A foam padded cup auxiliary center will allow you to cut and finish off a chuck supported spindle at the tailstock end early in the turning process while the spindle is still substantial and then replace tailstock support to continue turning the rest of the piece. This one is designed to be used with a rounded ornament finial, but the same idea could be adapted to a variety of shapes by changing the shape of the recess. Briefly a wood blank is mounted in a chuck to drill and tap accurately to fit the mounting threads for a One-Way tailstock (or one of its clones). After tapping the blank is mounted via the threads in a chuck to shape the blank and give it a cupped recess. Then the recess is padded with a layer of 2mm craft foam to keep the cup from marring the already turned work.

Begin by cutting out a cylindrical blank on the bandsaw. The blank should be 1-3/4” in diameter and about 1-3/4” thick. To accept threads, the blank must be in faceplate orientation. Mount the blank in a 4-jaw chuck with #2 jaws. Mount a drill chuck in your tailstock and mount a combined drill and countersink in the drill chuck. Start the lathe at a slow speed and create a starter hole with the combined drill and countersink, as in FCC01. The combined drill and countersink is short and rigid and will not deflect as a longer drill bit often will.

Now remove the combined drill and countersink from your drill chuck and substitute a 21/32” drill. Turn on the lathe at a slow speed and drill a hole 1-1/4” deep as in FCC02. Remove the drill and chuck up a mini-tap guide in the drill chuck. A mini-tap guide is available from any Industrial Supplier such as www.mscdirect.com. The mini-tap guide has a spring loaded point that engages a dimple in the base of your tap and/or tap wrench to keep the tap straight while tapping the threads. Place the nose of a 3/4x10 tap in the drilled hole and advance the tailstock so that the point of the mini-tap guide engages the dimple in the base of the tap and is compressed. Lock the lathe spindle and turn the tap with a wrench as in FCC03, until the tap bottoms out in the hole.

Now remove the drill and chuck up a mini-tap guide in the drill chuck. A mini-tap guide is available from any Industrial Supplier such as www.mscdirect.com. The mini-tap guide has a spring loaded point that engages a dimple in the base of your tap and/or tap wrench to keep the tap straight while tapping the threads. Place the nose of a 3/4x10 tap in the drilled hole and advance the tailstock so that the point of the mini-tap guide engages the dimple in the base of the tap and is compressed. Lock the lathe spindle and turn the tap with a wrench as in FCC03, until the tap bottoms out in the hole.

Now remove the combined drill and countersink from your drill chuck and substitute a 21/32” drill. Turn on the lathe at a slow speed and drill a hole 1-1/4” deep as in FCC02.

FCC04: A threaded rod mounted in a collet chuck.

FCC05: The tapped blank mounted for shaping on the threaded rod.

Use a bowl gouge to trim the blank and taper it down to about 1/2” in diameter as in FCC06. Then use the bowl gouge to turn a small conical recess in the end of the blank as in FCC07.
FCC07: After forming a conical recess in the nose of the blank.

Remove the blank from the lathe. Cut a small circle of 2mm craft foam (look in the craft section of Wal*Mart or any craft supply store). Make a radial cut to the center of the circle. Place the foam circle in the recess of the auxiliary center and adjust it so that it fits. Use a marker to indicate the overlap as in FCC08.

FCC08: After marking the foam circle to form a proper size cone.

Remove the foam circle and cut along the marked line, removing a pie shaped piece of foam. Apply 3M #77 spray adhesive to one side of the foam following the instructions on the can. Then attach the foam to the inside of the conical recess of the auxiliary center. The completed center is shown in FCC09. FCC10 shows the auxiliary center in use engaging the finial of an ornament.

FCC09: After attaching the foam to the inside of the conical recess.

FCC10: The auxiliary center in use engaging the finial of an ornament.