

A Documentation of the Traditional Wood-craft of the Kingdom of Bhutan (by work experience).

Introduction :

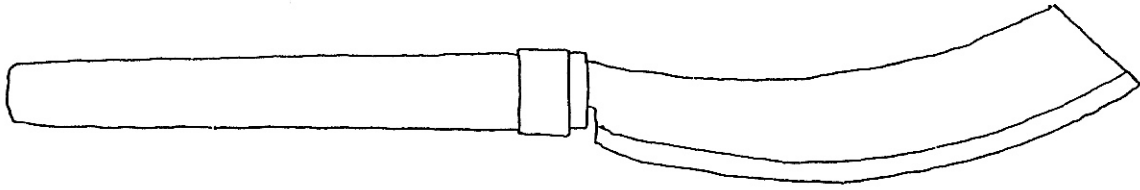
The traditional woodcraft of Bhutan is one of the best preserved in the world. The possible reasons could be attributed to the following:

- firstly, Bhutan has never been colonized ;
- the lack of communication due to the barriers created by the mountainous regions ;
- the strong and binding Buddhist faith ;
- the big restriction to the number of tourists coming into the country and,
- last but not the least , a deep sense of pride shown by the countrymen to the King , country and culture .

The industrialization in the western world has destroyed a lot of the traditional knowledge about wood and wood-craft . To show a documentation like this would be useful and interesting – to the Bhutanese , to appreciate the wonderful culture of wood-work they have and, for the western world to see what we can learn from this culture .

**The carpentry- work at the restoration on the house Kawang Mankhey
(Kawanjangsa Folk Heritage Museum) :**

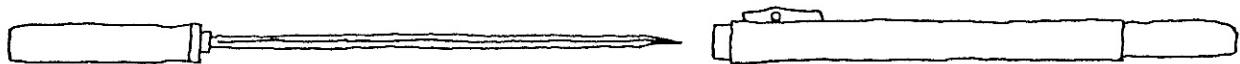
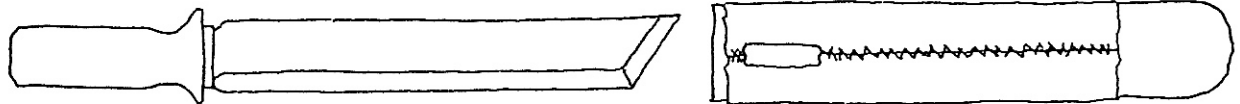
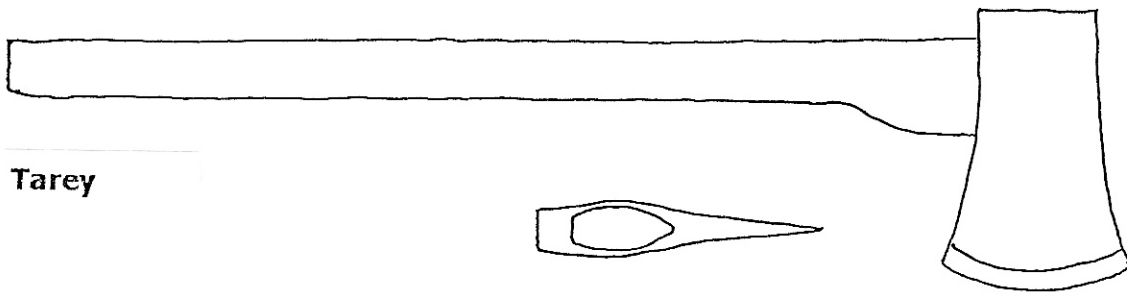
The tools of the Zowpeon(master carpenter) Langkhong and his son Zowa(carpenter)
Wangchuck :



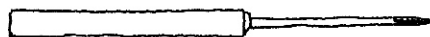
Banki



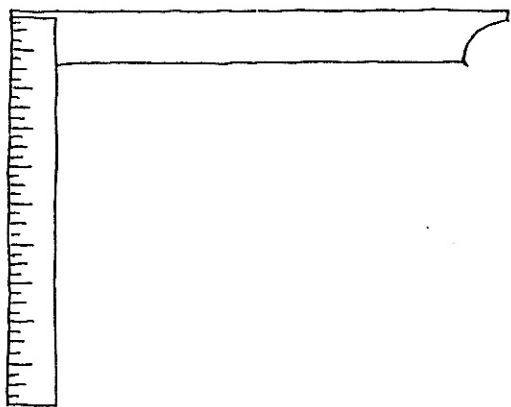
Tarey



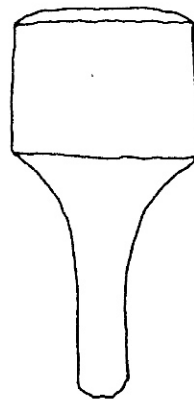
Patang



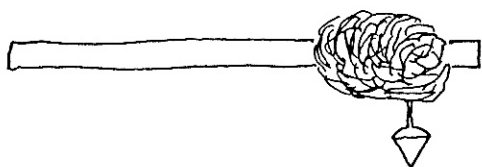
Zong



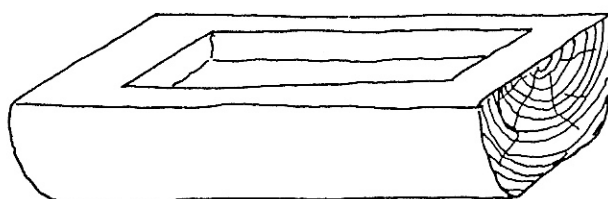
Lebe



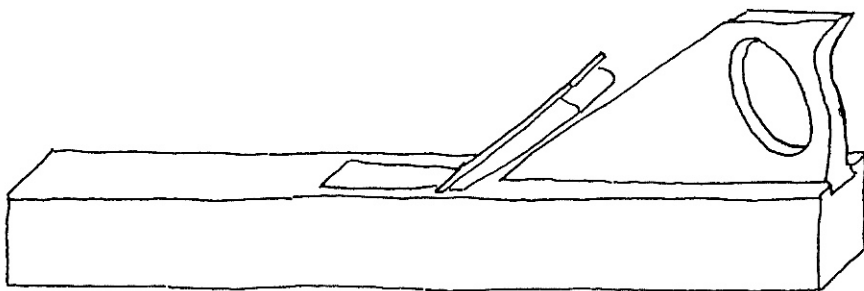
Thong



Thee

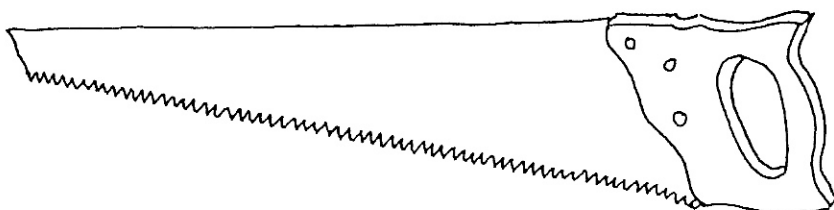
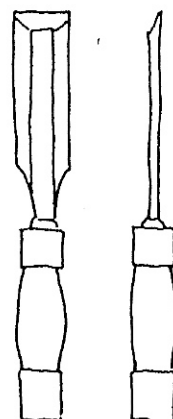


Wa / Wachung



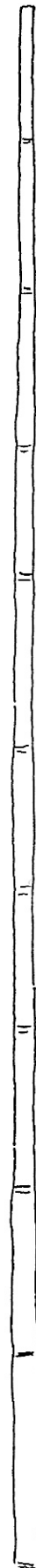
Bjilee

Zong



Soli

Baa / Tsheshing



A short description of the following tools :

Banki : An old traditional tool from the Sharchop (eastern) area .

It was first introduced in Thimphu about 35-40 years ago . *

A heavy tool for chopping wood . A comfortable tool that can be used for making good locking and smooth surface on the beams .

Tarey : One of the most commonly used tools in Bhutan . This particular type of axe comes from China (the carpenter says the quality is better) .It was introduced in Bhutan 15 years ago .

The axe in Bhutan is used to fell trees , chopping the logs , cutting logs and beams and for doing a finishing job on the beams .

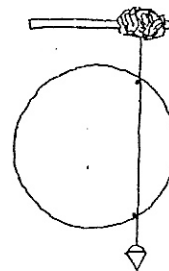
Patang : A tool that every villager is seen carrying within the folds of their garment (gho).It is used for cutting firewood , bamboo, as well as meat, vegetables and for all kinds of carpentry works including wood carving . It is a very useful tool and one is amazed at the variations at which this tool can be used. The patang is always kept in a sheath made of wood which is bound together by leather .

Zong :This special chisel looks like the smaller version of a patang . It is used for carving and making joints.

Lebe :This wooden angle is used by every carpenter and is self-made . It has an inch scale on one side and often is the only form of measurement the carpenter has . This sort of measurement in Bhutan is a recent innovation.

Thong :This wooden hammer is made mostly out of oak and carved out of a single piece of wood.

Thee : The shake line is used for marking any straight line on wood or even on the edges of the logs . For this purpose first mark a point and plumb the string to mark the other point , then mark the line .



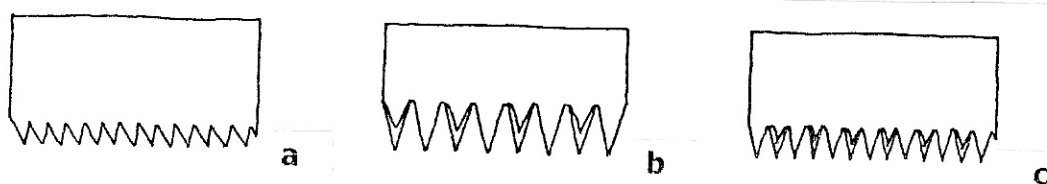
Wa / Wachung: It is a wooden log which is cut out and filled with red colour for the shake line .This red colour comes from Wamrong Dungkhag , Trashigang District . It is also used for painting houses and monasteries. Before the advent of pencils in Bhutan, an improvised version of a pencil was used . A wooden chip was cut and sharpened at one end – the end of which was dipped in the colour and used as a pen. ***



Bjilee : This type of plane is the most used . The way this tool is used by the Bhutanese is a clear indication that it is not a traditional tool . It's introduction in Bhutan was 35-40 years ago . *The use of different planes is now an up-coming trend among the Bhutanese carpenters .

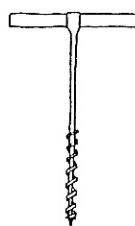
Zong : A common chisel introduced in Bhutan 35-40 years ago from India .

Soli : The saw is like in all Himalayan areas not a traditional tool but has been in use for about 50 years . **The carpenters say that the saw comes from India but in terms of its usage, the saws are sawed in one direction in India (a) , whereas , in Bhutan the saws are sharpened to work in both directions (b/c) . Version (b) is for coarse cut and (c) for fine cut . The Pit- saw which is used to cut the log along-side has been introduced from India 35-40 years ago. *



Baa / Tsheshing: This strong bamboo stick comes from a high altitude . It is used for measurement, either by marking on them or cutting. Sometimes they are also split and cut for special length.

Chunzee : This particular drill came into Bhutan 50 years ago probably from India . **



A brief description of the carpenters :

- Zowpeon Langkhong was born in 1951 and started his work as a carpenter from the young age of 20 . His son was born in 1974 and by the age of 16 started working as a carpenter . They come from Khoshar , in the Zhemgang district . They have had no formal training in carpentry neither have they had any formal education , and their skills have been learnt purely through practise .
- Zowpeon Thuji was born in 1940 and started working as a carpenter by the age of 16. He knowledge of Dzongkha, both written and spoken , were acquired through his own initiatives .
- * He says that the following tools like *banki*, *bjilee*, *zong* (straight one), and the *pit-saw* were used in the construction of the Tashichhodzong in Thimphu (1962-1969). These tools were then newly introduced.
- ** He also says that the *soli* and the *chunzee* were already used by his father .
- *** Sometimes the carpenters use *charcoal* instead of the red colour especially in the forests.

The Hierarchy and the Social Structure in the work at the Restoration of the house Kawang Mangkhey .

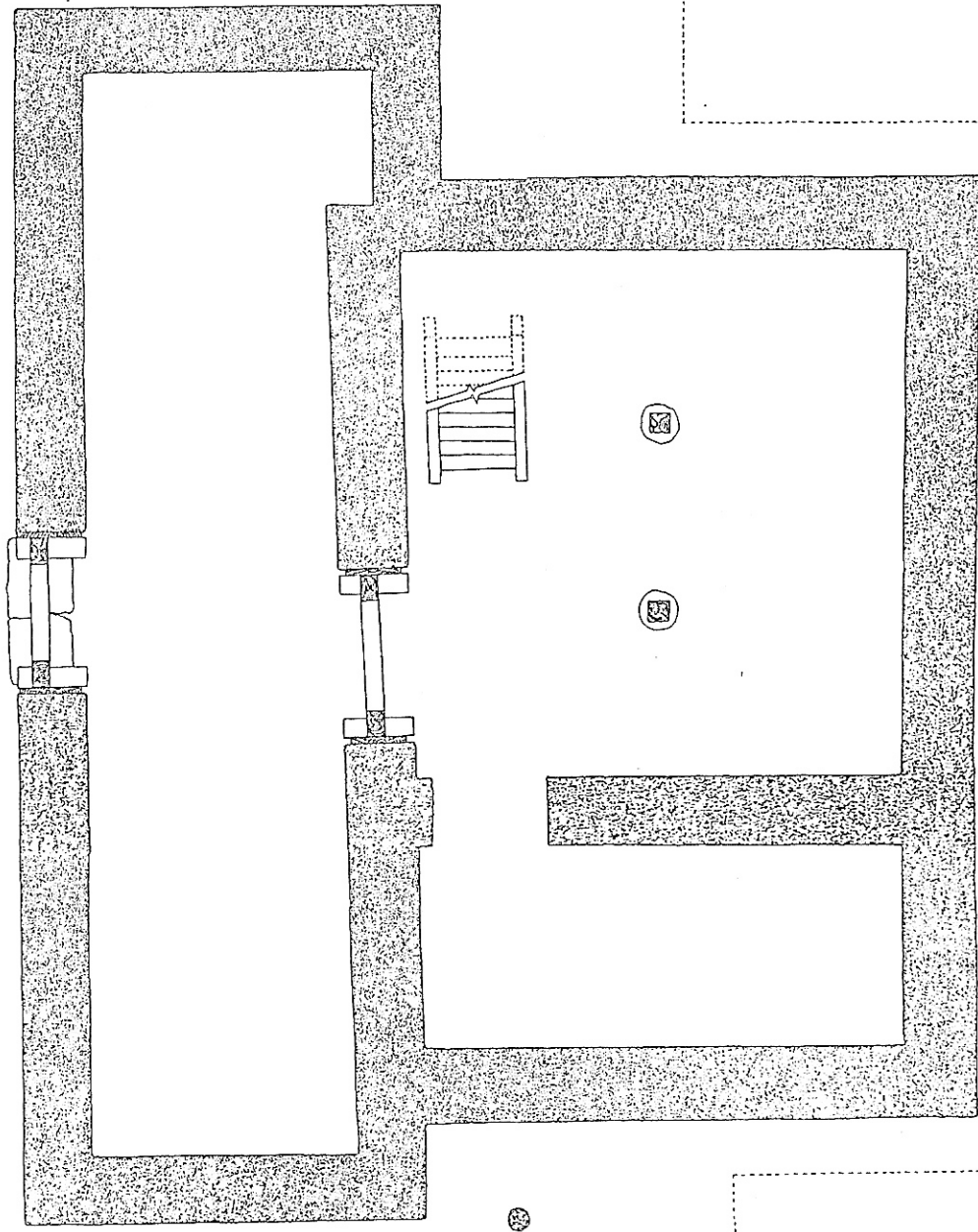
This project is under the care of the Special Commission , with Dorji Yanki as the head manager . The responsibility of the work is on Zowpeon Thuji. He is the best carpenter in that place and has 45 years working experience. He recruits workers from the villages and groups them according to their specific skills. His task involves giving the right measurements to the workers , organizing the workers in terms of their skills ,and overall looks after the general smooth running of the work site . He works only when some intricate details are to be shown to workers or when he is required to show by example how certain things are to be made or fixed . Socially speaking , his job entails looking after the general well-being of the workers and should there be any quarrels among themselves , he has a say in it .His decision is final and binding –his voice is to be respected .(There is a saying in Bhutan that the Zowpeon of your own house is to be treated like your parents and your teacher alike. It clearly indicates the high respect of a Zowpeon in the Bhutanese society .)

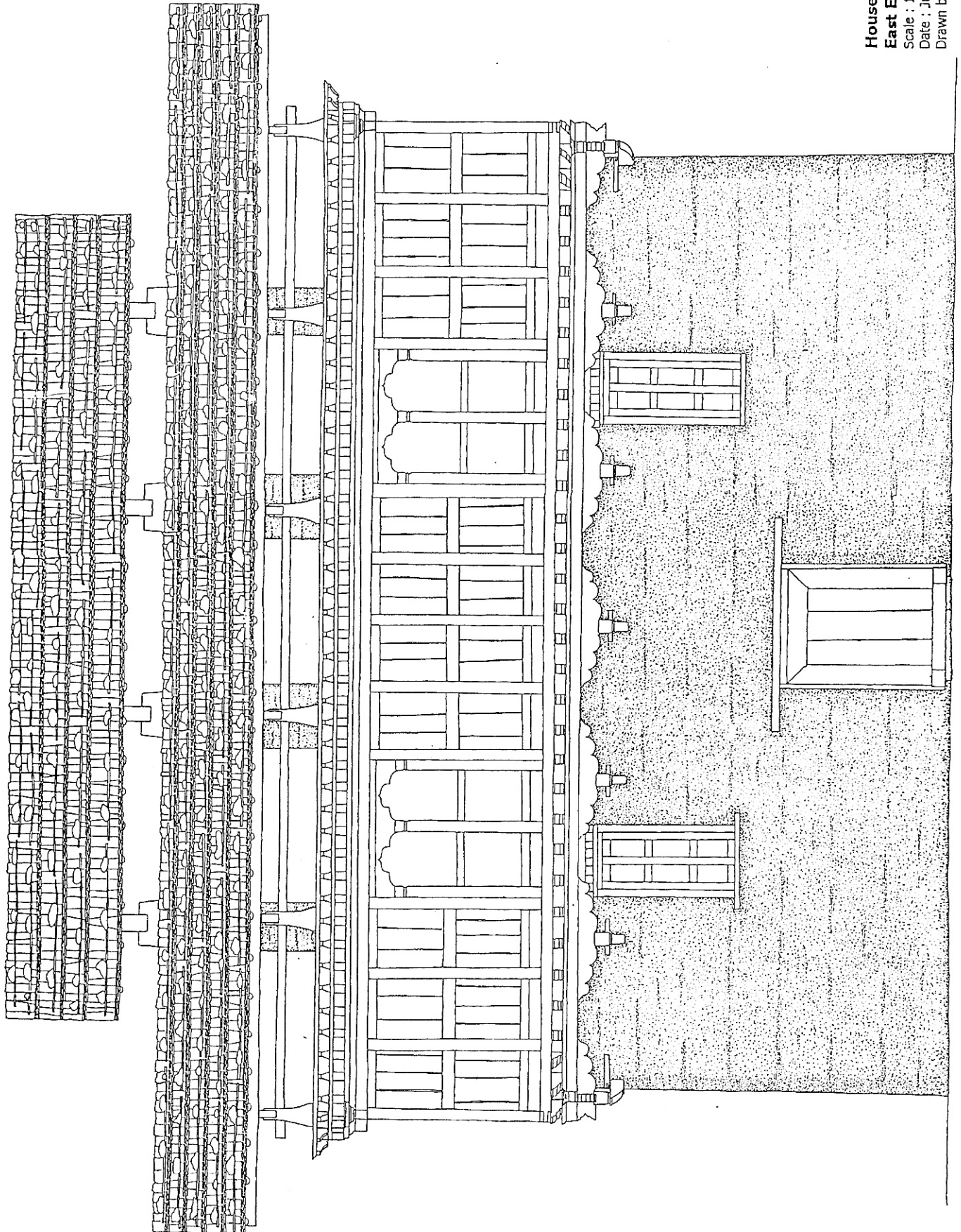
Zowpeon Langkhong is the second best carpenter in the work site. He takes the most complicated carpentry work , marks the lines on the wood and gives order to his son and the other Zows (carpenter).The Zows by themselves take responsibility for ' only' the piece of wood they are working on .

At times certain helpers help to plane or do other small carpentry work. (Like in most of the Asian countries , in Bhutan too there is no education system for carpentry .Anyone can take up carpentry ,depending on his interest and aptitude.* But every farmer has the basic knowledge of carpentry .)Every persons duty in the work site is well defined .

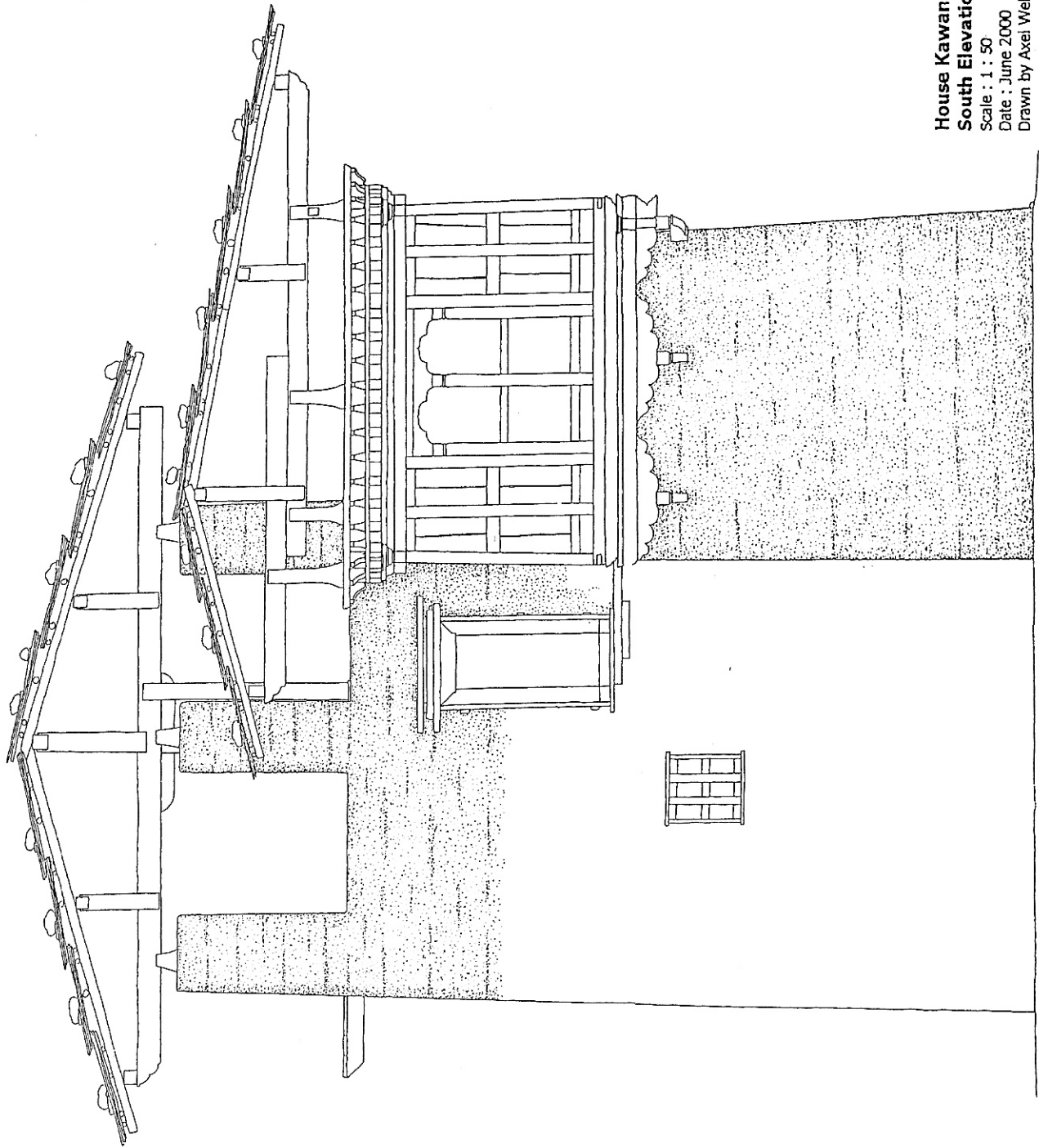
Most of the workers have their family with them and sometimes they help with a little input from their side , making the work atmosphere into a lively situation .The workers take holidays from time to time to visit their village and on the completion of Kawang Mangkhey , they would probably shift with their family to the next work site .

* Note : In the South of Bhutan, their professions are determined by the caste system .



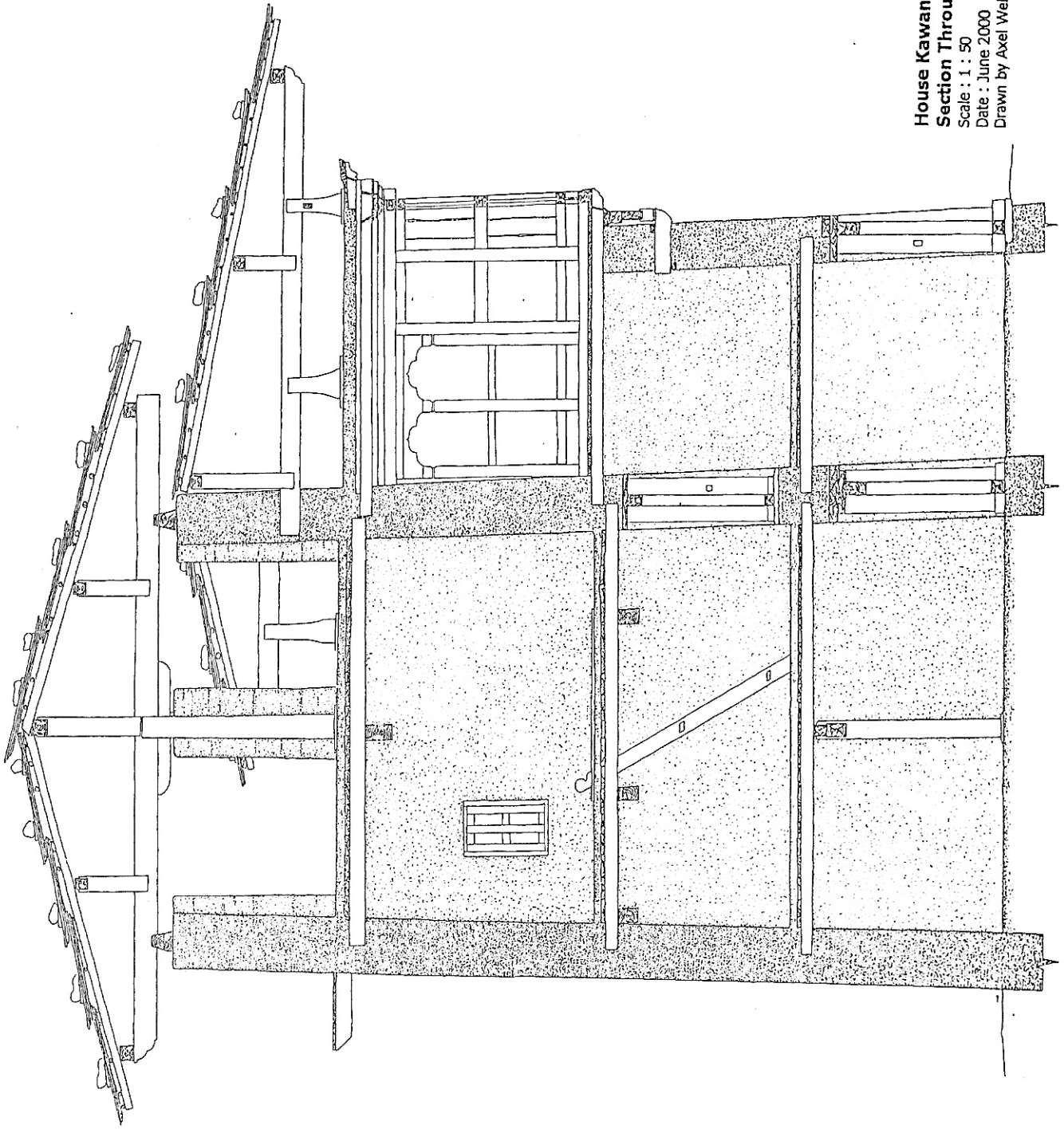


House Kawang Mangkhey
East Elevation
Scale : 1 : 50
Date : June 2000
Drawn by Axel Weller

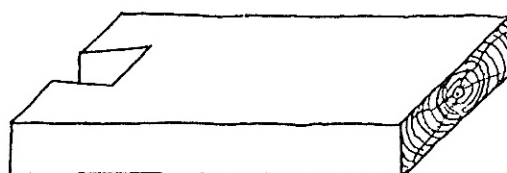
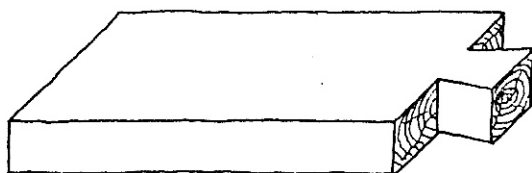


House Kawang Mangkhey
South Elevation
Scale : 1 : 50
Date : June 2000
Drawn by Axel Weller

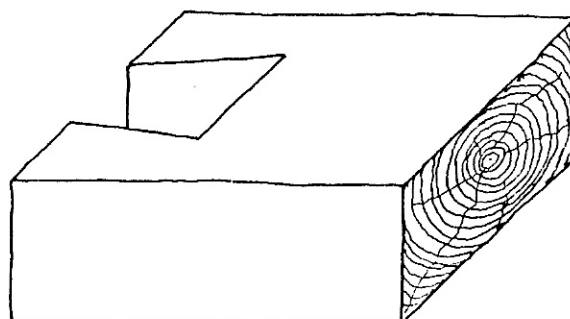
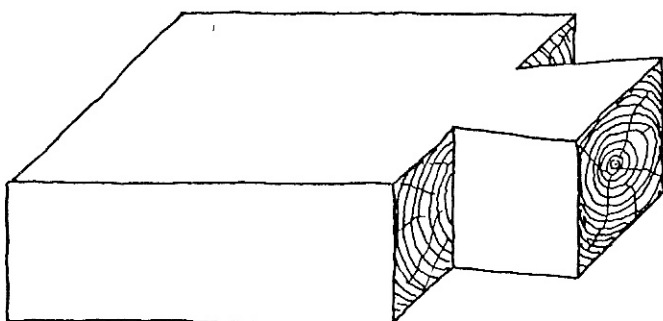
House Kawang Mangkhey
Section Through Center
Scale : 1 : 50
Date : June 2000
Drawn by Axel Weller



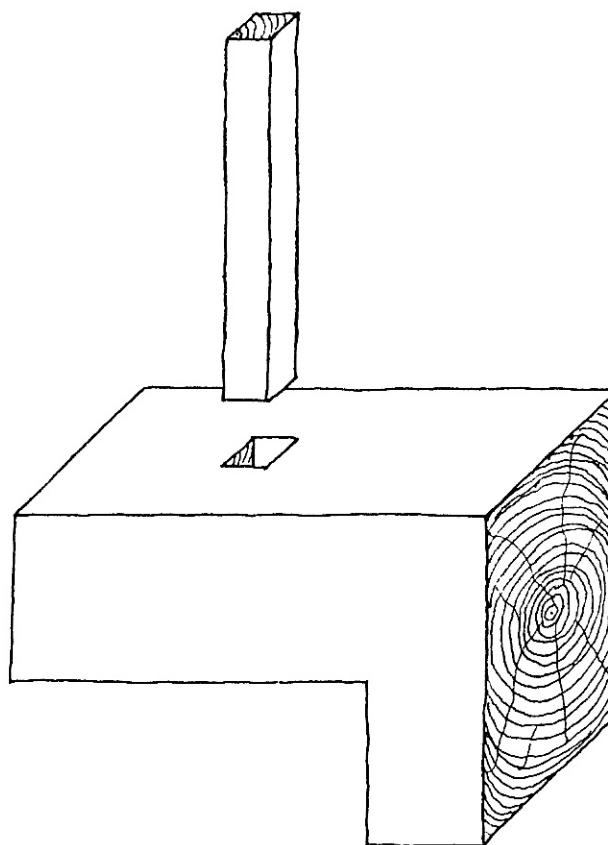
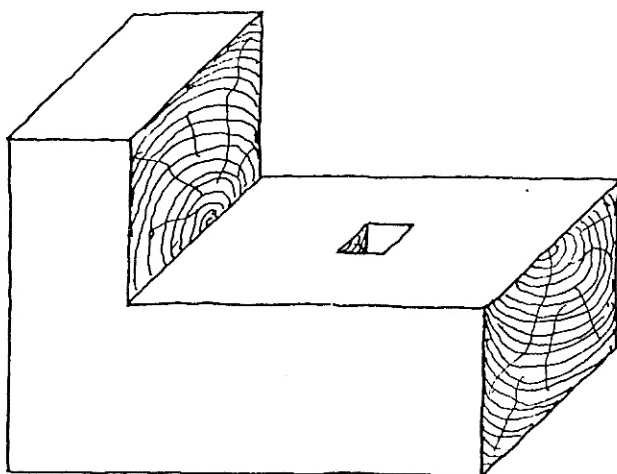
Traditional joints in wood construction In Bhutan.



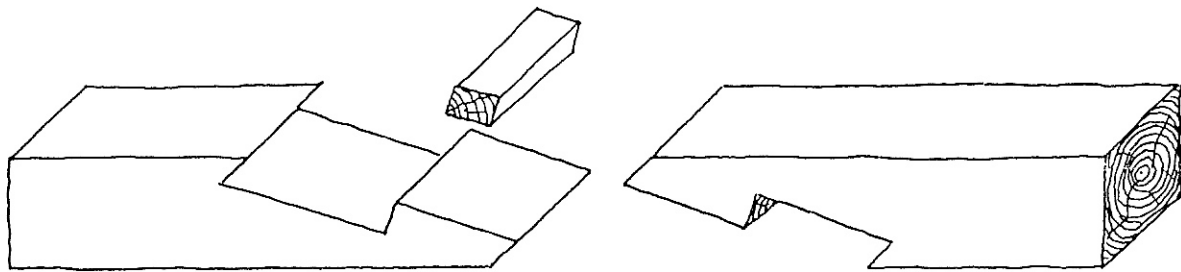
1. This joint is used on the timber cornices, especially on the board's; here at House Kawang Mangkhey/ Thimphu.



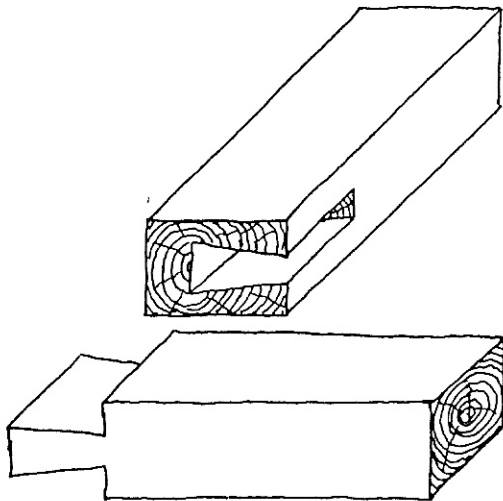
- 2 This joint is used on roof construction, timber cornices, timber frame walls; here at Rinchenpung Dzong /Paro.



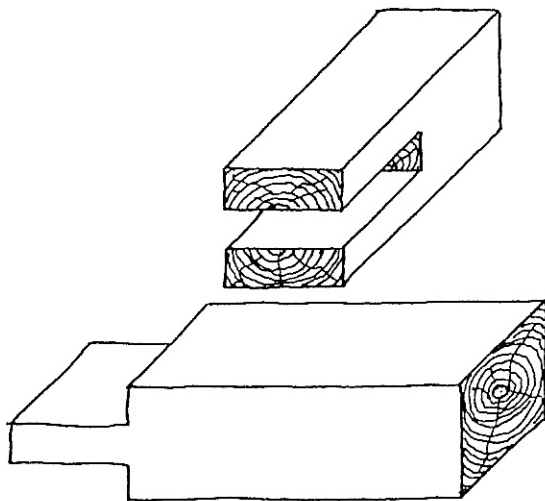
- 3 This joint is used on roof construction, timber frame walls; here at Rinchenpung Dzong /Paro. *



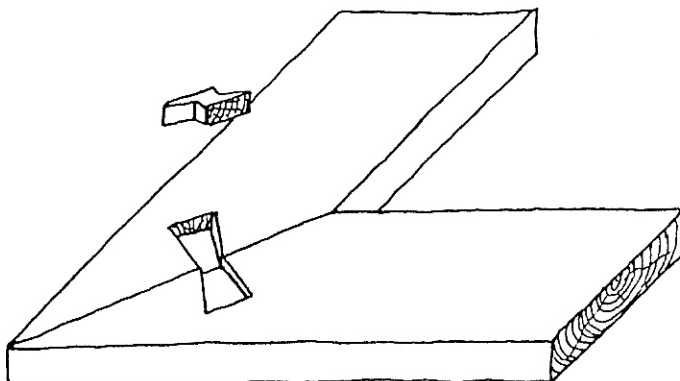
- 4 This joint is used on roof construction, timber frame walls (every joint like this I have seen is not older than forty years); here at a new constructed building near the cinema in Thimphu.



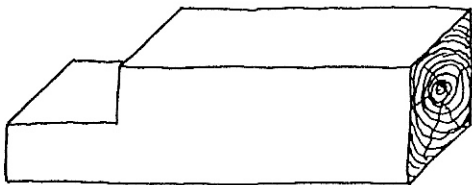
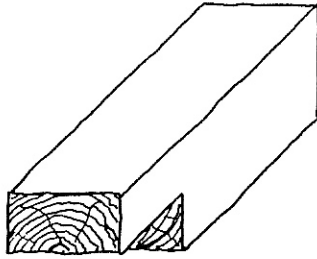
- 5 This joint is used on the timber frame of chorten's; here at the chorten to the House Kawang Mangkhey/ Thimphu.



- 6 This joint is used on roof construction, timber frame walls; here at House Kawang Mangkhey/ Thimphu.

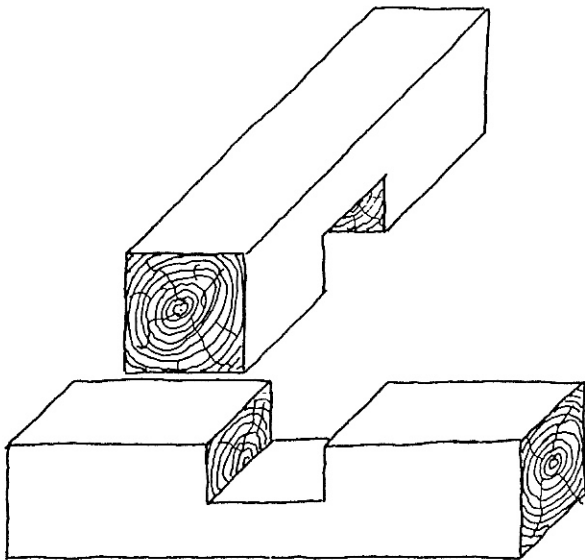


- 7 This joint is used on the timber cornices, specially on " Pholey Katchu " the upper most board; here at House Kawang Mangkhey/ Thimphu.



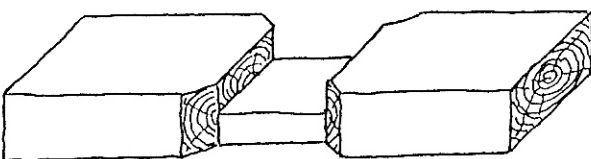
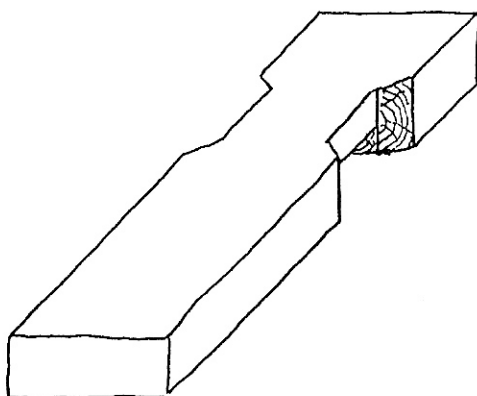
8

This joint is used on roof construction, timber frame walls; here at House Kawang Mangkhey/ Thimphu.



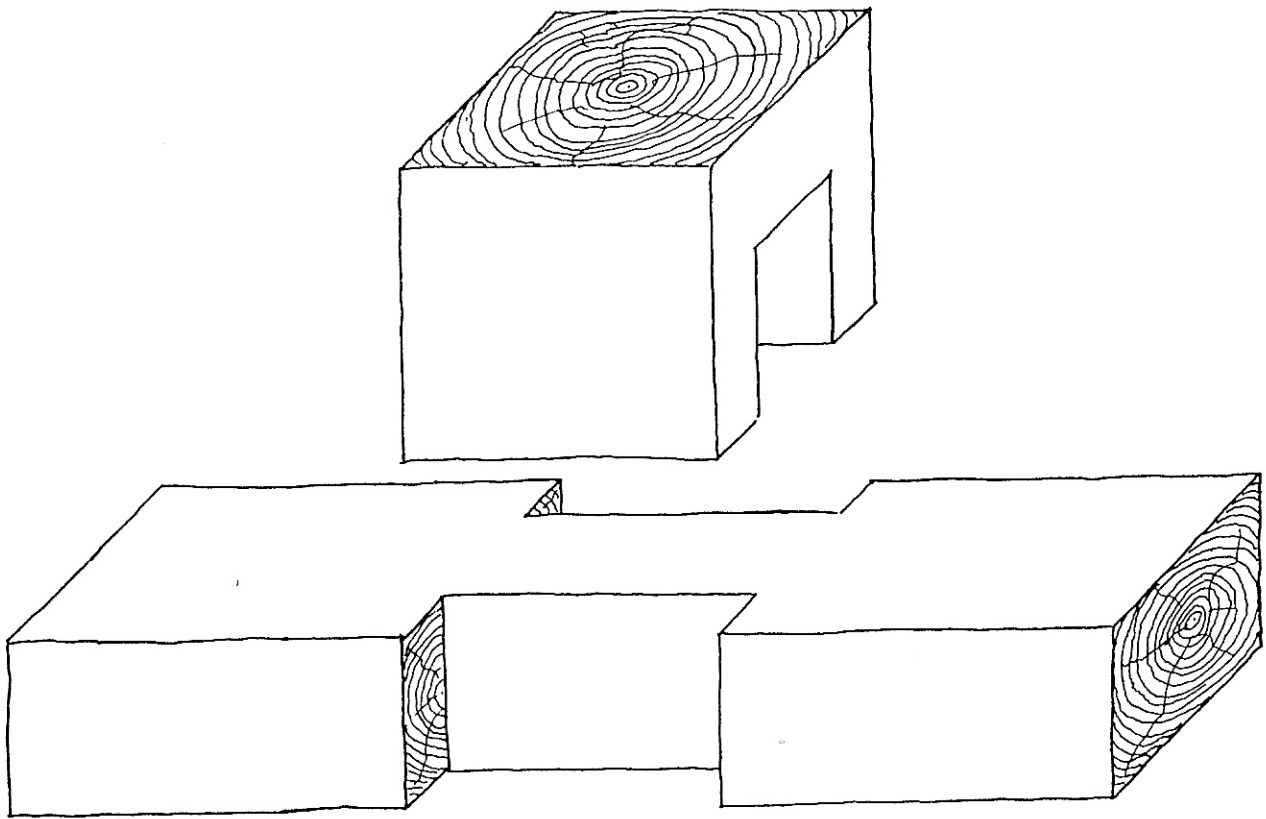
9

This joint is used on roof construction, timber frame walls, timber cornices; here at House Kawang Mangkhey / Thimphu.

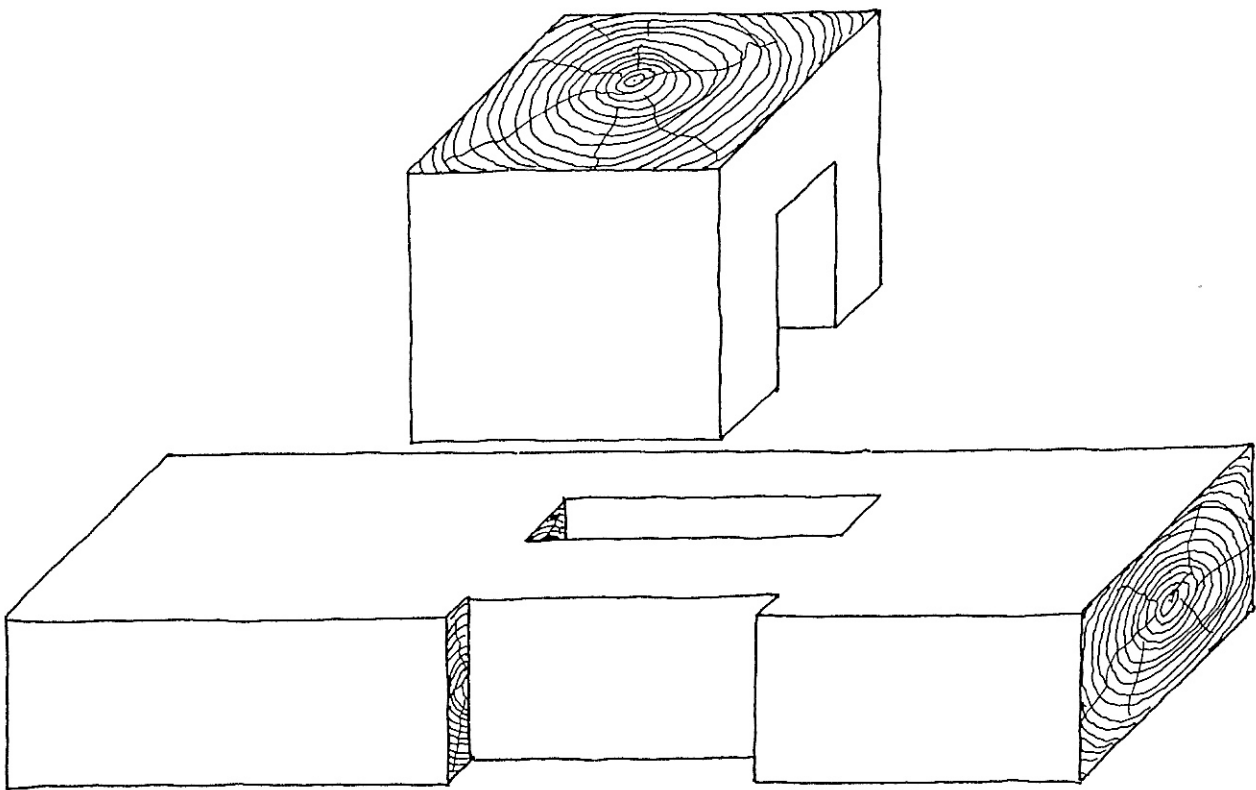


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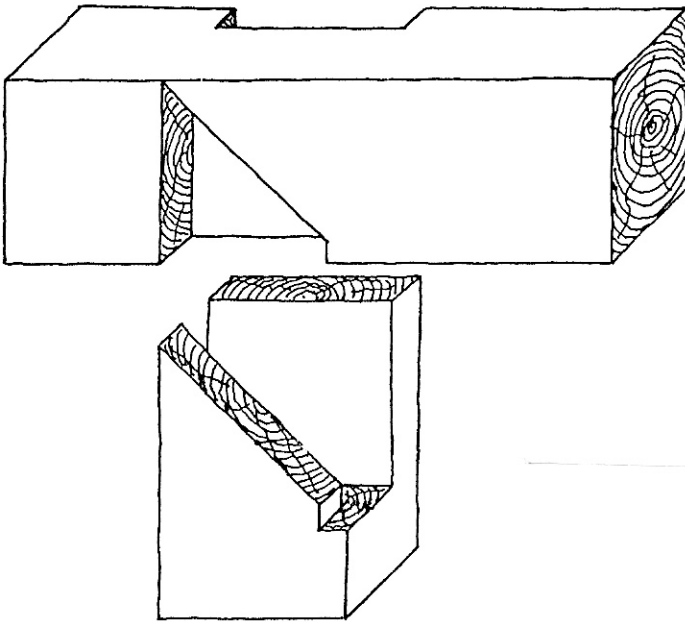
This joint is used on timber cornices especially at profiled board's; here at House Kawang Mangkhey/ Thimphu.



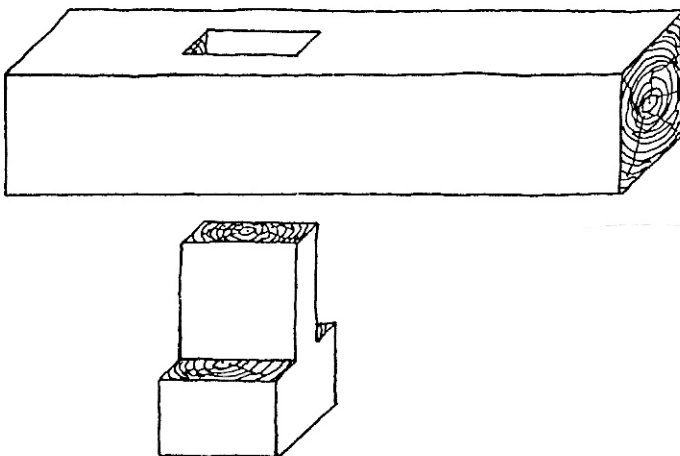
- 11 One of the used join, on roof construction, timber frame walls, balconies and almost all kinds of timber construction here at Rinchenpung Dzong, Paro.



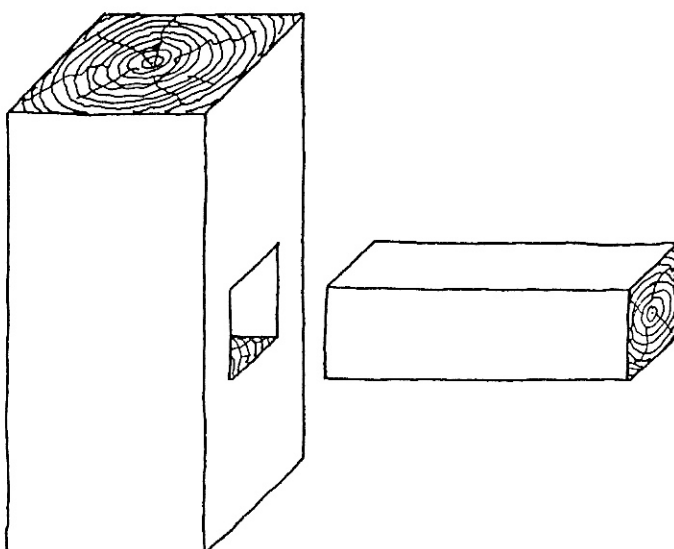
- 12 This joint is used on roof construction, timber frame walls; here at Rinchenpung Dzong, Paro.



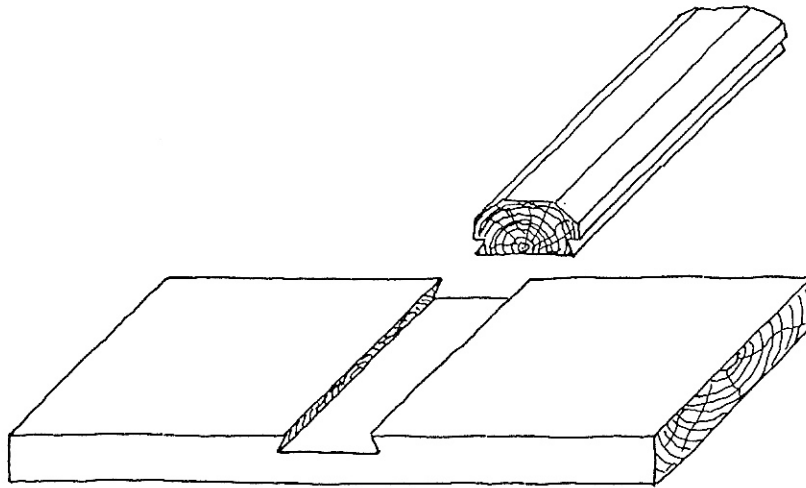
- 13 The traditional joint on almost all door- frames; here at House Kawang Mangkhey/ Thimphu.



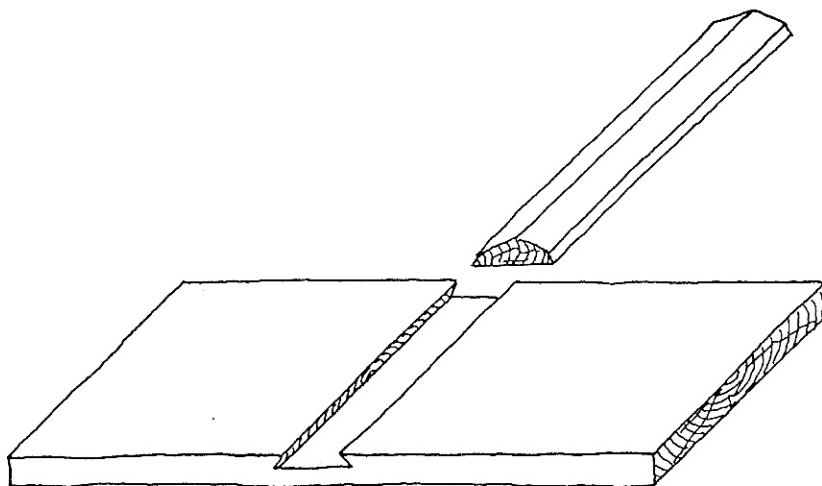
- 14 This joint is used on roof construction, timber frame walls, windows ; here at House Kawang Mangkhey /Thimphu.



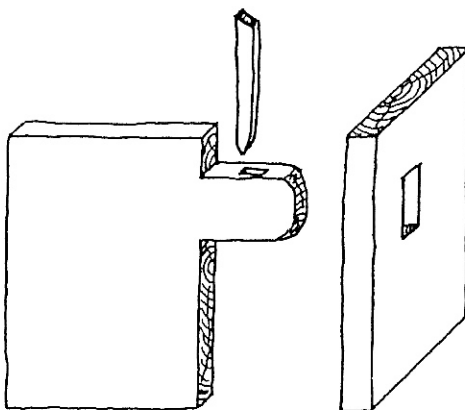
- 15 This joint is used on roof construction, balconies, windows, timber frame walls ; here at Rinchenpung Dzong, Paro.



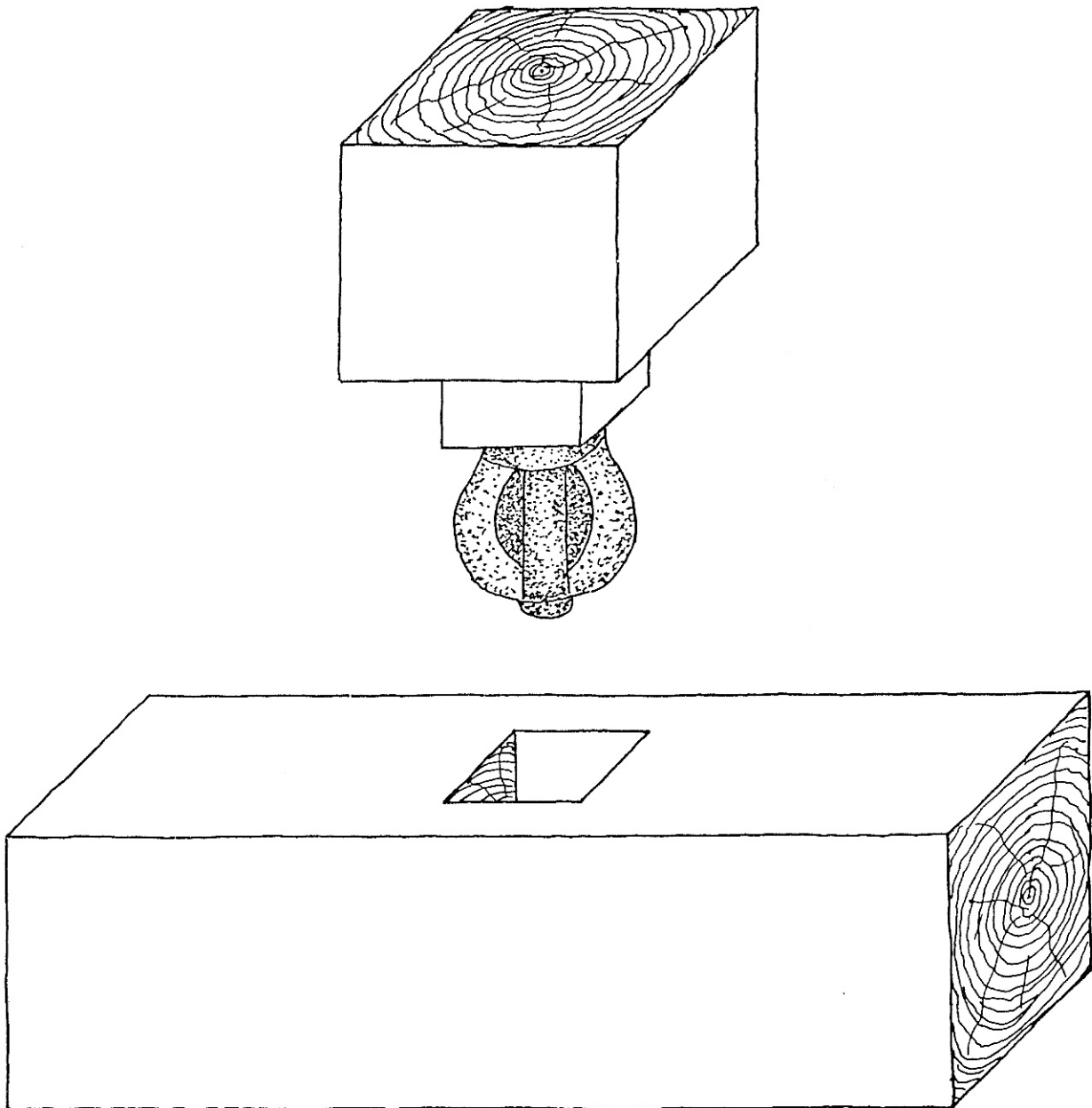
- 16 This joint is used on doors, window – shutter, tables and everywhere, where boards has to be joint; here at the door to the bridge house in Paro.



- 17 This joint is used on doors, window-shutter, and every where, where boards has to be joint without a landing ; here on window - shutter in Taba village near Thimphu.



- 18 This joint is used on chests in every size and use; here in Taba village near Thimphu.



- 19 This is the joint on the upper most ,vertical beam at the " Utse" The tower of the Rinchenpung Dzong , Paro. The joint is carved like "Dorji" (similar to the beam in every stupa)

Note:

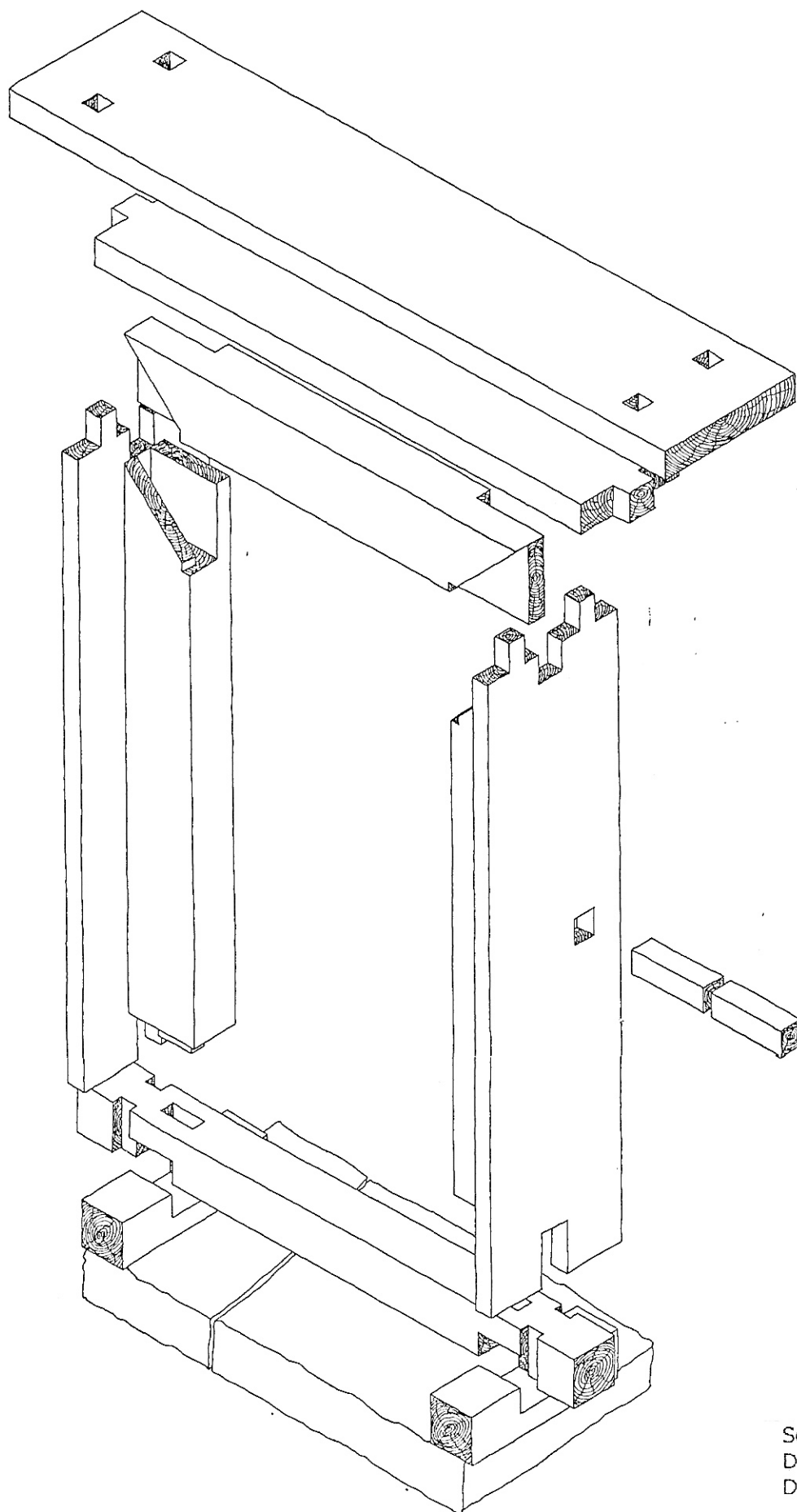
- * The corner wooden nail make clear in this time the roof has been built, no drill has been in use.

All drawings of the joints from the Rinchenpung Dzong in Paro have been taken from the roof of the Utze. Rinchenpung Dzong caught fire in 1905 and has been repaired in 1908-9. So all of the joints must be from this time.

All drawings of the joints from House Kawang Mangkhey have been taken during the restoration in 2000.

Examples of traditional wood constructions

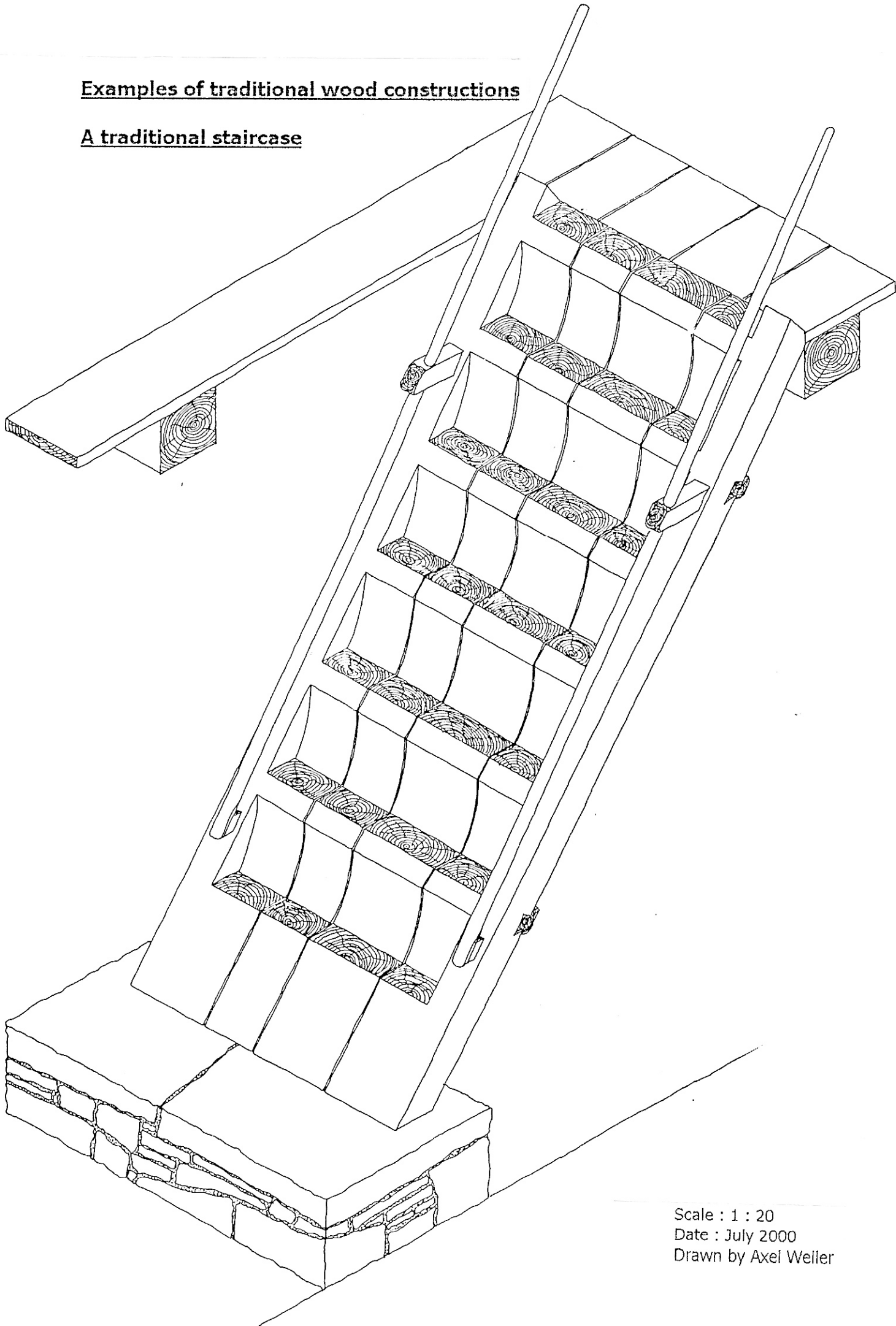
A door frame construction.



Scale : 1 : 20
Date : July 2000
Drawn by Axel Weller

Examples of traditional wood constructions

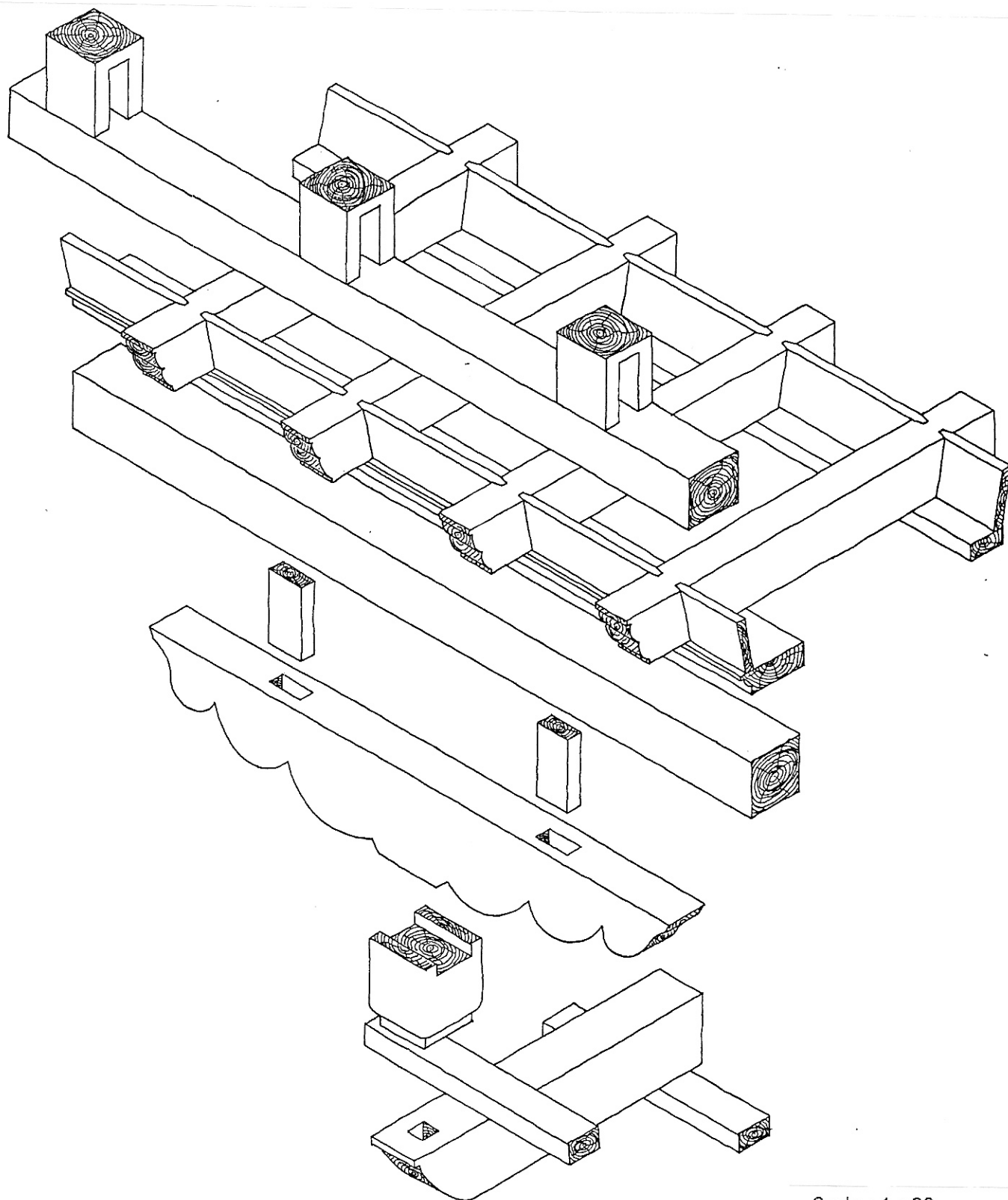
A traditional staircase



Scale : 1 : 20
Date : July 2000
Drawn by Axel Weller

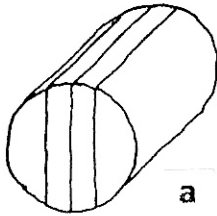
Examples of traditional wood constructions

The base construction for a window front



Scale : 1 : 20
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Preparing of the wood for the construction

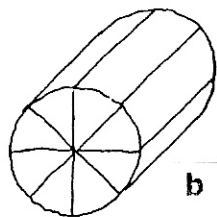


a

- The felling of the trees are mostly done by axe.

- The trees get rough chopped by axe or banki, and cut in to shorter pieces in the forest.

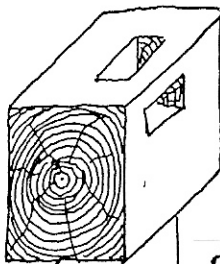
- For planks the down part of the tree gets spilt into two parts and chopped to planks. (a)



b

- For the roof shingles the tree get cut into smaller pieces and spilt into eight parts (b)

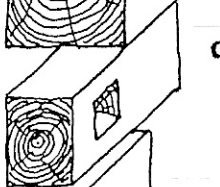
- Planks and beams become a hole, made by axe, to tie a rope and pull the wood out of the forest. (almost all forests in Bhutan is mountain areas without road or way) (c, d,e)



c

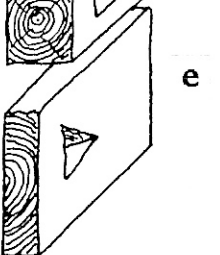
- After the wood is out of the forest the beams are put together to big piles covered by wooden shingles to dry.

The same happen with the wood pieces prepared for shingles. (f)



d

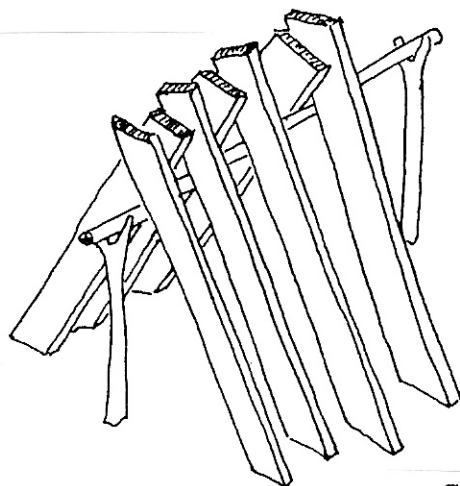
- The planks are kept standing to dry and it is the quickest way to dry wood(g)



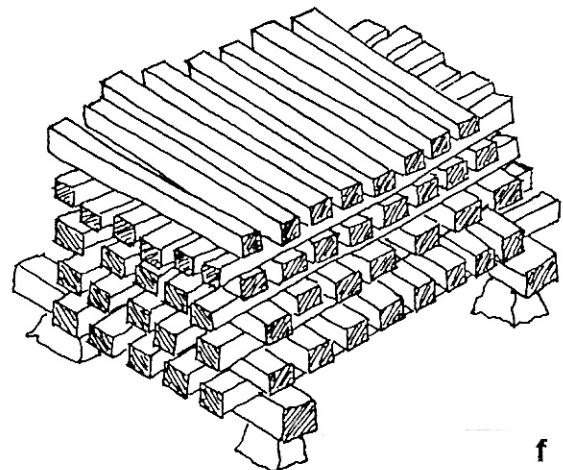
e

-After the wood is dried, the beams for the construction and the planks chopped or plant in the used size (It is advantage to dry the wood before finishing in the right size because during the process of drying the wood move and twist a lot. If the wood twist in the finish construction, it create often problems)

- The bigger beams get saw in a sawmill or by a Pit saw to planks.



g



f

The use of Bhutanese trees

Abie densa East Himalayan Fir Dung shing Waang shing Gobre salla	Timber for roof shingles, construction timber, and furniture.
Acacia catechu Toe-ja-shing Toe-ja-shing Khair	Durable timber
Acer cambellii Mapple Chalum Sermaling shing Kapasi	Preferred wood for using with lathe to produce wooden cups and bowls.
Alnus nepalensis Alder Gama Gammo shing Utis	Used as fire wood and fencing materials and timber.
Betula alnoides Birch Taab Chhar shing Saur	Timber for building, printing blocks and furnitures.
Castanopsis hystrix Chestnut Tshai shing Katus	Used for roof shingles

Cupressus corneyana Weeping sypress Chendhey or Tsendhey Tsendhen shing or Chen shing Dhupi	Very good and durable timber for various purposes and is used for incense, the most desire wood for religious building.
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Daphniphyllum chartaceum	Used as building construction timber.
Juroo shing Awa shing Lal chanda	

Junglans regia Walnut Tashing Khey shing Okhar	Most valued timber.
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Michelia champaca Golden champ Kha shing Kar shing or Chhamp shing Camp	Very valuable timber.
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Morus macroura	Very valuable timber.
Tshendhey Froomtegepa shing or Sengdheng shing Kimbu	

Picea spinulosa West Himalayan spruce Ba - shing Ba - shing Kalo salla	One of the most used construction timber.
------------------------------------------------------------------------------------	-------------------------------------------

Pinus bhutanica Bhutan pine Drug – gi – tongphu Drukpa chang shing	Very good construction timber.
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Pinus roxburghii Chir pine They tong Roinang shing Dhup	Most used construction timber, source of resin.
Pinus wallichiana Blue pine Tongphu Chang shing Dhupi	Good timber for multiple purposes.
Quercus semecarpifolia Brown Oak Bji shing Betsinang shing Khossra	Good for agricultural implement and very durable timber, best fire wood.
Salix bhutanesis Bhutan willow Borang changma	Used for furniture and fire wood.
Schima wallichii Needle wood Puyam Zala shing Chilaune	Used for construction timber.
Taxus baccata Yew Ha shing Keerang shing Dhengre salla	Durable timber.

Terminalia chebula
Myrobalan
Aaroo
Aaroo
Harra

Used for construction timber.

Toona ciliata
Indian mahogany

Very valuable and durable wood.

Rawa shing
Toon

Note :

Botanical name
English name
Dzongkha name
Sharchop name
Nepali name

Most information from " Know the plants of Bhutan" from Ugyen Thinley.

The Rituals of House Building :

- Before building a house the lama (Buddhist monk)* has to find out whether the place is suitable for the building and the owner. In this case the lama takes the year of birth of the owner , the name of him/her and the name of the wife/husband , the number of the family members and counts it in a system together .He then writes it on a handful of earth from the chosen building site . Depending on the results , the owner will or will not build the house . **
- In line with the Tibetan calendar and the star constellation, the lama decides the day when the work should begin. **
- In the process of building a house, there are several rituals to fulfill. **
- The direction of the house is decided by the Zowpeon in consultation with the owner .They are as follows : ~ the house should face (the main door) to East or West . East is the best direction. ~ the house that faces the South or North bring illness or death to the occupants .~ the house should face the valley .~the house should not face a rock ~the chorten of the house should not face the main door . ~the best is the chorten stay in the eastern direction , to the house .~the chorten should not face another house . ***

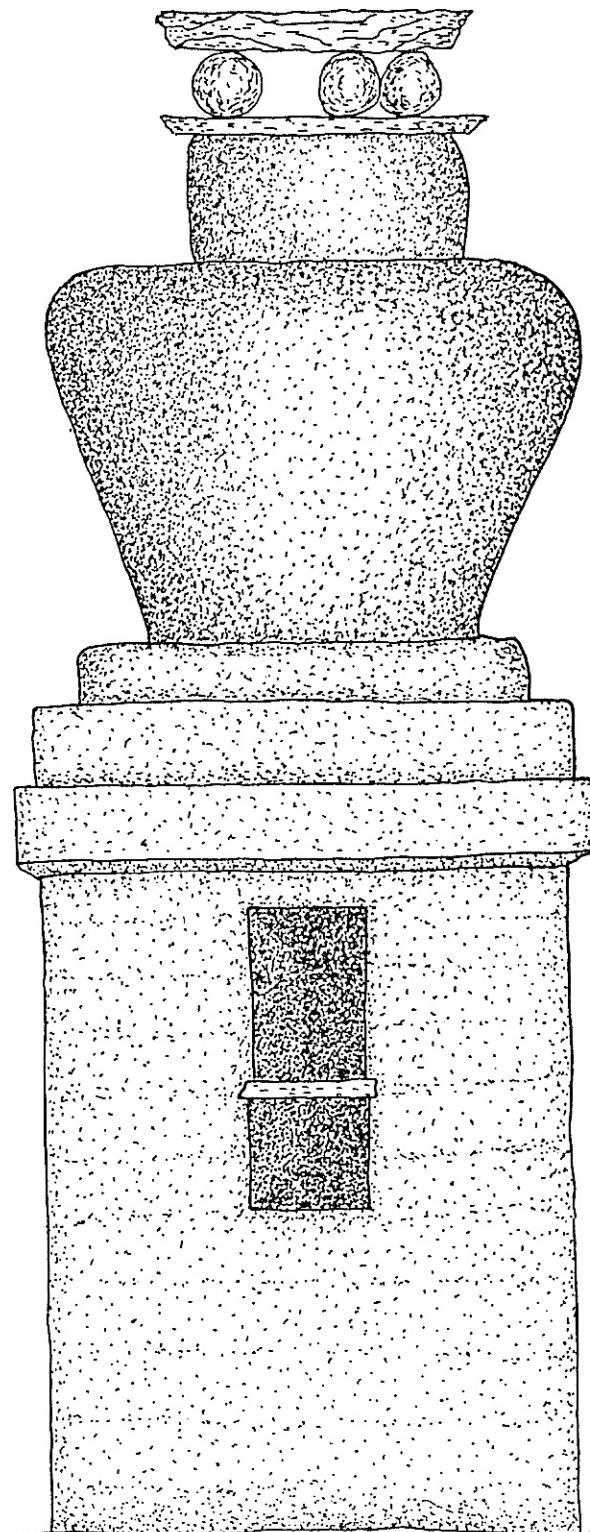
Note :

* In some regions the local shaman takes the task/duty of the lama .

** Information from the lamas from the Buddhist college in Tango Monastery .

*** Information from Zowpeon Thuji .

SANG THAB (Smoke Oven)

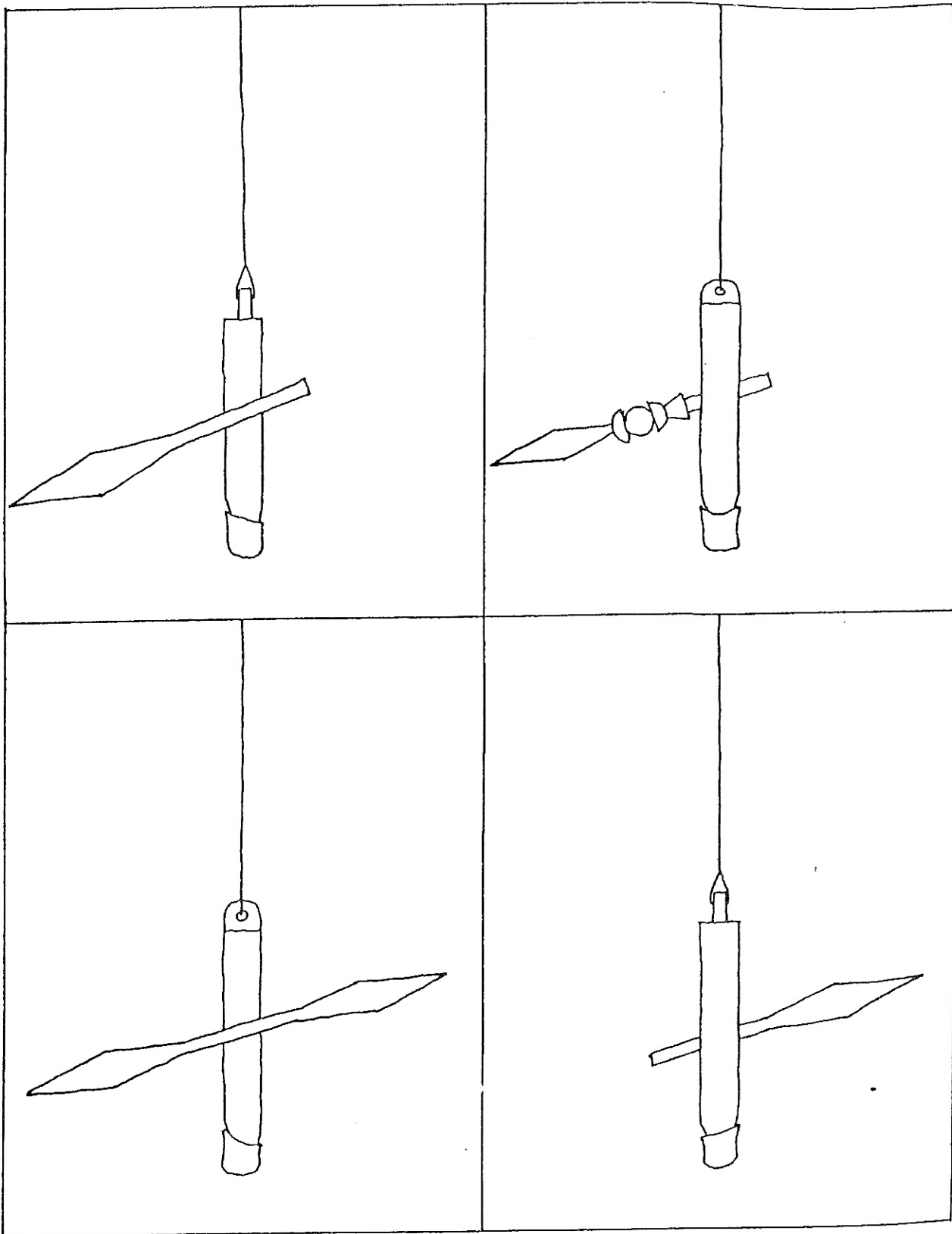


Scale : 1 : 10
Date : July 2000
Drawn by Axel Weller

Every morning the Bhutanese people burn leaves of Pine or Cedar in this kind of oven to clean with the smoke the house, farm and every living being.

Phochen

A wooden phallus as house protector,



To protect the house in all directions against evil, this wooden phallus hanging from the roof and it should save the house from lightnings. The people say Lama Drukpa Kinley 1455-1529 coming from Tibet has driven away a lot of evil from Bhutan with his phallus and since then the people used as a protector of the houses and farms.

