

## **KERF BENT BOX FUNDAMENTALS - References**

**Date:** November 14, 2020

**Time:** 1:00 pm to 5:00 pm

### **References and Resources-**

**CEDAR** by Hillary Stewart, University of Washington Press, 1984, ISBN 0-295-96160-0

**Cedar Bentwood Chests** of the First Nations of the Pacific North West-  
<https://www.donsmaps.com/bentwoodchests.html>

**Davidson, S.**, 1980: *Fine Woodworking - Kerf-Bent Boxes*, May/June 1980, no 22

**Making a Kerf-bent Box** – Google lists a number of articles, etc.

### **PBS - THE WOODWRIGHT'S SHOP**

#### **Bentwood Boxes of the Northwest Coast**

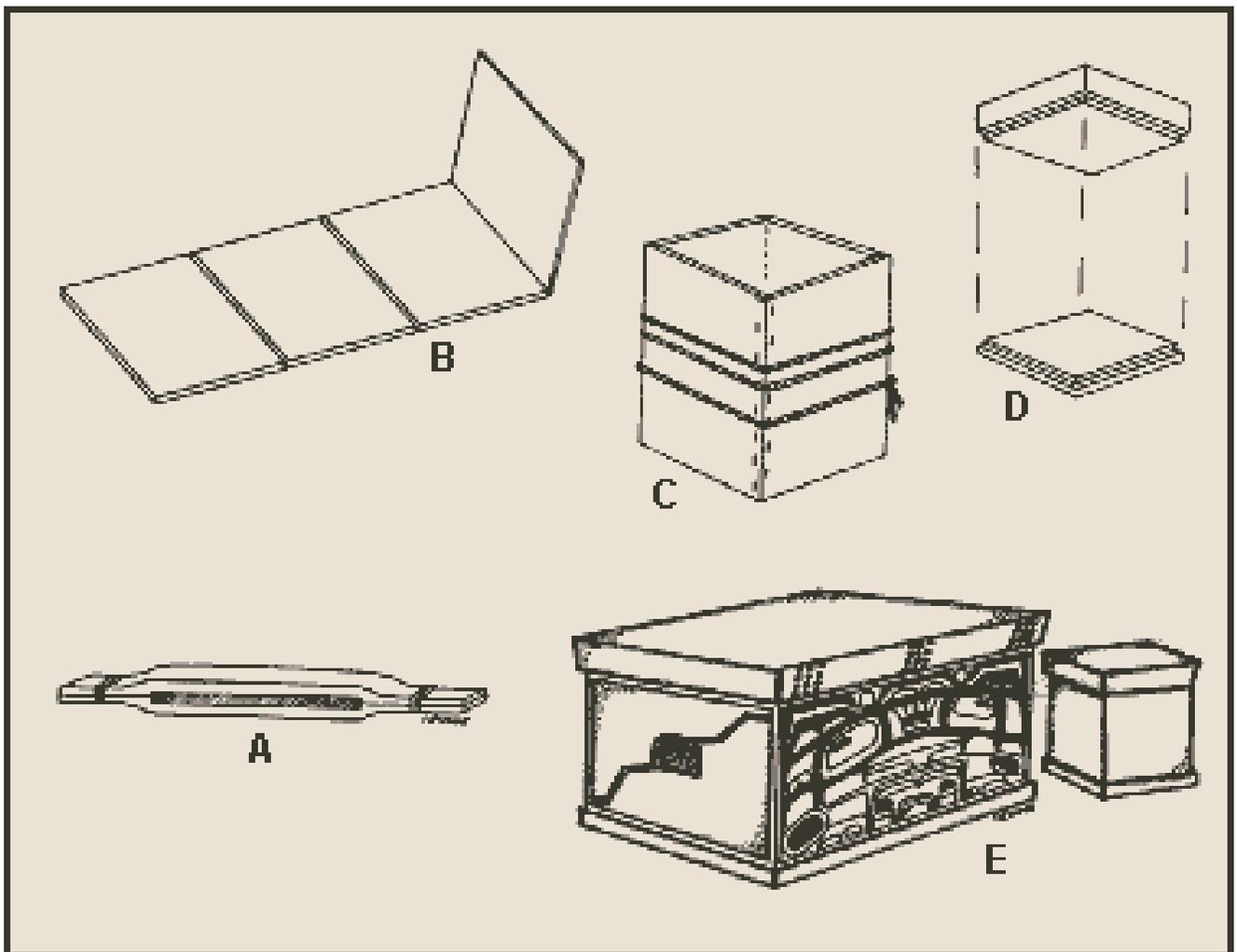
Season 12 Episode 1 | 26m 46s | Video has closed captioning.

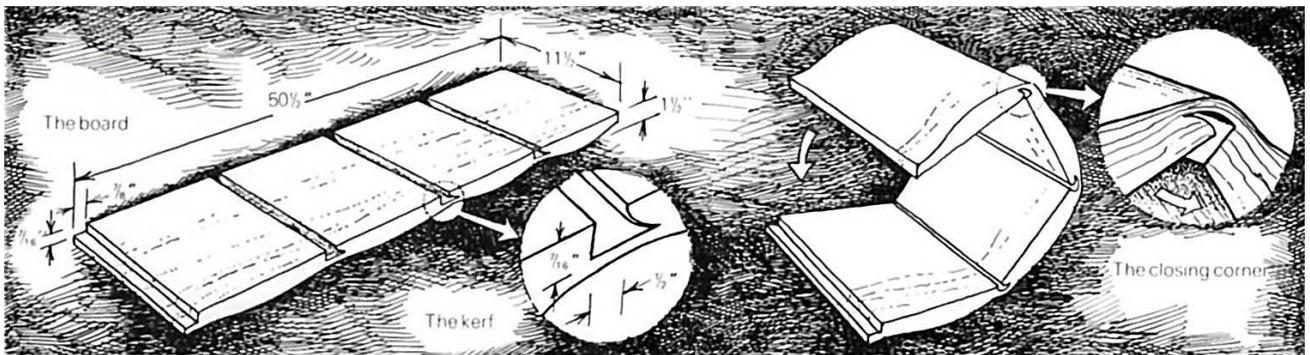
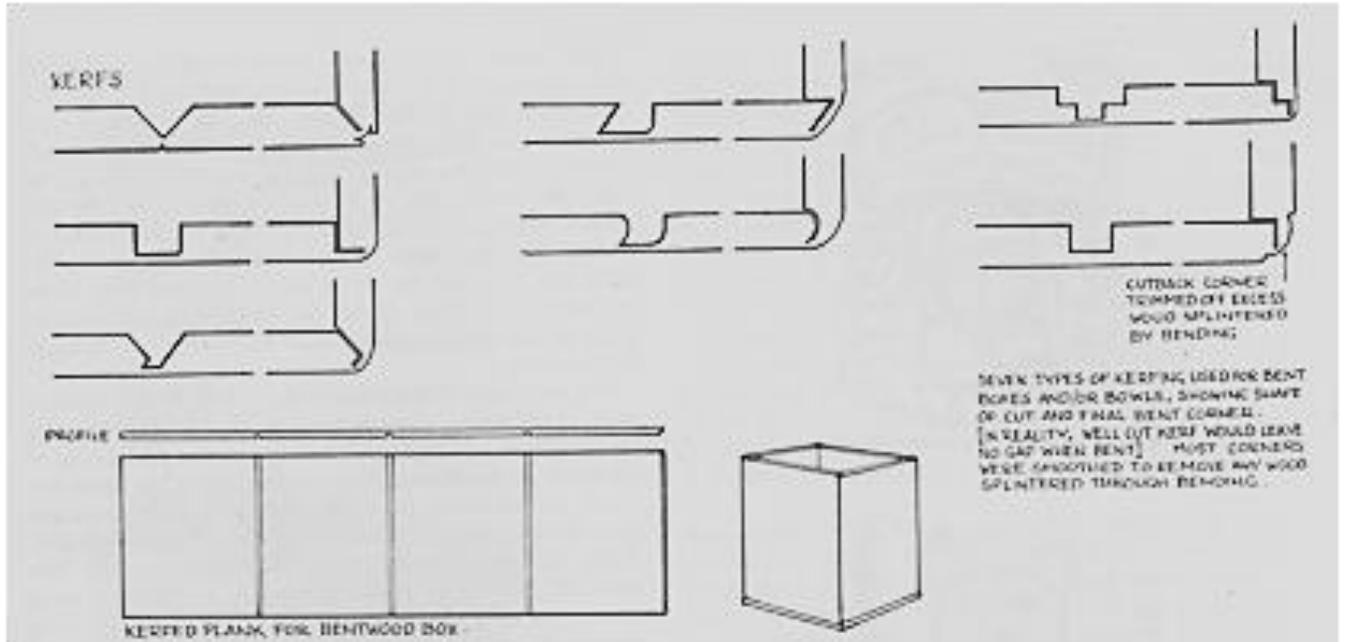
[Add to My List](#)

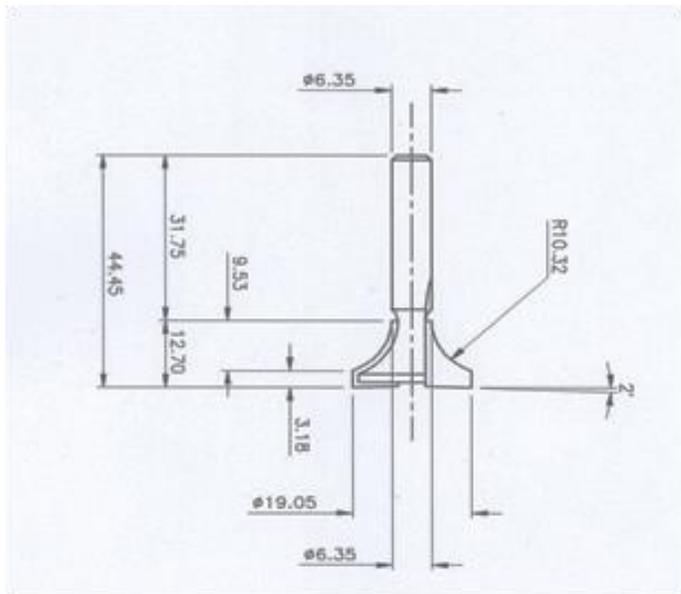
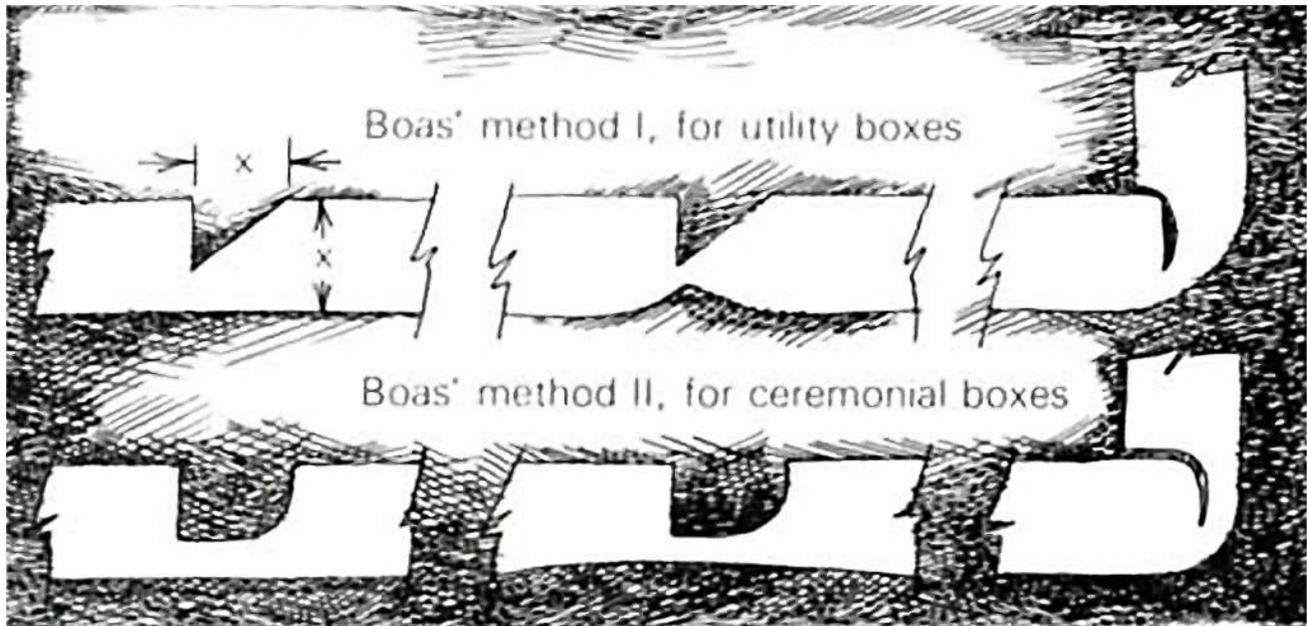
Roy visits Gregg Blomberg and explores woodworking traditions of the Pacific Northwest.

### **Illustrations**









**Router Bit for making bending Kerf**

## **Making a bentwood box**

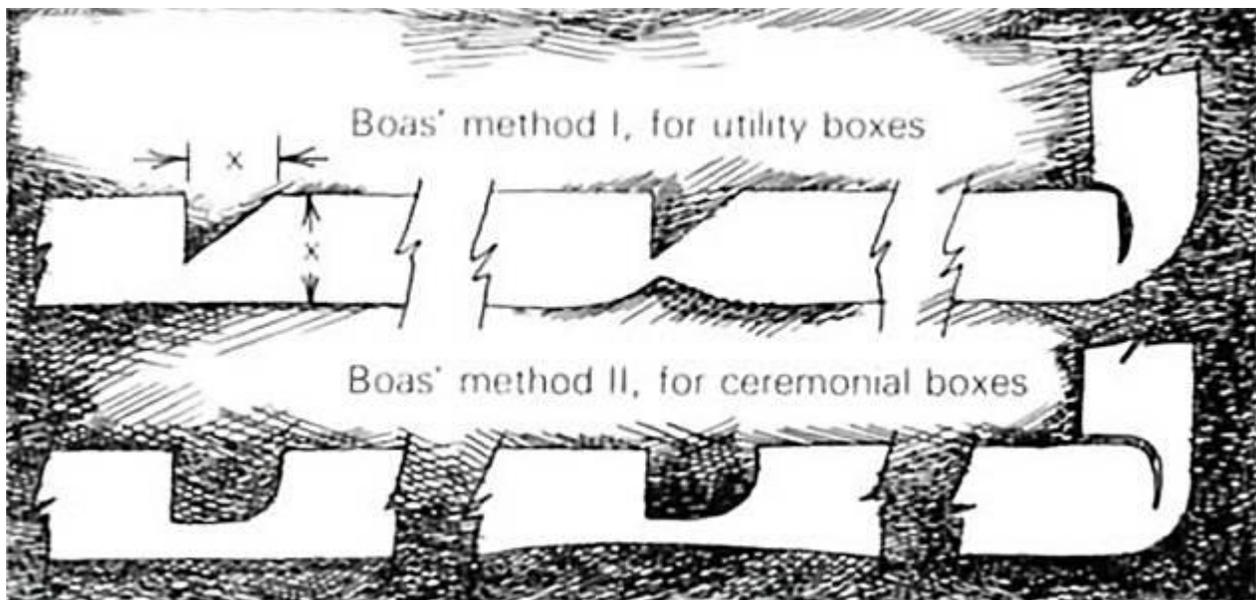
Text and photos from the excellent reference [Davidson \(1980\)](#)

For bentwood boxes and totem poles western red cedar and yellow cedar remain the material of choice. The old way was to burrow two deep holes into the living trunk, one near the ground and the other as high up as the boards would be long. Planks could then be split off using a graduated set of seven yew-wood wedges and a stone maul, and the tree would live on. The trees were much bigger then, 10 feet and more in diameter.

Aside from living memory and contemporary experience, information about the old ways of woodworking comes mainly from Franz Boas, the German-born anthropologist who studied the Northwest Coast tribes between 1885 and 1930. By the time of Boas' observations, metal tools were readily available and the trees were usually felled. They were then made to lie with their smooth, weather side upward. The seven graduated wedges were driven in along a line four finger-widths above the center of the log. When the tree began to open, a round crab-apple or yew-wood stick about 6 inches thick was inserted across the horizontal crack, and two men pounded on blunt wedges that were hollowed to fit around the 'spreading stick'. Planks were always split from the branch end down, to prevent the plane of fissure from turning outward, and to avoid producing a plank that was short and thin at one end.

The first plank removed was three finger-widths thick, because it never ran quite parallel to the splitting plane. Subsequent planks ran more nearly parallel and could be as thin as one finger-width - if the cedar was good. Planks of 20 feet and longer were split in this way. Most boards were split tangentially - that is, the growth rings intersected the face of the board at a small angle. But the boards intended to become bent boxes were split radially, through the centre of the tree, crossing the growth rings at right angles.

The wood had to be seasoned, since green wood is liable to shatter when forced into the tight bends necessary for wooden boxes. The plank to be used was shaved and adzed to the right thickness, perhaps half a finger thick, and trimmed to a rectangular shape.



The next step was most critical, that of cutting the kerfs where the future corners would be. Boas describes two styles of kerfing. The simplest is a V cut with one vertical side, about half way through the board, as wide as the board is thick. The outside of the board would be shaved back on both sides of the V cut. Museum specimens show that this method was reserved for utility boxes for gathering, storing, and cooking food. The wood at the corners is quite thin and would have bent easily with a minimum of steaming, but the result is fragile - many surviving examples are cracked or broken.

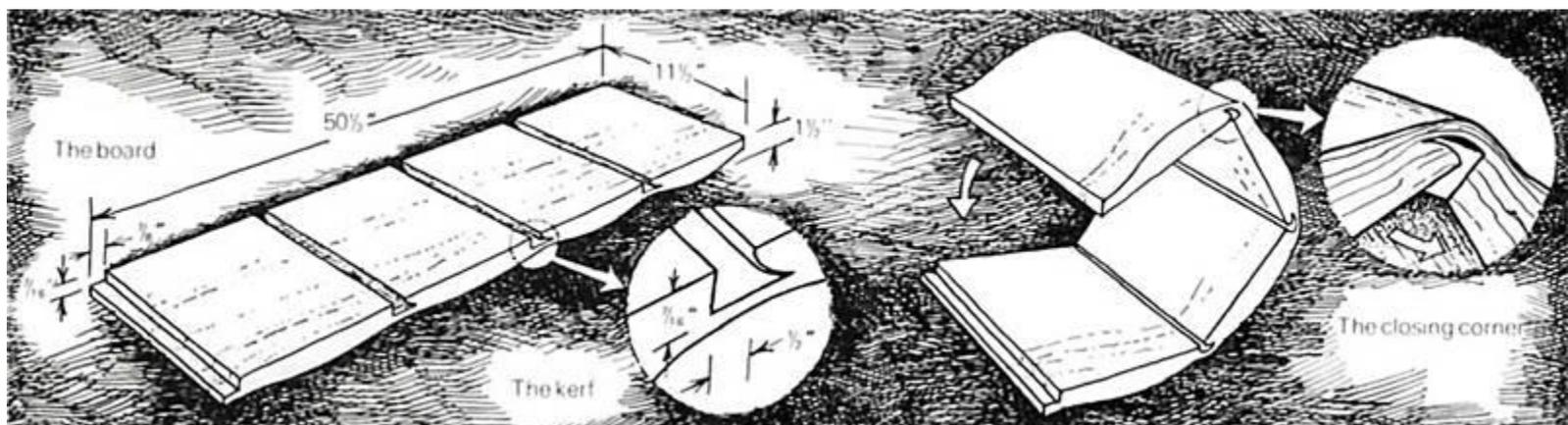
In the second method Boas recorded, the kerf looks like a dado with one rounded corner. It was made by incising a narrow vertical kerf, then working it wider with the knife along a curve reaching down to the original cut. The board was also thinned opposite to the kerf. This method was reserved for decorated chests and serving dishes. It required more skill to make, but produced a more durable and aesthetically pleasing wrapped corner.

Photo and text: Davidson (1980)

Even so, a study of 99 boxes at the National Museum of Man in Ottawa isolated 11 different kerfing styles.

In old boxes, as today, the fitting at the fourth corner is a rabbet joint, the rabbet being as wide as the kerfed board is thick, and half as deep. The other end was and is left blunt to butt up against this tongue.

Steaming used to be a difficult and time consuming process, with hot rocks used to heat the water, but now steam is fed via a rubber hose to the wood. When the box is bent into a rectangle, the final corner is secured with tapered cedar pegs. A rope was wrapped around the bent form several times and tightened so that the box would not twist out of shape. To keep it square, four cedar sticks of equal length were wedged diagonally inside, two across the top and two across the bottom. The bottom was shaped from a block of wood rabbeted down half a finger-width around the edge. It was made to fit up tightly into the box and then pegged securely to the sides. The lid was sculpted to fit tightly over the top. Stale human urine was used to help in bending the wood and preventing checking, and urine was also used when spreading canoes. The skin from dogfish, a member of the shark family, was used to sand wood to a smooth finish. Food was cooked in kerf-bent boxes by



filling the box with water and food, and bringing to the boil by tossing in hot rocks.

It is certainly possible to simply dig out three channels in a length of board, heat the wood in a steam box, bend the wood, and secure the other end, then attach a base and make a top.

Doing it well is another matter.

This diagram shows what is necessary to get a tight fit, with no gaps. Notice that the profile of one side of the channel is curved, while the other is straight. Thus when the board is bent, the thin wood bends in an arc, which is supported by the corresponding arc on one side of the channel, leaving little or no gap to be filled with pitch or filler of some kind. This method will give a solid and long lasting, hard wearing corner.

Photo: [Davidson \(1980\)](#)

Text for this image: Don Hitchcock