More About Harps

Let me preface this document with this statement: I don't degrade other harp makers or their designs. There are many finely made harps out there, that sound great and play well. I'd just like to point out what makes my design different, with less inherent handicaps to start with. They are designed to my specific preferences. If your preferences align with mine, we have a connection!

Having said this, let's start with a short tutorial on basic harp construction. The first image that probably comes to mind when you say "harp" is the traditional orchestra/pedal/ concert harp played in symphonies. Here is a gorgeous one on the right.

These are the bigger cousins of the Celtic folk harps (pictured here) that have become, in more recent years, much beloved by folk harpists worldwide, due to their lower cost and portability.

More obscurely, there is the Paraguayan/South American harp or arpa. Pictured here on the left.

There are also various small harps, lyres etc. But lets focus on these three basic designs, for the sake of brevity.

There are four basic parts to a harp.

1: The neck, or top of the harp, with all the mechanical string connections, and sharping mechanisms

2: The soundbox, or box, the basic body of the harp

3: The pillar, the column that rises from the bottom face of the soundboard, to the farthest point of the neck.

4: And the strings

If you take a closer look you'll see that all 3 of the previously mentioned harp designs have necks with roughly the same basic harmonic curve, (the same as the lovely sweeping curve that you see when you look inside a piano).

There is a complex explanation for this curve and the resultant string lengths, but we won't go into that here. If you are consumed with a burning curiosity, my suggestion is, ask an accomplished pianist or music teacher.

While speaking of pianos, a note on sharping systems; imagine the white keys on a piano. That would be the harp with no levers activated, no sharps or flats. In order to attain key changes, we need a method of quickly and accurately changing the pitch of each string on demand.

Enter… the dragon… just kidding! Enter the sharping systems developed over the centuries. Sharping levers basically give you the black keys.

Onward to examples!

1: The pedal harp (or orchestral harp) is a grand and cumbersome beast with a magnificent sound, 47 strings, and a sharping system activated by foot pedals at the base of the instrument. A pedal is depressed and moved to a notch, which pulls several fine steel cables, or rods, activating a counter lever system that tightens or shortens several strings simultaneously. A friend of ours has one, it requires a designated mini-van, a furniture dolly, a strong back, and about an hour to re-tune after moving. The sound is fabulous! Hers cost upwards of $20,000 plus the case. This requires a serious commitment, and resources not

everyone has. (she played in symphonies, ensembles, and at private events for a living)

2: Moving on to where most of us mere mortals live, is the Celtic side strung harp, commonly called a folk harp. Ranging from 21 to 36 strings, average price range is somewhere between $1000 - $6000 depending on options most of them will fit in the back seat of the family conveyance, and can be moved without the aid of a crane! These are very popular for obvious reasons. The sharping system consists of small individual levers that change the pitch of each string individually by adjusting the vibrating string length, either by pressing in to the string with a cam action, or capturing it between 2 opposed surfaces, pinching it.

3: A variant on this design is what's commonly called a Paraguayan harp, lighter and often cheaper than the celtic folk harp, depending on country of manufacture, and shipping cost. The distinguishing feature is the 2 sided top section, or neck, that has the strings suspended between the sides like a "string sandwich", so to speak. As opposed to the Celtic harps whose strings attach to one side of the top, or neck. The primary drawback to the Paraguayan, is that until recently, the only method of sharping them was to physically retune the strings for a key change. Sharping levers would not fit the design.

That was my first big design challenge sometime in early 2000. My first working prototype had a Paraguayan neck with an internal sharping mechanism, activated by external levers, it looked great, had no dulling effect on the strings when they were sharped, and was a total nightmare to build! I have since come up with simpler options, but I still like the playability of my original design.

Lets examine pros and cons a bit. Let's play a typical Celtic folk harp.

First of all, take off the case or cover, get your stool or chair situated, rock it back on it's hind legs, (if so equipped). Snuggle it up to your shoulder, to a comfortable spot, now lets check tuning. Attach your tuner, or go off the piano, or whatever is available as a reference. Now, locate the #@#*! tuning wrench, (you did remember the wrench, right?) No? Oops! Re-set the harp, out of the seat, back to the car, or living room, or wherever, find the wrench, or if not, improvise with a pair of pliers or a small wrench out of the toolbox, now back into position. Get a very firm grip on the wrench, find the pin for the string in question, grip the head of the pin securely. Slowly, carefully, rotate into the windings to sharp, or out of the windings to flat. Too far? back it up a bit, not far enough? Nudge it a little farther.

Now if you have some slippage (the tuning keeps going flat), apply pressure against the wrench as you turn it in, or take the wrench, grab the metal part, and use the grip as a mallet to tap the loose pin in until the string holds without slippage. If it still slips, or it's in so deep the alignment with the bridge pin is problematic, it's time to have the pins redone, or use any of several methods of swelling and locking the pins back in place.

Now, let's pick a key, and set sharping levers, assuming no mid song key changes. Notice the slight damping of the of the string as you engage the levers, and the fact the string itself moves slightly out of line with the un-sharped strings. Most levers use a lifting motion to change the vibrating length, and thusly the pitch. Harpists are used to this, so it's not crippling, but one of those little annoyances you just automatically compensate for.

Now, you're ready to amaze people with your mad harping skills!!

Another note on the Celtic harp. As I've mentioned before, these are strung from the side of the neck, to the middle of the soundboard, so the collective string tension (1000 + pounds I've been told, depending on the type of strings used!) is continually pulling primarily on one side of the neck and is always trying to warp and break the joints and major components. So, harp makers have developed work arounds for this in offset necks, substantial T bracing, and many other clever and beautiful design compensations.

Now, on to the next design, the traditional Diatonic Paraguayan, or hollow neck from South America.

Setup and tuning are similar, with the exceptions that a traditional Paraguayan traditionally has violin-type friction pegs instead of metal pins, and does not have sharping levers. Key changes require re-tuning the necessary strings, and can not be done quickly mid song, as the Celtic harps can with their sharping levers. Also, the playing technique for a Paraguayan is different from other harps, in that the strings are traditionally played with the fingernails, like a classical guitar, necessitating a different, more "claw-like" fingering than the Celtic style harp, that is played with the fleshy part of the fingertips, which also results in a different overall tone.

Pros on this design are, you don't need a #@#*! wrench, and the center strung design makes for a well balanced instrument requiring no special side bracing, or offsets. Some of them are held together only by string tension, no glue or

mechanical fasteners! Remove the strings, and the neck lifts off the pillar, and the pillar lifts out of the soundbox.

I've never had my hands on one, but I imagine restringing, tuning, and waiting for the string tension to re-stabilize must be far from fun, but does make for a more easily transported harp, unfortunately not one you expect to play immediately after arrival and re-assembly.

My experience is once a new harp is strung, or upon restringing one, it's several weeks before the tuning really stabilizes. They are playable for short periods, but require frequent retuning, until they stabilize.

A note: modern Paraguayan harp makers are now offering a variety of harps that incorporate mechanical tuners, and sharping levers. Having listened to several professional recordings of these instruments, I wasn't fond of the actual sound.

Let me elaborate.
A nice quick attack, bright sound, but not much sustain, or "ring" if you will. Also, not enough depth in the tone of the lower 1/3 of the instrument, for me. The quality is probably fine, but it's not a tone I like. Strictly personal taste. Some folks like chocolate, some do not, N'est-Ce pas?

The most noticeable differences in my design, are the Paraguayan, or double neck, combined with a Celtic type stave back, with a larger sound board and box for a full sound with clear highs and deep resonant lows, and the use of mechanical tuners, as opposed to metal pins driven into a pin block, and held fast by friction. At a 16 or 18 to 1 turn ratio, the tuners are smooth, easy, and can't slip like the friction pins in conventional harps. I use Gotoh, Schaller, Grover, Sperzel, Schertler, etc. Anyway, you never have to worry, "Where did I put that #@#*! tuning wrench!"

The double neck allows for a well balanced instrument. All strings are evenly centered with no off axis strains pulling on the side of the neck, or soundbox. My necks are reinforced with aircraft aluminum, allowing for a much slimmer profile than the common Paraguayan necks, which can be quite massive looking, for the strength necessary to support the 1000 to 1500 pounds of force common to even the nylon strung harps.

I use only solid woods, no plywood. The soundboards are either Sitka or Engellman spruce, carefully tapered toward all edges for resonance, no veneers. I don't like the dulling effect the veneers have on the soundboard. Each soundboard has 2 string strips (inner and outer) for strength, also hand tapered and fitted. I avoid using dyes or stains. After 45 years of commercial and custom woodworking, I'm tired of trying to make wood look like something it isn't, or painting it. I really think wood should be appreciated for the unique and individual material it is. I have fun hunting for woods with character.

For sharping levers I recommend Camac, Truitt, or my own design, which actually does not dull the tone of the string at all, or change the relative string alignment.

The sound boxes are stave back design, solidly built and reinforced, assembled with locking joinery as opposed to plain butt joints, which can crack with age and stress. The soundboard/box is larger than the norm for more volume, and richer low and mid tones.

I use a non yellowing bar top type lacquer for a final finish, and all my harps come with adjustable stands for comfortable playing angle. All strings are nylon, or nylon wound.

My personal goals for my harps are; easy and comfortable playability, durability, easy maintenance and adjustment, also tonality that favors clear intelligible highs, full mids, and full resonant lows. This design is the result of about 16 years of building and road testing… literally.

The first working prototype, (Zahava) has been in constant service, since summer of 2001, traveling in trailers, vans, and in the under compartment of a tour bus, pretty much 24/7 for months at a time. It's been water damaged twice, dropped, played in the worst conditions & temperature extremes you could imagine, and generally had an abused life.

If she could speak she would probably have a pretty good case for a personal injury lawsuit! Fortunately, she holds her peace, and patiently continues to make beautiful music in spite of the scars!

If, after reading this, you are interested, please contact me with further inquiries at

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Caveat;

We still actively tour as a musical group, but not 24/7-365. We go out for a few months out of the year, (usually summer) and have chosen to settle in a quiet area in rural Florida. The downside of that, is phone reception is sometimes erratic, If you can't reach me at 316-259-4106, call my secretary (my lovely wife!) at 316-259-8338. Texting me at my number, or emailing at mchanes@juno.com are also good ways to reach me.

P.S. I am a proud supporter of olympic wombats, I mean, who could possibly not love Fatso, unofficial mascot of the Sydney 2000 summer Olympics?