



The Game is Changing

by Brendan Power

We live in exciting times! In every area of manufacturing and production, several factors are coming together to make it possible for small start-up companies (or even individuals in their home workshops) to create affordable, commercially viable products of a sophistication and complexity that was undreamed of only a few years ago.

This applies in the harmonica market too. I confidently predict that there will soon be an explosion of new harp designs and options available to players. Happy days! Let me explain...

The digitisation of absolutely everything is the key. It has revolutionised so many fields in the past 50 years, and the net is spreading. If you're old enough, you'll remember when CDs took over from vinyl: analogue gave way to digital. That same process has been repeated in publishing, film, telephones... you name it, there is virtually nothing these days that isn't controlled via ones and zeroes.

Digital technology has taken over manufacturing too. Initially the digital machines were hugely expensive, only affordable for large manufacturers. CAD (Computer Aided Design) and CNC

(Computer Numeric Control) were exotic acronyms that only specialists understood, and the machines were massive beasts that inspired awe and wonder.

These days CAD and CNC machining are everywhere, and you can now buy desktop CNC machines for a few hundred quid. I know: I've recently bought such a one, an inexpensive but highly sophisticated 4-axis CNC machine from China. It's taking up a ridiculously small footprint on my workbench relative to its incredible power to make amazing stuff.

But the machine I cherish above all is another low-cost Chinese import: my 3D Printer. What a treasure! I love her so much, let me count the ways... Flash is her name (short for the brand name Flashforge) and she's a development of the Makerbot Replicator, a popular American design.

3D Printing is an astonishing, democratising development in the world of manufacturing. I'm sure you've all read misty-eyed articles saying how it will change the world. Well, after seeing Flash do her stuff in my workshop for the past couple of months, I'm a believer.

For the harmonica designer, since harmonicas are small objects, affordable desktop machines like this are all you need to make your wildest creations come to life.

Since teaching myself CAD and acquiring Flash I've been bringing long-cherished radical harmonica designs into beautiful hard reality with the flick of a switch. It still amazes me every time...

The truly radical thing about 3D Printing is that complexity is not a barrier any more. In the past, if you wanted to make something complex, it cost an awful lot of money to even make a prototype - let alone get to a finished product, which requires lots of small changes and refinements in the process. Each of those steps would cost a lot too.

That cost barrier stopped many inventors realising their dream ideas. I have designs for complex, ground-breaking harps that go back three decades or more. I've tried making some of them over the years with laborious hand work, hacking available parts with knives, glue and sweat, but could never achieve the accuracy I needed to properly test out their qualities. Some were even beyond my ability to hand-make; they remained as forlorn un-realised ideas through the years, only visible as sketches.

Now I can pop out bizarre harmonica parts in ABS industrial-grade plastic at will, in my own home, for a few pence each! Wow and double wow! If you can draw it, you can make it with 3D printing - it's that simple. I test my Franken-harps, make the design tweaks necessary in CAD,

and Flash immediately prints a new improved model. There is no limit to the complexity of the design and the cost is miniscule.

This has significant ramifications for the harmonica field, as in every other area. At a stroke, it removes the hegemony the big manufacturers have enjoyed for over a century to dictate what harmonica products are available to buy. Because they alone had the funds and machinery to make the parts (and had to be sparing in their investment because of the high cost of making alternative designs), we have been fed a very limited diet of harmonica models. Mostly they are just variations on the same old themes, many dating back to the nineteenth century!]: the 10 hole Richter diatonic, the 12 hole slider chromatic, plus the stock tremolo/octave/bass/chord models.

Now, in my humble loft workshop, I can make harmonicas of a sophistication never achieved by any big manufacturer. Working with Zombor Kovacs, my X-Reed partner, we have some truly revolutionary working prototypes under development that will see the light of day as weird but wonderful new harmonicas available to buy in the next six months. And we're just two guys! This maker gear is available to everyone now - even you! So if you have some dream harp that you always wanted to make, get stuck in, and just do it. Yes you can! www.x-reed.com