

how they did it

Creating compound curves

BY JONATHAN BINZEN

Designer Will Acland and maker Tim Smith realized that because their bent-laminated chair (see the back cover) was so full of subtle and complex curves, there would be no easy way to build a prototype to assess the design for looks and comfort. So they decided to create the seat and back first, bending fiberglass over MDF forms to make the compound-curved substrates for the leather upholstery. Next they made an MDF structure to cradle the seat and back so they could be tested for comfort (see p. 90). Then they moved on to building the chair's bent-laminated frame. Acland designed the frame joints to meet in curves, echoing the other rounded forms in the chair.



CURVED COMPONENTS FROM VENEER



A chair frame in the raw. Straight-grained, fitch-cut European ash veneer, 0.6 mm thick, was used for the frame (left). After ripping the sheets into strips and cutting them to length, Smith sorted and numbered them to keep them in the order they came from the tree (above).



Major bending. Smith built MDF forms to bend the chair parts. Applying epoxy to all 80 strips in the front leg-and-arms component and clamping it up took three hours.

SHAPING THE PARTS



Out of the bag. Once the epoxy cured, Smith used hash lines to indicate where wood should be removed during the initial shaping.



Square before circle. Smith cut the components to a square section before shaping them round. He made some cuts with a saber saw, others with an Arbortek angle grinder with a planer head.



Freehand shaping. Smith used an angle grinder for some of the shaping and rasps, files, and spokeshaves for the rest. A tent of plastic sheeting contained the dust.

how they did it continued

SWELLING AT THE JOINTS

Joinery cradle.

Smith cut the joinery while the frame parts were still mostly square. The short veneers he added at the intersections let him shape the branch-like swells at the joints.



Ready for the router.

A curved template guides the router in cutting the male half of the back leg joint.



Powerful bevy of bolts. After routing and drilling, Smith epoxied in the lengths of threaded rod that secure the joint (left). With the joinery complete and much of the frame shaped (above), Smith finished up with hand tools.

FIBERGLASS SHELLS

First the forms.

To make bending forms for the fiberglass substrates of the seat and back, Smith cut pieces of water-resistant MDF to shape and bolted them side by side.



Prepared for the test.

To assess comfort, Smith built an MDF cradle that supported the seat and back substrates in position. Then he invited dozens of people of all sizes to try the chair.



ATTACHING THE SEAT AND BACK



Two-part seat. The paired fiberglass substrates, fitted with threaded steel studs for attachment to the frame, were trimmed to size and then upholstered with leather.



Final fitting. Using the threaded studs, Smith epoxied the seat and back to the chair frame.