



Hawaiian-style bowl repairs

Emiliano Achaval shows how to repair work using pewa patches and huini pegs

There was a time at the beginning of my career that if the piece that I put on the lathe had a crack or any flaw, I would keep on turning till it disappeared. Sometimes starting with a 30mm bowl blank, I would end up with a toothpick holder, or just a toothpick. Eventually, I started fixing the cracks and imperfections.

But not always – sometimes they become a part of the design.

When trying to decide what to do with a less than perfect blank, the most important consideration is safety. Can I safely begin turning it? How deep do the cracks go? Is it worth repairing it?

In this article I will show you my favourite and a traditional ancient way of repairing Hawaiian vessels, but the methods work well on furniture and other turned work too.

The repairs comprise of pewa, which are also known as ‘flying Dutchmen’, ‘butterflies’ or ‘bow ties’ and probably other names.

In the Hawaiian language it means ‘fishtail’. These are typically inset into the wood and used to bridge a split, crack or void to keep things from moving further apart and stabilise the work. They can also be used to cover over blemishes or holes. The pewa often did not go all the way through to the inside of the vessel, instead sitting in at a depth of 3-5mm or so. That said, some pewa are deep enough, or more than one are used, so they do go all the way through the wall thickness of the vessel.

If one is working with splits and not voids, pegs, known as huini in the Hawaiian language, are inserted to stop the crack from extending further.

They complement each other greatly and they enhance any turning. When properly done they add ancient beauty to a modern work.

◀ Laying out the pewa and huini

Pewa are typically applied after the piece has been turned inside and out. That said, they can be inset once the outside is turned prior to turning the inside. The piece being used in this article has a small crack running part way along the vessel and the piece. The vessel has also had the inside turned. Once you have the shape you want on the outside, sand your work turned down to, say, 120 grit. Once at this grade of sanding, it is ready to lay out the pewa on the crack or whatever you want to cover up or fix.

Determine how many pewa you need, lay around with the layout and outline them with a pencil. They go perpendicular to the crack, and the crack should run through the thin part in the middle of the pewa used. Also check what size will look good.

You can make your own pewa or buy ready-made ones in different sizes. The pre-dimensioned versions are available in different coloured woods, likewise you can cut your own from whatever timber gives the effect you want, so you can add contrast to the work too. If you are making your own pewa you can use a scrollsaw to cut them. Accurate measuring and marking is required and, once cut, lay them in the position you want them on the work and mark around them with a scalpel. Then use a knife and chisel to cut out the correspondingly shaped recess to fit them in.

The bought ones are numbered size-wise and you can use a matching polycarbonate template to suit them. This is employed in

conjunction with a small laminate router, fitted with a guide bush to suit the template and a thin, spiral, downcut router bit inserted in the router collet. This set-up allows you to cut the pewa shape into the wood. I am using this method in this article.

Whatever route you take, remember to match the size of the pewa to the item being worked on and how you wish it to look. Notice that I have also marked where I want to place the huini.

The template will need holding in place while the router is used so once you have marked where the pewa need to go, lay painter's masking tape around the first pewa you want to cut. This tape prevents marring the wooden surface when you affix the template in place.



Marking out the position of the pewa and huini



Masking tape applied round the patch to be cut

Fixing the template in place

You could just hot-glue the template to the wood, but with the tape there is hardly any clean-up. If any hot glue leaks on to the wood, a little bit of denatured alcohol will soften it up, making removal much easier.

The key requirement of the platform is for it to be stable and not rock when you gently place your small router on to and guide the bushing inside the template while cutting the wood. Apply a generous amount of hot-melt glue on to the surface of the template, keeping clear of the template opening, and press the glued face on to the work ensuring it is placed correctly, with the line of the crack running across the centre narrow section.

If you are using pewa to cover a knot or hole, you position the

template to best cover the blemish and also look the most attractive.

Once the glue dries, add more glue, building up a bridging gap of glue so you have a steady platform that won't move when you rout the recess.

Remember this is, in this instance, a flat template sitting on a round turned piece of work, so some gaps under the template need more adhesive than others. Once dry and stable you are ready to use the router.

Templates are reusable hundreds of times. Simply clean up the hot glue with a chisel or soak it in denatured alcohol to remove it.



Here are some dimensioned pewa and templates



Preparing to affix the template on the turned work



Careful alignment is required



Bridging the gaps with hot-melt glue to provide stability

Routing out the shape

Now you are ready to start routing the recess with the laminate router. Set bushing so it sits far enough inside the template guide to run against it without it being dislodged easily from the template, and set the cutter depth so that it cuts at 1mm. Place the router on the template and cut about 1mm deep into

the wood while manipulating the guide bush around the cut template. Don't cut too deep in one pass. I would say make at least three passes depth-wise. Cleaning the recess every time, blow it out with a shot of air from your compressor, or you could use a small brush. The debris prevents the bushing

from reaching the edges of the template. You don't want to go deeper than the thickness of your pewa or inadvertently slip and go wider. You need to be careful. You are routing a flat-bottomed recess on a curved surface so, by default, the recess is not a uniform depth on the arc of the work.



The picture shows the router with guide bush and bit attached and a spare router bit to show what is being used to cut the wood



Wearing appropriate PPE and RPE and keeping the router firmly against the template, make gentle cuts, incrementally deeper until the required depth is achieved



Stop regularly and clear out the debris



Here is the fill depth recess and the corresponding pewa to be inset

◀ Fitting the pewa

1 Cut all four corners square. For this step I use a jeweller's magnifying glass headset that came with a LED light mounted right above it.

2 Sand all four corners of the underside of the pewa lightly. This will make it sit flush inside the recess if the corners on the router-cut recess were not cut perfectly.

3 Now ready to test-fit the pewa. It is a snug fit. If it doesn't fit, it is probably due to one of the corners not being straight. The commercially available pewas have the size marked on the bottom. This helps in knowing which way to place it.

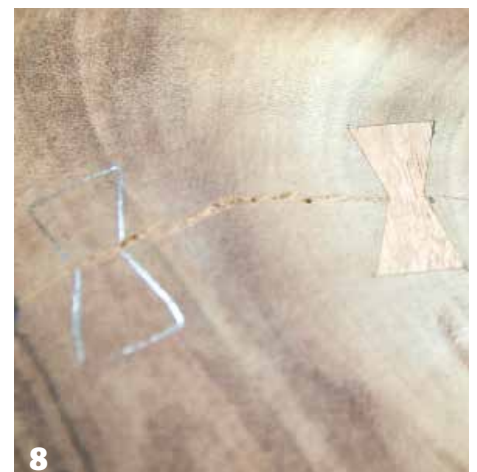
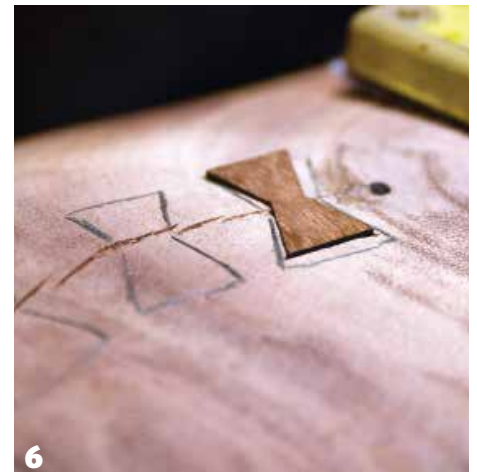
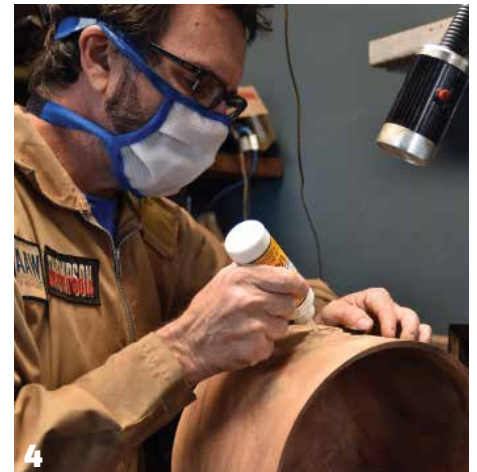
4 Using the glue of your choice apply a small amount to the bottom of the recess. Have a paper towel ready in case some squeezes out when you press the pewa down. I have been using CA glue for years, the gap filling consistency. The thin CA will run all over the crack, and could get into areas that you don't want it. If the crack is deep and shows on the inside, apply some masking tape to prevent the glue from running on the inside.

5 Tap the pewa firmly but lightly. I use something that we all have laying around – the handle to tighten a chuck. It's the perfect size. You want to feel the pewa sitting on the bottom of the recess.

6 An important step here, sanding the pewa. You need to sand it flush with the bowl – use something flat, like a painter's sanding block. I started with a piece of timber that I glued on a piece of Velcro, where I could attach Abranet sanding mesh. I found a nice light piece of hard plastic at an automotive finishing supply store.

7 You have to do the sanding with the lathe turned off and with the same grit that you last used – 120 is a good starting point. If you sand while the lathe is turning, you will end up with a divot right next to the pewa. Every time the paper hits the pewa it will jump, landing hard on the same spot, causing an ugly undulation. Trust me on this one, it's one of those personal learning experiences.

8 Congratulations! If you followed the steps closely, you ended up with something very close to the pewa in this picture. If your pewa is a snug fit, when you do the sanding very fine dust will accumulate in the space. Apply thin CA, keep sanding and repeat as needed for a perfect looking fit. Now cut and fit as many more pewa as required.



Fitting huini



A drill bit of the right size to suit your huini is required

I try to stay true to historical accuracy as much as possible so I am using a huini also on the repair. This is simply a peg that goes in the crack. There is a little controversy as to whether they are effective. I use them because if the ancient Hawaiians went to the trouble of using them, they did the job. You could make your own pegs or buy rods of any timber colour you choose and



The drilled holes with the huini glued in place ready for cleaning up and sanding

match the size of the drill bit to the rods or pegs being used. They look good when in place and resemble the repairs seen on ancient vessels. Simply drill a hole of the right size in the location you want it, apply medium cyanoacrylate adhesive, tap the peg in place, trim off excess and then sand with the flat block you used for sanding the pewas. ●



Here is the finished repair. I think it is not only functional but looks good too

Ancient repairs



This is a close-up of a pre-contact puahala calabash. I have been able to reproduce the pewas and huini. But notice the tiny zig-zag slivers, called kepakepa in Hawaiian. I have not been able to do them that small. How did they do it 200 or more years ago?

WHERE TO BUY templates and pewa

You can make your own pewas, but you can also buy everything you need from: www.bigislandengraving.com It's under 'precision inlay repair system'.