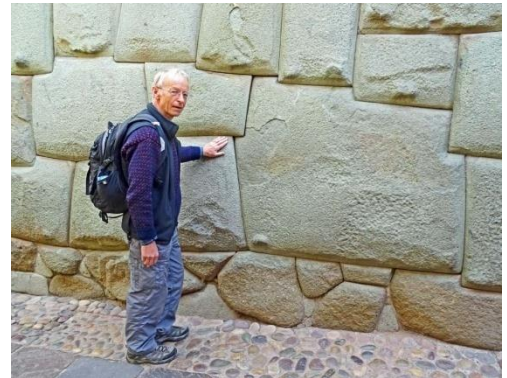


Stone Turning by Robin Goodman



1. Soapstone bowls

The Stone Age began about 2.6 million years ago, the date of the earliest evidence of humans using stone tools, and lasted until around 5,000 years ago when the Bronze Age began and humans began making tools and weapons of metal. Early stone carvers created impressive and long-lasting monuments around the world such as the Pyramids in Egypt and medieval cathedrals and churches in Europe. I was impressed by the Inca stonework workmanship in Cusco, Peru; **photo 2** shows a wall including a 12 angled stone block with perfect tight dry joints that even a knife will not penetrate. Just outside the city are the large impressive walls of Sacsayhuaman (pronounced sexy human!), where massive boulders of up to at least 100 tons have been carved to fit tight in a similar manner; all achieved without modern equipment and tools.



2. Inca workmanship

Some of the earliest examples of turning stone on a lathe are in Cairo museum, where there are bowls that were found in the Step Pyramid at Saqqara – constructed about 4,700 years ago. These show the unmistakable tool marks of lathe manufacture for stone bowls and vases. In the 1890's the English Egyptologist Flinders Petrie wrote that 'the lathe appears to have been as familiar an instrument in the fourth dynasty, as it is in the modern workshop'.



3. coaster

As with many others in the coronavirus lockdown, I had a major sort out of my workshop garage. The expression "Leave no stone unturned", which may have originated with the Greek playwright Euripides over 2000 years ago, suddenly came to mind, when I found I still had 3 pieces of unturned stone! I like to try turning alternative materials to wood and a few years ago acquired pieces of soapstone and alabaster. I turned most of the pieces back then, but now was the time to make something from the final three stone blanks.

The **Cornish soapstone** was bought from stone supplier Nigel Owen in Northamptonshire and was sourced from the Launceston Polyphant quarry, which is the only UK quarry to provide soapstone. Soapstone and alabaster are metamorphic rocks that are composed primarily of talc, with varying amounts of chlorite, pyroxenes, micas, carbonates and other minerals. They are amongst the softest rocks and carve relatively easily, so can also be turned. This English impermeable soapstone is a green grey colour, which darkens markedly when water or a finish is applied. The attractive fleck appearance looks as if the stone is made up of very small tiny fragments, less than 4mm across, of varying colour all stuck together, see coaster **photo 3**.

Very different in colour and texture are 2 African soapstone items, **photo 4**, bought in Kenya nearly 50 years ago.



4. Kenyan soapstone

Unlike wood there is no grain direction. The stone density is about 3½ times that of a typical hardwood, so even when cut down to a 150mm diameter bowl blank, it weighs over 3 kg.

Before starting to turn stone for the first time, I sought information about turning it, since the material was not cheap and I wanted to save time and minimise mistakes and maybe breakages. Few UK woodturners turn stone, but it seems more popular in the USA. They seem to use alabaster predominantly, rather than soapstone. Max Krimmel has some stone turning information on his website and Steve Finch has produced a DVD called 'stone turning'. This provided some useful information and tips, such as the preferred method of using a glue chuck to support the piece that also minimises stone wastage. A dark wooden rim or base is often added.

Carbide cutting tools are ideal for removing stone relatively quickly, but ordinary gouges and scrapers also work satisfactorily with light cuts. It was useful to have one gouge in tougher M42 steel, which lasts much longer before re-sharpening than ordinary HSS. Whatever tool is used the 'shavings' are always in the form of a fine powder, **photo 5**. Although this dust created by cutting and sanding is much denser than for wood, it can still circulate around in the air and a suitable respirator is recommended together with a suitable extractor. Drilling the stone with Forstner bits works well, **photo 6**, and a bandsaw is ideal for trimming blanks.



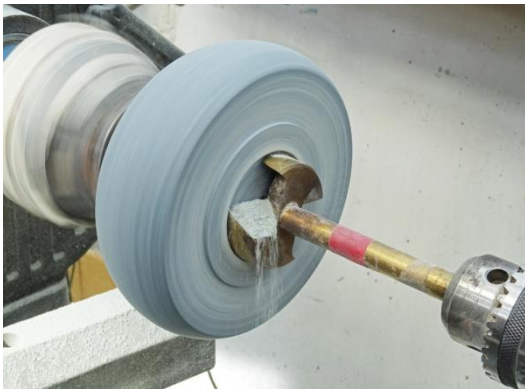
5. Shavings as a powder

Sanding the stone is more efficient when done dry. Wet sanding avoids the dust, but the abrasive blocks up very quickly with the powder slurry and needs frequent washing out, also you need to



7. 150mm soapstone blank

6. Drilling soapstone



frequently rinse the slurry off the turned piece. I usually started with 120 grit and worked up through the grades, finishing with orange Nyweb, approx 1000 grit. Various different finishes can be used, but I used a finishing oil and or microcrystalline wax.

For work holding, a glue chuck is recommended as one of the best methods and epoxy glue is ideal to attach to the stone blank. The glue chuck can be fixed to a face plate, especially for larger pieces, but I used a dovetail, **photo 7**, in chuck jaws, as none of my blanks were much heavier than about 3 kgs. This photo also shows how much darker the stone appears when finishings have been applied. Pin jaws in a pre drilled hole can be used in expansion mode directly in the stone, but if there are any weaknesses or cracks in the stone this could be unwise.

It is a good idea to check for fine cracks as the stone is turned away and to add thin superglue along any visible cracks or lines when present. Use tailstock support for as long as possible. I preferred to chuck just once to turn both inside and outside, before using a jam chuck to complete the underside of the base. Bowl thicknesses varied between about 2mm and 5mm, depending on diameter.

Simple shapes work well for stone bowls, 3 options are shown in **photo 1**. The stone is not always as strong as you think. On my final last 150mm diameter bowl, I was parting it off by cutting away the glue chuck to about 10mm diameter, then starting to saw through the remainder when the bowl came off in my hand, leaving a hole in the bottom and a section of base still on the glue chuck. I had cut the base slightly too thin and also failed to appreciate how heavy the completed bowl was.



All was not lost; mistakes can lead to a design opportunity. The amended bowl would now have a wooden plug to cover over the hole and a wooden base added to lift the bowl up a little. The jagged hole in the bottom was drilled out to a neat 50mm diameter, **photo 8**, and a thin African blackwood plug made to overlap the top of the hole. A base was then turned, **photo 9**, and glued in place underneath.



8. Hole in bottom

9. Blackwood base



10. Comparison with and without hardwood base



The rescued modified bowl, **photo 10** RHS, looks OK and is an interesting variation on a similar shaped bowl without a base, shown on the left.

I had blanks suitable for two stone **hollow forms**. Procedure for hollowing was the same as if they had been of wood. Segmented African Blackwood rims were constructed and glued to the top rim of both pieces; the shorter one of height 80mm is shown in **photo 11**.

11. Hollow form with wood rim

The word **Alabaster** is derived from the Greek word alabastros meaning perfume vase. It is a soft fine-grained sedimentary gypsum rock, generally white or delicately shaded and translucent. It is porous, so should only be used indoors and not for anything to hold liquids. It is usually a little harder than soapstone and for thousands of years it has been used for vessels, statuary, carvings, and other ornaments. In powdered form it is still used for making plaster.



**12. reinforced
for hollowing**



13. Finish shaping of the base

I had only one piece of alabaster and used it to make a hollow form. After shaping the outside, while supported by a glue chuck, I made a 12 segment wooden ring to glue to the top of the vessel. In matching African Blackwood I also made a base. There were some veins in the material that seemed as though they could be fine cracks, although they would not absorb thin glue. I therefore wrapped the piece in special reinforcing tape, **photo 12**, as a precaution before proceeding to hollow. Final shaping of the bottom section was carried out between centres, **photo 13**.



14 Alabaster piece



15 Showing translucence

The finished piece, **photo 14**, shows how white the alabaster is. Its translucent property is illustrated in **photo 15**, by placing a coloured LED inside.

As an alternative to wood, both soapstone and alabaster are suitable for turning pieces for practical use or purely as decoration. As detailed above, normal woodturning techniques and tools can be used, although ordinary HSS tools need frequent sharpening and the resulting powder generated can be tedious to deal with. Suitable stone availability is very limited in the UK and the cost can be high. Even so, for something different, it is well worth a try.



Extra photo that could be used on front cover?

Robin Goodman

June 2020