Making and Using a Pole Lathe
Presented at Canterbury Fair AS XLIV
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Introduction

When you hear the word “lathe”, you probably tend to think of a precision powered machine, moderately large and moderately expensive. For engineering metalwork, this is not too far from reality. For wood turning, the entry level is much lower.

The essential requirements of a wood lathe are: something to hold the wood, something to spin it around rapidly, and a firm rest for the cutting tool. Everything else is elaboration.

Construction

Essential Elements

• pair of rails and a support at a convenient working height.

• pair of poppets and centres to support the workpiece. Wood allows a simple hard point to be used as a support and a bearing – very convenient.

• drive mechanism – a drive cord wrapped around the workpiece - avoids complicated bearings and the foot alignment

• motor -a treadle to pull the drive cord and a spring to return it between power strokes

The key thing is rigidity in the frame, which makes it much nicer to use.

Materials

Any basic wood is OK: pine, rimu, etc. The rails are the only really critical part, for straightness. Locking wedges are better in a harder wood, but this is not a big deal.
Treadle

In the shape of an inverted “Y”, with the ends of the “Y” approximately forming an isosceles triangle as shown in the drawing. Nail these parts together.

Nail on the cross pieces in the approximate positions shown.

Treadles are often shown as open Ys, but my experience is that a base makes it much easier to control, by placing your other foot on the base.

Cut two leather hinges and pin these to the undersides of the treadle. Pin the free ends of the hinges to the treadle base as shown in the drawing. The ends of the treadle should be resting on the treadle base, not in mid-air.
**Preparation of work**

The workpiece needs to be cut roughly to shape and size before putting on the lathe (see the next section).

- Do a trial centring on points to check for balance
- Enlarge the centre indents, lubricate with some wax or lard, wrap the cord around and lock into place in the centres.
- Work the drive cord to a convenient place away from where the cutting will happen!
- Adjust the position of the cord on the treadle to match the size of the work – a fat workpiece means closer to the foot of the treadle for more torque.

**Working**

Working seasoned wood is hard and rather slow, since the available cutting power is limited. Unseasoned wood is softer and much easier to cut. Pole lathe working pushes you towards green wood working.

The other big consequence of low available power is that the lathe is mostly used just for finishing and detail work. Rough shaping is done off the lathe by other means.

Hence, using a pole lathe generally also means using splitting and shaving techniques for preparation.

Splitting is done with a froe or wedges. A small hatchet is also usable for this.

Rough to medium shaping is best done with an axe. Again, a hatchet can be used, but best results come from a side axe. This looks like an axe but is used more like a large heavy chisel, using its weight and sharpness to cut precisely.

Some different types of side axe heads.
L-R: wheelwright's, coachmaker's, cooper's
Fine shaping is the work for a draw knife, and the ideal place to use this is on a shaving bench or horse. There are plenty of plans of benches on the Web, but I like the one in by John Alexander (see below).

** Obtaining Tools **

This will be the hardest part.

Froe – you can make one or get your friendly local metalworker to do it. Mild steel is fine, say 5mm x 30mm strip.

Draw knife – can still be bought new, or found at Sunday markets.

Shaving bench – can be made from a 12” plank. Old wood or even new wood is suitable. See the attached plan.

Side axe – this will be the hard one to get. They turn up at markets very rarely. You have to make do with a small sharp hatchet.

** Reference material **

These are books I found useful:

- **Make a chair from a tree**: an introduction to working green wood, by John D. Alexander, Jr., Taunton Press, ISBN 978-0918804013

- these two have good information on lathe construction, shaving bench construction, wood preparation.

- **The Woodwright's Shop**: a practical guide to traditional woodcraft, by Roy Underhill, Univ of North Carolina Press, ISBN 978-0-8078-4082-5, also www.pbs.org/woodwrightsshop/ for more current info - descriptions of (post 1600) treadle lathes and pole lathes, but useful pictures, and a good read. Also making a froe.


- **Craft, Industry and Everyday Life**: Wood and Woodworking in Anglo-Scandinavian and Medieval York, Carole Morris, York Archaeological Trust, ISBN: 1902771109 - haven't read this myself yet but have it on order; it is highly recommended for practical details from excavations. Also see the Trust's site at www.yorkarchaeology.co.uk

- I also have a blog where I post photos and words about what I am making on my lathe(s), at http://scottsmakingdo.blogspot.com/, or contact me at lscampbell@xtra.co.nz
Plan taken from “Make a Chair from a Tree”, by John Alexander