themselves to the thatch, the layer of bramble can be left out.

On top of it comes **the second, rainproof layer** of thatch proper, with the culms of the plants orientated **along** the rafters, i.e., along the slope of the roof, to allow rainwater to flow freely down the slope. Thatch, as reaped, comes packed in sheafs (*màcić*, pl. *màcići*) bound with a few culms of the same plant. The roof is first covered with densely packed sheafs, and then one unties the sheafs by cutting their bindings and spreads the material out as evenly as possible.

The thatch is pressed tightly against the rafters below by wooden rods (*prut*, pl. *prùti*), 3 to 4 metres long, that come on top of the thatch and are laid perpendicular to the culms of the thatch (and rafters). They are termed *pritisak*, pl. *prìtiski* in Draga (AGL) and *protenica*, pl. *protenice* in the neighbouring village of Jurandvor (AJP), and are made from flowering (or manna) ash (*Fraxinus ornus* L., *jèsen*), a small tree

indigenous to the central and eastern parts of the Mediterranean, which has fine-grained, light, very tough, but pliable wood. Ash rods and rafters are fastened together with elastic shoots of white willow (*Salix alba* L., *žùkva*) going **through** the roofing sandwiched in between. So it takes two workers to finish a thatched roof, one of them inside the building and the other one on the roof. The “insider” pushes a willow shoot through the roofing to the outside, where it is taken over by the “outsider”, folded around the ash rod and pushed through the roofing back inside. The “insider” then twines the shoot round the rafter, twisting the ends together, with the “outsider” kneeling on the roof above him and pressing the thatch as tightly as possible with his knees and shins.



If the white willow shoots are not pliable enough as harvested from the tree, they are macerated in water for some time before use.

On oval domed thatched roofs manna ash rods (*pritiski*) make two to three concentric horizontal rings, while on double-slope ones they simply run horizontally along the length of the slopes.

### (iii) Thatching materials

The preferred thatching material, at least within the four settlements of the Baška valley, is **tall moor grass** (*Molinia litoralis* Host or *Molinia caerulea* (L.) Moench **subsp. arundinacea** (Schrank) H. K. G. Paul), termed *travina* in the local speech of the village of Draga. In the vernacular of the whole Baška valley *travina* means “weed”, and indeed it is – sheep refuse to eat it and only donkeys accept it for want of something better. But in the local speech of Draga this term refers only to this particular kind of weed that has traditionally been used for thatching dry stone shelters for both people and livestock. In the local speech of neighbouring Baška it is called *vèla travà*, meaning “big grass” (AŽL), while in the local speech of Punat (which is “beyond the col of Treskavac”) it is called *pavèr* (POM, IOV).

**Tall moor grass** was locally considered **the best** choice for thatching roofs, owing to its convenient physical properties. It was also used for sealing wooden barrels to make them watertight (IOV), which gives a hint of its performance when used as thatch – owing to the spongy tissue in the interior of its culm, it swells up with moisture and makes a thatched roof rainproof (or a wooden barrel watertight.) Also, the culms of grasses have nodes or joints, which add to their strength. However, in grasses of the genus *Molinia* the lower internodes of the culm are very short, reaching just a little above the ground, while the uppermost internode is extremely long, constituting most of the elevated culm and reaching up to the spikelets (“ears”). This gives the impression that the culms are jointless, which for practical purposes they are. This “jointlessness” of the culms of tall moor grass makes them smooth and



straight, which enables an extremely tight packing and makes the thatch additionally rainproof. And the very length of the culms of up to two metres is a further convenience.

**Rye, wheat, and millet straw** were used as **the second best** choice, and **reed** only as **the third**. Common rush (*Juncus effusus* L., *sìće*) was not used at all, due to its too short culms.

Tall moor grass grows in relatively moist places, which are rare indeed in this particularly stony and arid part of the island. It can be found in small quantities around larger water holes, small ponds with rainwater where sheep go to drink (**POM, IOV**), as well as in shallow dips in the surface of the ground with loamy soil, in which rainwater collects and lingers longer than elsewhere around. It is **nowhere** abundant, but Draga has simply been lucky to have much more of it than the others.

Apart from some smaller isolated places, the largest terrain overgrown with tall moor grass is at the locality called *Na Travìni* (“At Travina”), where each family from Draga used to have its share. A plot with *travìna* was regarded as a valuable possession and an important part of someone's inheritance. Since these plots were usually rather small, with a yearly yield barely sufficing for a single thatched roof, an unlucky heir (who had to share it with too many brothers) might often have had to wait for up to five years for his turn to harvest the precious plant. (More than five would be simply too long, since that is the effective deadline for regular maintenance of the roof covering.) “In the old times” *travìna* used to be a valued export product of Draga – they actually **sold** this plant to the neighbouring villages, which happen to be considerably less blessed by its abundance.

It is reaped or scythed in November, when it grows up to two metres plus in height, depending on the rainfall during the year. In extremely dry years it barely reaches one metre. It thrives much better if harvested regularly. “In the old times” it was normally reaped with sickles. (Nowadays nobody “has time” to do it properly, so it is scythed, which is faster.) A reaper would be followed by an assistant who would take over a bunch of reaped *travìna*, make a neat sheaf (*màcić*, pl. *màcići*) and bind it with a few culms of *travìna* itself. Twenty to twenty-five such sheafs would eventually be tied in a big bundle, and two such bundles would be loaded on a donkey, each on one side of the packsaddle, and transported to the village.

### (III) Last but not least: AESTHETICS

In addition to its purely functional and constructional values, an oval-domed thatched roof with a dark oval of the opening gaping in the middle, surrounded by concentric rings of manna ash rods and rimmed with whitish dry stone walling, makes simply **a lovely sight**. It is a pleasure for the eye. It is unobtrusive in the landscape, it does not stick out. It belongs to the scenery and befits it. But all this only means that here one deals with a textbook example of **complete architecture**, with all three essential constituent elements, **function**, **construction**, and **aesthetics**, represented and blended into a balanced, harmonious whole, which makes **good architecture**.

What more could one ask for?

### THE EPILOGUE?

The last surviving oval *mošùna zì zjalòn na slònu* has **not** been officially recognized as a cultural heritage monument and is **not** under any kind of protection by any official authority, not even as an entry in someone's paperwork. (And this is no

unfortunate exception – not a single **dry stone** building in Croatia is under official protection, although some promising positive shifts are to be expected in near future.) However, its owner has become aware of its value, has given up pulling it down and building a modern cattle shed in its place (which he did intend three years ago), and has promised that he would keep using and maintaining it in the traditional way as long as Nature allows him. So, for the time being at least, the precious building is **in best hands possible**, under **ideal** protection, in the very spirit of the recurring threads of this conference of ours.

## LOCAL INFORMANTS

The vast majority of architectural as well as ethnographic data were supplied by **Antòn Gùlešić Loparàn (AGL)**, born 1934, from the village of Draga Baščanska, the owner and the active user of the only and the last oval sheepcote presented here. As a trained mason, as well as an experienced active shepherd, he contributed outstandingly in both of these aspects. He was not just a splended “informant”, but rather an indispensable, able, and willing **coworker**, thereby certainly deserving to be recognized as a **coauthor** sine quo non of this report, be it at odds with the established practice of scientific writing. The “official” authors do feel an urge to redress the injustice and stress it here at least.

Further valuable information on issues within the Baška valley was obtained from **Antòn Jùranić Pivàc (AJP)**, born 1931, from the neighbouring village of Jurandvor. His open and hospitable house has been the first author's “base camp” for fieldwork in the Baška valley and its surroundings for five years already. **Tonè Pivàc** has been a dear and true friend and supporter. He understands.

Supplementary information from the neighbouring world outside the Baška valley (“beyond the col of Treskavac”) was supplied by **Ivè Őrlić Vicèncov (IOV)**, born 1936, and **Perè Őrlić Màndin (POM)**, born 1951, both from the place of Punat.

The mysterious and precious plant *travìna* was determined as the grass species *Molinia litoralis Host* by the biologist dr. **Àndrija Žèlimir Lòvrić (AŽL)** from the “Ruđer Bošković” Institute in Zagreb. As a native of Baška he also contributed the local name *vèla travà*.

(*Italic* here denotes family nicknames attached to different branches of the same family (bearing the same surname) and locally commonly used **instead** of surnames.)

## REMARKS ON LANGUAGE, NOTATION, AND TERMINOLOGY

The vernacular of the island of Krk and the local speech of the village of Draga Baščanska (as its microvariant) belong to the **northwestčakavian dialect** of the Croatian language. The dialect is extremely archaic, a kind of living fossil, and therefore of great interest to linguists concerned with Slavic languages in general.

The **dialectal technical terms** are here indicated by **boldface italic** and accented (wherever known and/or necessary), with a grave (e. g. *à*) indicating only the stressed syllable, disregarding the quantity of the stress (short, long, and the so-called “čakavian acute”).

“**In the old times**” refers to the times before the first decade after the 2nd World War, when “new ways of life” poured in and largely destroyed the traditional rural civilization with its ways of production and way of life. These “old times” came to an end rather abruptly, and what we find of them today are only the fragmentary

remains of a long period. The living informants give us an account of its last decades, supported and supplemented by scarce earlier ethnographic recordings.



As found on the 16th of November 1999 – with the roof in bad shape and doomed to be pulled down by the end of the year.







Next year, on the 30th of April 2000 - still alive and with a new roof







The oval domed thatched roof with the oblong central opening (*zjalò*)  
– simply a lovely sight!





*Zjalò*



The entrance in the right corner of the front elevation





The interior





At least thirty years ago



A nearby one, at the same time