More on the Black Art of Pitch Calculation of a Carved Prop

by Paul Grabski

Even though the article on this subject published in the July/August 2005 issue of this newsletter cautioned that it wasn't a complete description of how to carve a prop (referring the reader to a May 2002 issue for more information), those with a mathematical mind dug into the article with an eagle eye. No errors were found, but a recommendation was made that the article should mention that the width of the block from which the prop is carved is NOT equal to the chord of the finished prop. This was something not mentioned in the old article either. A prop carved from a block of the dimensions shown (1" high and 1.5" wide) would result in a prop with a chord of about 1.8 inches. Do the simple trigonometry.

Turning to one of the more learned sources on such things, Bill McCombs' "Making Scale Model Airplanes Fly (and Nonscale Models Also)," a prop with a chord that wide would be useful only for a scale model with a shorter than normal blade or a model which is heavier than normal. McCombs recommends that for a non-scale freeflight model, the chord be 8-9% of the diameter at the 60% point of the radius Some folks will go a bit more. For a scale rubber freeflight model, he recommends a chord of 14-20% of diameter at the 50% point.

So — not to worry, the resultant prop carved from this block can be shaped to whatever chord width which grabs you. Finish the backside of the blades first to ensure you have set the pitch built into this block size, then decide what blade shape you like together with what the chord should be. Cut the blade to that shape and chord. Sand the front side of the blades to fit the new shape and you've penetrated much of the black art.