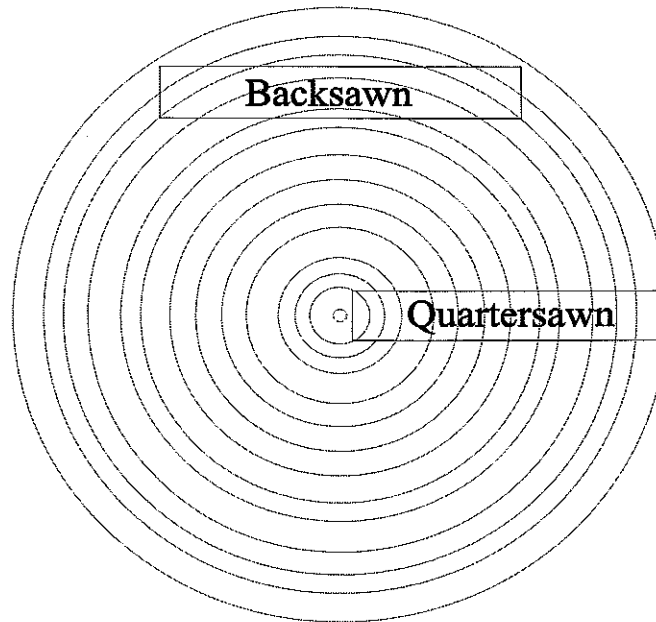
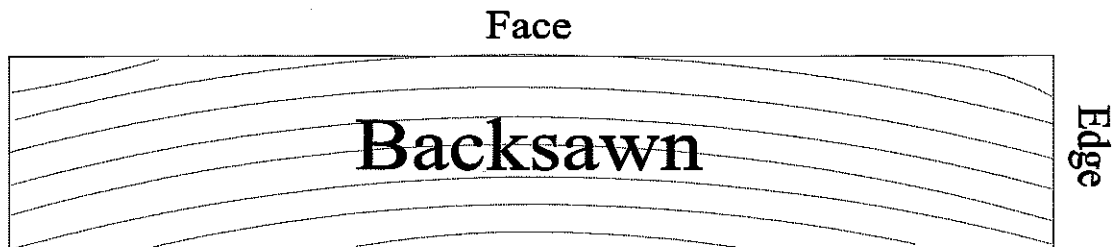


# BACKSAWN / QUARTERSAWN

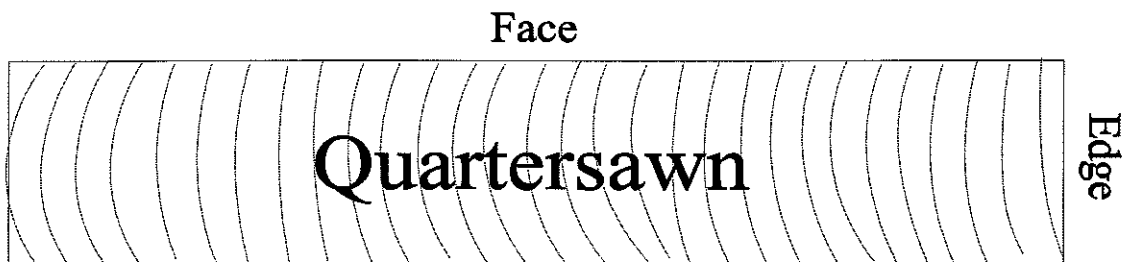
**Backsawn** and **Quartersawn** are two common cutting patterns used throughout the timber industry. This simply refers to the placement of growth rings.



**Backsawn** timber has growth rings generally going from edge to edge. To be backsawn growth rings have to be less than 45 degrees to the face of the timber. True backsawn has to have growth rings less than 10 degrees.



**Quartersawn** timber has growth rings generally going from face to face. To be quartersawn the growth rings have to be greater than 45 degrees to the face of the timber. True quartersawn has to have growth ring greater than 80 degrees.



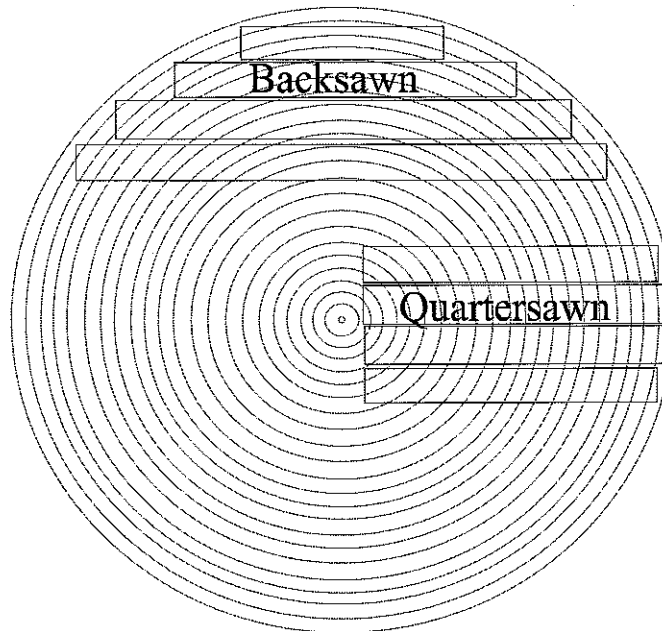
# BACKSAWN / QUARTERSAWN

## BACKSAWN ADVANTAGES

- **Wide board availability:** Due to growth ring orientation across the board.  
(See diagram below)
- **Better Recovery:** Sawing induces **bow** into the product **not spring**.  
It's a gradual relief of growth stresses.

**Bow** is where the timber is bent through the thickness.  
**Spring** is where the timber is bent through the width.  
**Bow** is generally easier to straighten than spring.

- **It's faster:** Because you are dealing with the whole log, there is generally less straightening cuts required.



## QUARTERSAWN ADVANTAGES

- **Easy to match:** Due to growth ring orientation it's easy to match the appearance of the boards, even from different logs. They must be the same species.
- **Dry product is more stable:** Due to different shrinkage rates.

**A quartersawn board has a radial shrinkage across the width.**  
**A back sawn board has a tangential shrinkage across the width.**  
**Radial shrinkage is generally half of tangential shrinkage.**

- **Far less drying degrade:** Quarter sawn is not prone to surface checking and cupping.

**Surface checks occur radially. This means surface checks travels through the growth ring towards the heart. A quartersawn board will have surface checks on the edge and a backsawn board will have surface checks on the face.**

## OTHER REASONS TO BACKSAW

- Less prone to splitting when nailed.
- Loose gum veins and shakes are less likely to extend from one surface to another.

**This is two of the main reasons why railway sleepers have to be backsawn.**

- Backsawn timber has a better nail holding ability particularly in soft wood.
- Backsawn timber will dry faster than quartersawn.

**This is not necessarily a good thing.**

**The faster the timber dries the more prone you are to drying defects.**

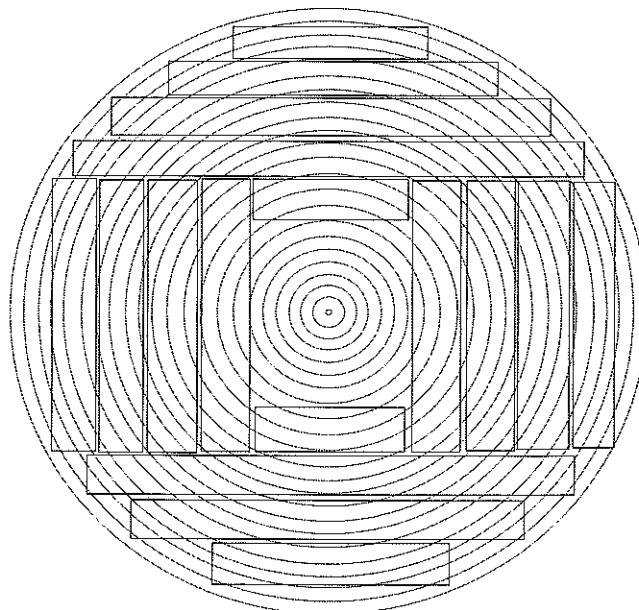
**Soft wood:** Is not prone to surface checking and due to its poor nail holding ability and small diameter, a backsawn cutting pattern is generally used.

**Hard wood:** In most cases, a backsawn cutting pattern is used when cutting timber for structural purposes and sleepers. Quartersawn is generally used for appearance grade timbers. Backsawn timber can be used for appearance grade, however it may be harder to achieve the grade requirements.

**To achieve true backsawn** you should only remove one third of the logs diameter before changing sawing directions. The one third cutting principle will help to minimise cupping and maximise wide board availability.

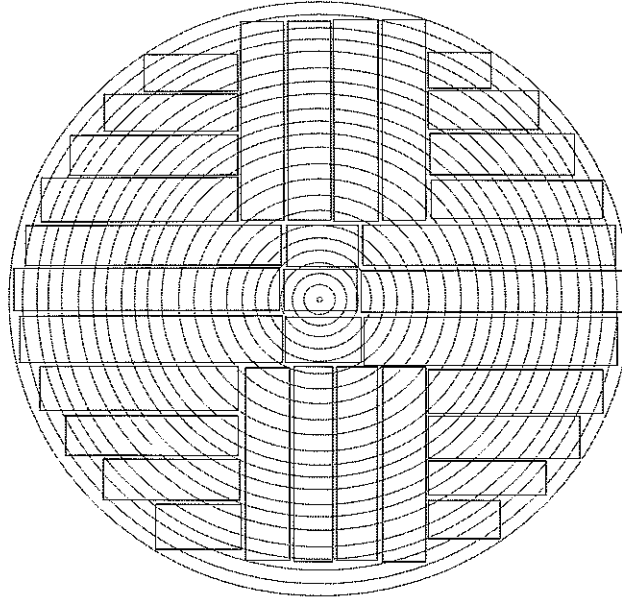
**When slabbing** the one third principle will help to minimise cupping. Without rolling the log, your best slabs will come from the top and bottom third.

## Suggested backsawn strategy for a Lucas mill.

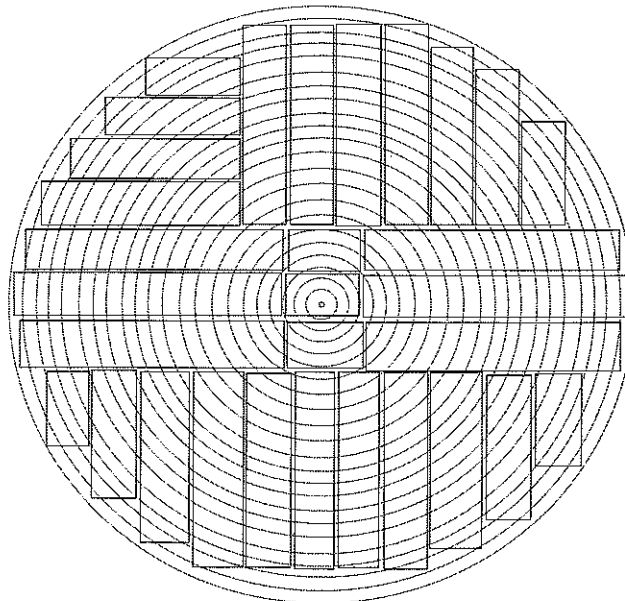


Although the cutting pattern is different, to achieve true quartersawn you should also maintain the one third cutting principle.

## A true Quartersawn strategy for a Lucas mill



To produce true quartersawn is time consuming compared to backsawn. This suggested quartersawn strategy would sacrifice some quartersawn timber in order to reduce production time.



**Note:** Due to growth stresses in a lot of hardwood logs, to produce straight timber you may be required to cut slabs and then resaw them.