

BUILDER'S FORUM

Why Block? My Findings

Tony Pass

Builder's Forum is a new column in *BNL* that will feature articles from various banjo builders and technicians—experts talking about what they are doing and working on. In this first installment, Tony Pass talks about how he came to his block rim designs. —Donald Nitchie

As banjo players, tinkerers, and builders, we have tuned our ears to a specific sound. Each and every one of us is an individual, with the sound we want to hear in our heads. Electronics can tell us what we think we want to hear but the numbers they produce tell us nothing. My sound is not your sound, your sound is not mine, nor is it “the sound.”

As a design engineer working for contract agencies for twenty of my thirty years, I found that when entering a new industry (which I did thirteen times), I didn't want to see what you were doing now nor did I want to see your references. If I did, I would be thinking your way. The way I work is: Leave me alone with your product and I may come up with something unique and possibly patentable for you and your industry.

I entered the banjo world Jan. 2, 2000. Six months later I did what I described above. I opened my first Gibson style banjo and saw the rim as a flaw. I saw things differently, because, I think, I had no idea what the rim did anyway. I also saw that a ply rim was the easy way out for production. It was as though everything I learned in those thirty years had led me to this.

My first impression was that although bent wood might be great for such things as furniture, or the hand rails of a stair case, it was not best for this. It might also be great for use on the sides of guitars, mandolins, and fiddles, but again, not for this. The banjo rim is unique. No matter whether you are a builder, a luthier, or just a player putting your banjo back together

after a good cleaning, the first thing you grab is the rim. It is the heart of the banjo. The skeleton. The frame. And, I saw it as a flaw.

A few months before, while in the process of learning to play banjo, I was at a friend's home looking for beginner tabs in his collection of *BNL*s. I had seen a sketch of a block rim, by Ty Piper in the Sept. 1978 issue. It was a sketch of a two-layer rim, six blocks to the layer.

I looked at this sketch again, and researched the block rim (going back to the late 1800s) and found it a good idea, but not the way it was being used. Each block was being isolated by glue because of the inaccuracy of wood working tools and equipment. The best rim would be a solid chunk of wood. But how? Bending a 3/4" thick piece of wood accurately would be nearly impossible. Using a large chunk of wood and cutting a circle out of it would leave 10% straight grain and 90% end grain. This would be very weak. I even played with the idea of building a rim with blocks as tall as the rim. In other words, one layer rims. But, I digress; my subject today is why I chose block rims over ply.

In my mind I was converting wood to metal, working in thousandths of an inch. I was mentally machining each block, so that when compressed together it would squeeze out the glue until wood touched wood completely. It worked, but created another problem: “precision in wood lasts about ten minutes.” If I waited a couple of hours to glue, all the dimensions were lost. The solution was to glue immediately after machining. It worked. The block on the top layer under the tone ring at the neck was doing as much work as the block on the bottom layer under the tailpiece. I achieved what I was looking for.

What does a banjo sound like without the flaw? It sounds like the best ply rim banjo you ever heard. That's right; I never said my rim sounds better than a ply rim. I never claimed my rim to be the *best* rim ever made. What I did claim

is consistency, rim after rim. Let me explain.

In the prewar days they had the same success rate we have today with ply rims. Just to pick a figure, let's say one in ten was awesome and the rest were good to not so good. If I showed you a stack of twenty rims from today's best ply rim made, could you point to the two that would be awesome? I say you can't. You can knock on them and pick out a potentially good one, but you can't just point to it. However, if you pick a rim from a stack of twenty of mine and don't like the sound, don't try another because the odds are you won't like it either. That's why I say, I achieved consistency.

When people call me and say, “My banjo is awesome but I read about your rim and I have to go with the hype?”, my answer is, “If it ain't broke, don't fix it.” My rim is not the final solution; it is “A” solution. If you're going to jams and not liking the sound of your banjo compared to others, call me. Odds are it's the rim, not the ring. My rim has made pot metal tone rings sit up and get noticed. If you ever had the chance to play my Turtle Hill Bluegrass Woody, you might wonder why we even have tone rings. It also makes me wonder if all these tone rings that are being made today are being formulated just to make a ply rim work.

During the past seven years I have machined countless ply rims for customers and builders. I must say, no matter whether they were old wood, sunken wood, or new wood, I loved them all. They machine faster and better than block, and the sanding process is almost eliminated. But, not a single one kept the dimensions I machined it to twenty minutes after I machined it. They shrunk, they grew, but mostly they went out-of-round. Why? Because every pass I took on the lathe was stress relieving a strip of wood that still had a memory of being straight. I machined the ThinSkirt in one new ply blank, taking .100 from the inside, and the skirt went .043 out of round as I took it off the lathe. I clamped it to .040 in the opposite direction for four months and it went right back to its original out-of-round dimension. It went to where the wood said it wanted to be. “Shapeshifters,” I call them.

I have received over a thousand ply rims from customers who wanted me to make block rims to replace them. Not a

single one of them has been round. Some were .010 out of round. Most were .030 to .040 out, and some were more than .100 out. At first I thought this was caused by people adjusting their action with the coordinator rods, but I soon found the out-of-roundness was not always related to the rods. Sometimes it was caused by the wood moving from stress relief, the four seasons, and time. In many instances the tone rings were tight, but were only making a two point contact with the rim. (This may also account for some of the many out-of-round tone rings.)

I'm sure many of the parts were fitted to the rim by builders just by removing wood till the part fit. If this was the case and calipers were not used to check fitting, then out-of-roundness would go unnoticed. .030 is not easily noticed on an 11" diameter with the naked eye.

I came to the conclusion that it's not how old the wood is, but how long ago it was *bent*. In other words, I don't care how old the wood is that you're making your rim out of. The age means nothing.

Naturally I had to prove this theory. The problem was, where could I find a prewar blank? A ply rim that has been bent for fifty or sixty years; long enough to forget that it used to be straight. The fibers of the wood would be completely dry, and the resins crystallized and hardened.

In June of 2006, Scott Zimmerman called me from Japan to order a couple of rims. He advised me that he was sending a 1926 TB 100 rim with the bracket shoe holes plugged, and wanted it turned to fit the ring and flange he was sending with it. When I opened the box this project was the closest thing to a prewar blank I was ever going to get. It was 2 7/8 inches tall and 3/4 inches thick. It was also .010 out of round, which I accommodated for with tape to take up for the slight out of roundness. I then chucked on the ID and turned the rest of the rim to fit his tone ring and one piece flange, in the process taking off quite a lot of wood. Four days later not a dimension had changed.

In 2007 my friend Dick Smith said he had three of these old rims and I was welcome to turn them for rings and flanges. And, he said I could keep them for as long as needed. Of the three rims, two could be turned. The third could not, because it was .120 out of round at the top and bottom—like a bent bottle cap. The two other rims

were fitted for rings and flanges and were left unfinished in the shop for three months. For the Labor Day holiday, the shop was shut down for five days. There was no



temperature control. When I returned, it was apparent that the humidity had gotten into the shop because the lathe chucks had light surface rust on them. The wood in the rack had gone from 6 to 10 on the moisture meter and was brought back to 6 in 24 hours. The first thing I did was check the prewar rims. They did not change as much as .001 from the day I turned them. They were still perfectly round.

In a recent interview I was asked, "How long should a ply blank sit around before it can be turned and still keep its shape?" My answer was, "I honestly don't know. If I could talk someone around the age of 18 into buying 50 ply rim blanks, then turn one of them each year and record the movements after turning till it stops, we might have a pretty good idea."

My block rim, on the other hand, is made of wood in its natural state. There *is* no stress. It might be out of round a couple of thousandths when finished, but this comes from the bandsawed blank not being perfectly round and being clamped on by six jaws when first chucked up. The jaws squeeze the high points. The rim will grow and shrink with the four seasons but will always stay round.

In an experiment some years ago, I exposed turned block and ply rims to the worst of our south Arkansas humidity, in an open carport with a wet concrete floor. Not wet from rain, just humidity. The block rim grew .005 (which is why I fit tone rings .005 loose), and the ply grew .008. They were brought back in the shop and allowed to dry for a week. The block rim returned to its original dimension and stayed round.

The ply rim shrunk back down also but was so out of round the tone ring would not begin to go back on.

The type of woods react differently also. Although maple works well in ply rims (perhaps because it is bent), in the natural state it is bright. My first rims were maple. They sounded great in a Stelling but were bright in a Gibson-style banjo. Clear and clean, but bright. The ThinSkirt helped a little, but the bottom end was not there. In 2002, after talking with Geoff Stelling, he switched to birch with the test rim I sent him. Birch was warmer. Sample birch Gibson style rims were sent to Bill Palmer, Kyle Smith, Scott Zimmerman, and Paul Hopkins. It was unanimous; birch filled the gap. Booming bottom with clear and clean mids and highs plus plenty of volume. Since that time I still have 200 feet of the original 300 feet of maple that I bought, and I've gone through more than 4000 feet of birch.

I wasn't going after the "Prewar" sound. I have no idea what that is. I just wanted to know what a banjo sounded like without the flaws as I saw them. A banjo built on a good solid base. A sound that can be had with each rim instead of taking chances that you might buy an awesome ply rim or not. A consistent sound.

Sound is subjective. You may like my rim or you may not. But, the way I see sound in the banjo world is like this. You live in a 200-year-old town. When the town was built the church was built. The church bell has been cracked since the day it was installed. Everyone grew up listening to the sound of that cracked bell. Then, the wooden mounting rotted and the bell fell to the ground breaking beyond repair. Everybody pitched in and bought a new bell—not cracked, tone clear and crisp. Now there's a controversy. Half the town likes the sound of the new bell and the other half would prefer the old one. That sounds more like a bell to them.

I fully understand the nostalgia for the ply rim and its sound. I'm an avid black powder, patched round ball, sidelock shooter. I was hunting this way when it was called a "primitive hunt." Today's inlines, scopes, and sabots have taken the "primitive" out of the hunt. We have faster, flatter shooting, and twice the effective range. Although I respect the old methods, I understand that the new technology is a modern, and a better, way. I transformed to the new and progressive way. And I must admit, *it is better.* —TP