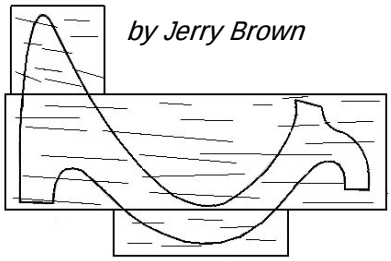
Home Built Harps



by Jerry Brown

This feature is intended to celebrate and encourage the craft of harp-making by home hobbyists around the world. The goal is to publicize the excellent, and sometimes surprising, results of one of these adventurous woodworkers in each issue of the Journal. We will focus on amateur builders, those building harps as a hobby rather than as a business, sharing some of their interesting experiences, successful woodworking tips, customizing ideas, etc. for the benefit and encouragement of other amateur builders.

What is so great about designing and building your own harp? In the words of Rev. Steve Barnett, "It is the joy of creating a beautiful instrument, learning just how these beasts work, and the satisfaction of being able to say that, from beginning to end, 'I did it!'"

Rev. Barnett hails from Lehigh Acres, Florida, where he and his wife both minister in the Assemblies of God Church. In addition to his pastoral duties, he does some TV voice-overs, a little on-camera acting, and he flies DC-3 airplanes for Mosquito Control. But in this article it is my pleasure to brag on his woodworking skills.

Steve was an avid model airplane builder for many years, and he has also made a few musical instruments, one of which was a harp in the Paraguayan style. This time he decided to tackle a Celtic harp. We corresponded a few times as his harp took shape, and I think some of his ideas are of particular interest.

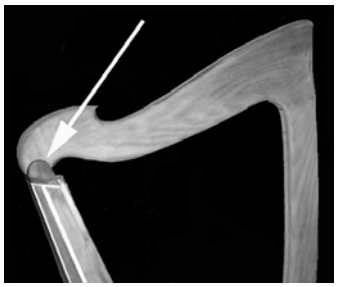
Rev Steve Barnett shows off the 31-string harp that he designed and built from scratch.

Stave-back construction

This is the first stave-back harp he has tackled, enjoying the challenge of cutting accurate miter joints for five different tapered panels. The main wood for the frame is walnut, but you'll notice that he laminated the neck, pillar and feet with a maple core for extra strength. Laminating the neck is one of the "Golden Rules" in my harp-making book, so I like to point out such details. It will help make his harp last a lifetime.

You'll also notice the thin walnut "T-brace" glued to the front edge of the pillar. This is another good stabilizer that will help prevent the pillar from bending in response to all the string tension pulling on one side of the neck. I love the maple inlay stripes that frame each side panel of the box. Beautiful detail!

Walnut T-brace on front of pillar



Rotating "knuckle" joint

I also like the rather dramatic shoulder connection Steve fashioned between the sound-chamber and the back of the neck. This rotating "knuckle" joint can be left dry (without glue) to allow the neck to pivot slightly under the string tension, yet it utilizes the same string forces to hold the parts together.

When Steve got to this point in construction, he contacted me for my recommendation on stringing. "I built another harp of my own design," he wrote, "but what I put down on paper didn't exactly turn out in wood as I'd planned." I told him I know the feeling!

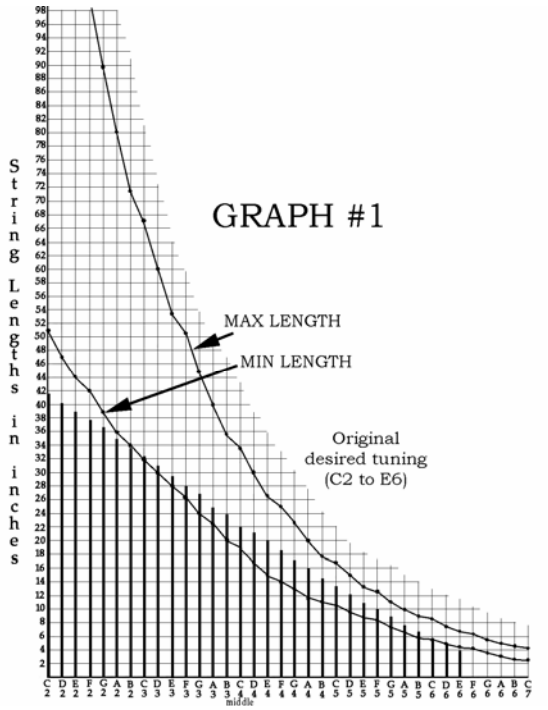
He was hoping to tune the harp starting with C2 at the bottom, but when he measured the string vibrating lengths, he found that the strings at both the top and bottom of the range fell below acceptable lengths for those pitches according to my harp-making manual. In fact, many strings were just barely above the desired minimum lengths for good performance. Graph #1 shows the strings as he originally wanted to tune them.

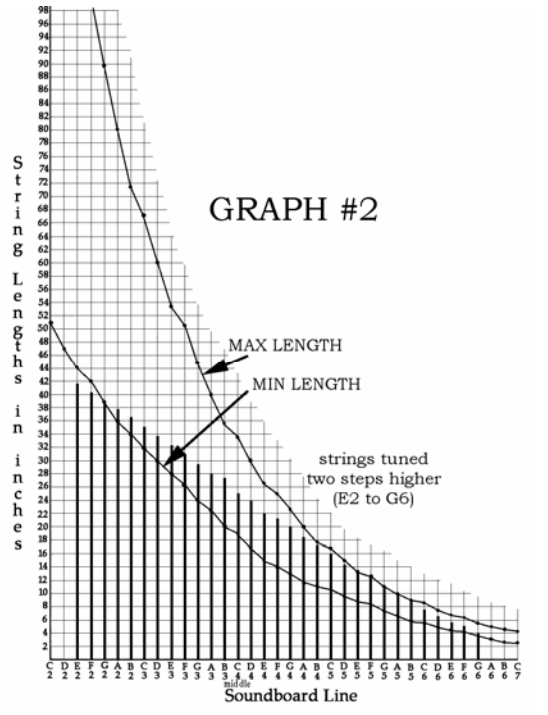
"I cannot afford to rebuild the neck and pillar," he told me, "so I'm hoping my problem can be solved with a combination of strings – Please advise." I congratulated him on a beautiful harp frame and suggested that he simply tune the harp a little higher than he had planned. By raising the pitch of each string two whole steps, he was able to get most of the strings into the window of acceptable vibrating lengths. Graph #2 shows the results of that change.

Notice that some of the treble strings in Graph #2 just touch the maximum boundary line, and that's OK. We don't dare tune higher than this, however, without encountering some string breakage in that part of the harp. Two of the lowest notes fall below the minimum line on the graph, which is also fine, as that just indicates the need for some wound strings in the bass range.

Graphing the string vibrating lengths like this can be very helpful for deciding on the best tuning range of an instrument, as well as for making future improvements to the harp design. Next time, for example, Steve might add a little more curve into the shape of the harp neck to get the string lengths to follow the graph more evenly. Nonetheless, this harp turned out beautifully. He is very pleased with both the sound and the appearance.

I should point out that Steve used 1/8" thick aircraft birch (6-ply material) for the soundboard. This material is virtually indestructible, even when you cut an opening near the bottom for the pillar to pass through the front panel into the box. This is a great way to ensure stability of the





instrument. There's no way for the pillar to slide further downward from the string tension because it already rests on the bottom of the harp box.

I like the two extra holes with decorative rosettes too. You cannot do this with a thin soundboard of solid spruce, but it is not a problem with aircraft birch, and it adds beautiful details to this harp.

Custom designed harp by Rev. Steve Barnett

Notice also the unusual buttons down the centerline of the front panel. He borrowed this idea from the luthiers of South America. Rather than having to cut large holes in the back of the soundbox to access the strings, Steve simply ties a knot in the end of the string, places a drop of CA glue (cyanoacrylate) on it, and inserts the knotted end into the 3/16" hole in the soundboard. Then he pushes the tapered peg in to hold the string in place – just like a guitar. "It only takes a couple seconds to replace a string this way," he claims.

Clever ideas masterfully done. This is a beautiful showpiece instrument! Steve can be contacted by email at revbarnett@juno.com. I've also placed a color version of this article on www.harpkit.com under the "library" button.

Jerry Brown is owner and founder of Musicmaker's Kits, Inc., in Minnesota, and author of *Folk Harp Design and Construction*, a 150-page manual on harp making. An admitted kit-monger, plywood soundboard pusher, and incurable do-it-yourselfer, he corresponds regularly with hobbyists who build their own musical instruments.