

The tribulations of designing a bagpipe chanter for the specific requirements of an individual customer lead me to make some observations about the relationship of the musician and the instrument maker.

Preamble

The Secretary asked what we are doing in our workshops, which has prompted me to share the saga of my search to design a stable bagpipe chanter in A. But while writing this I began to ponder on the interplay between the demands of musicians and the abilities of instrument makers throughout the ages.

Background

For well over half my life I have been researching, making and playing a wide range of the 'rarer breeds' of European bagpipes. In research and development, I have a broad spectrum of approaches. Some pipes are detailed copies from actual museum examples and other designs are loosely based on early iconography. I enjoy this contrast between the detailed 'scientific' approach and the more 'creative' approach. Most, but not all, of my designs fall somewhere between these two approaches and I relish the freedom it gives me, and I am confident that all my pipes benefit from this.

According to my records I have currently completed 866 bagpipes since making my first one in 1983. Not all these pipes have been sold, as over the years I have retained some of these for my personal delight and for display purposes. Others have been prototypes that I later discarded and strategically placed in the back of the woodstove. But about 800 of them have been ordered by and sold to customers.

Most customers are happy to order one of my standard designs of pipes. I do offer them a choice of different woods and bag leather colour, but beyond that they accept my standard designs. But others have ideas of their own. I imagine that most instrument makers will have been approached now and then by an enthusiastic, gifted, eccentric or possibly demented would-be customer who has an intriguing, possibly brilliant, seemingly impractical or daft idea for an innovation that they want incorporated into a standard design of instrument. Discernment is needed; one must take the decision about whether it is worth accepting the challenge in the hope of discovering something new, which would enrich your current knowledge and design and might hopefully this may open up new avenues for other musicians to pursue.

Over the years I have had a series of fruitful collaborations with pipers. The first was with my brother John at the start of my pipemaking career. He, like several others, had been inspired by Roderick Cannon's seminal articles in The English Folk Dance and Song Society's Journal on his researches into historical references to English bagpiping. John wanted to transfer some of his recorder playing skills into playing an English bagpipe. At that time the only surviving English tradition was the Northumbrian smallpipe. John was looking for a less sophisticated instrument, with a cylindrically bored chanter and gave me his brief specifications for the pipe that we eventually rather cheekily called the Leicestershire smallpipe.

Over the ensuing 36 years this design has proved the most popular in my entire range and has formed the 'backbone' of my business. I have, on occasions and with a (hopefully) discernible twinkle in my eye, claimed that it was a *deeply* traditional instrument, and I suspect some pipers may believe this to be the case. At what stage will these pipes qualify to become *truly* traditional?

John immediately took to his Leicestershire smallpipe and insisted on playing it with covered fingering. With most types of bagpipes, the chanter reed is playing continuously, so the challenge is always with articulation; how does the piper create the impression of 'space' between each individual note played in a melody? Many smallpipe traditions take advantage of the weak sound of the lower notes and use what is known as covered fingering. The six-finger note is tuned in unison with the drone note and, apart from the right-hand pinkie, only one finger is ever raised at any one time. The chanter is open into its bell so that articulation is produced by returning briefly to the bottom (drone) note between each note of the melody, giving it a distinctive percussive character. The Northumbrian tradition has developed another

system, where the chanter is stopped at the end and only one finger is ever lifted off the chanter at any time so that with seven fingers on the chanter the piper can actually articulate real 'silence' between notes. This is known as stopped fingering and produces the very distinctive style of Northumbrian playing.

John soon became the piper for the women's Morris dance side Bare Bones and has retained this role for 35 years. They frequently dance out of doors and even though the Leicestershire small pipes have quite a punchy sound there were occasions when the dancers struggled to hear the pipes. More volume was required, and consequently he ordered a set of my Border Pipes. Border pipes were originally intended for outdoor playing. My design is a slightly modified copy of an 18th-century set in The Scottish National Museum, which I first measured in 1992. It has a conical chanter, which with a few modifications I convinced to play in A. John was doggedly determined that I should adjust the chanter so that it would play with the covered fingering that he was accustomed to and this was the start of a ten year saga.

In my experience conical chanters prefer to be played with open, or semi-closed, fingering. Playing with covered fingering never seems satisfactory, as the jumps from high notes down to lower notes can result in instabilities, double toning or unmusical squawks. To counteract these the player has to resort to making constant adjustments to the bag pressure which is not something one should need to do when playing a bagpipe; a chanter reed needs to be able to play all the notes without any change of air pressure. You shawm players have it easy as you can alter the air pressure you supply to the reed *and* you have all that control of your reed through squeezing with your lips. This is a doddle compared to the poor bagpipe chanter reed, which needs to achieve all its notes without the luxury of lip control or individual pressure variations!

Over the years I have developed conical chanters, in high D, G and low D, all of which overblow and have various cross fingering possibilities. These designs have, after a fair amount of prototype work and hair tearing, settled down and become the standard ones that I, and my customers use on my 'medieval' English Great pipes range. My border chanter is in A but has a fairly wide bore, with no cross fingering capabilities and is a bit too loud for my English Great pipe drones, but for some reason I have always struggled with designing another chanter in A with a tighter bore. I started this search 30 years ago and since then I have made many different attempts to juggle different internal dimensions, hole positions and reeds, but without any great success. Every chanter of any type that I make receives a number and looking at my records I see that I have made 82 A chanters and nearly all of them have ended their life in the back of the wood stove. Weeks of work, frustration & disappointment.....

The saga begins

John carried on battling on playing the border pipes with covered fingering with only a limited amount of success. He eventually ordered a set of English Great Pipes and insisted that I supply it with an A chanter, with sharpened leading notes that played with covered fingering. I accepted the order with a certain amount of optimism, but my new design of chanter was disappointing and after a few months he returned the pipes to me and they remained in my workshop, filling my heart with gloom whenever I glanced in their direction. Every few years I would reluctantly spend another week juggling with other bores, reeds and hole positions to try to overcome those wretched squawks. I began to think that it was never going to be possible. How many times did I wish that I had refused John's commission? Had we not been so closely related it would have been easy for me to admit defeat and return his money with an abject apology and put the pipes firmly in the back of the wood stove.

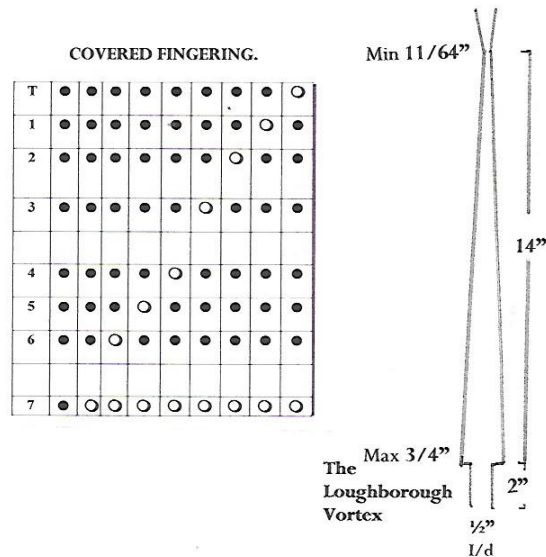
Eureka!

Things changed dramatically last year when a customer asked me to make a reed for his border chanter in A, made by the late John Addison. I will never know how John Addison arrived at his design and I know from bitter experience that trying to develop a reed for an unknown chanter can be exceedingly time consuming and often ends in little or no remuneration. However, in this instance I was delighted at the speed at which I managed to develop a suitable reed that played enthusiastically and accurately in this chanter. All these years I have been searching for such a stable marriage between reed and chanter! I took

the opportunity to measure it, made a reamer and reproduced it and found that my copy was equally enthusiastic to play.

I was tinkering with it to see whether I could encourage it to overblow into the next octave and began experimenting with a wheeze that Jon Swayne had taught me. By rolling up a piece of card and tucking it into the end of the chanter one can effectively increase the length of the cone. This did not seem to induce this chanter to overblow, but I noticed that it began to increase the stability of some of the notes when I attempted to play it with covered fingering. *Very interesting!!* I carried on messing about with it and can't remember what inspired me to try extending the bore beneath the existing cone with a considerably narrower piece of cylindrical brass tubing, but that produced my *Eureka!* moment. It stabilised all the notes and with a bit of hole repositioning I finally had a chanter that I could play with covered fingering, jumping from note to note with no pressure alterations required and no squawks.

Since then I designed this chanter to have an extended removable foot, similar to the foot extension on the Union or Pastoral Bagpipe. However, the foot on these pipes is conically bored and appears, I am led to believe, to provide enough backpressure to aid playing the notes into its upper octave. The foot on my new chanter has a cylindrical bore which is *considerably* narrower than the diameter of the bottom of the cone. Out of solidarity for my home county I have named this feature *The Loughborough Vortex*.



It works perfectly well in practice, but will it work in theory?

I have virtually no theoretical knowledge about acoustics or numbers and I shun all equations, but I seem to have stumbled on a surprising phenomenon. Are there other conically bored woodwind instruments that take advantage of having a terminal reduced cylindrical restriction? My design works well in practice, but I am curious if anyone can suggest whether it will also work in theory? (I anticipate future Comms.)

For me, the main thing is that it does work, and I have been able to return the pipes to John with a new design of chanter that plays exactly as he requested over ten years ago. There is a truism that the first stage of any new development project will take 90% of the time and that the second stage will also take 90% of the time, and it is always a challenge to work out how much to charge for this type of special commission. I charged him £400, which possibly works out to less than £2 per hour of development, however now that this work has been done and the design has settled I am in a position to use it as the basis to develop other chanters with more conventional fingerings in A to suit my English Great Pipes,

Border Pipes and Marwood double pipes. Optimistic as ever, I predict that these other design modifications will take far less time to complete, so I may eventually be able to recoup some of the initial development costs in time.

Callum appears on the scene

This has been a lengthy account of just one of my collaborative projects. There have been plenty of others. Some have been brief; some are on hold and some are still in the pipeline. A major change in my pipemaking career came when Callum Armstrong and I met each other at The London Early Music Festival in November 2009. He already had a sound grounding in playing The Highland Bagpipes and had just embarked on a four-year course in recorder playing at Trinity Laban Music Conservatoire, Greenwich. When he ordered a set of my Scottish smallpipes, neither of us knew then what a major impact this would have on both our lives. While he was waiting for me to make it, he began to ask me if I could incorporate some unique chanter and drone features in the pipes. Usually I would not consider fitting some of these for a customer, but for someone of his obvious musical capabilities I was certainly prepared to stretch my pipe making abilities to add them.

Within days of receiving the pipes he began experimenting and utilising some of these extra features in completely unexpected ways. He discovered that the two keys on the chanter gave him access to play many notes in the upper register. I had never designed the chanter to play like this; in fact, it was a technique that was previously thought impossible by smallpipe players. He was also using bold and unlikely drone combinations that sounded great. Later when I sent him the double chanter, he spent several months of concentrated effort developing a unique and extraordinarily fluent technique of playing each note independently, which to this day astounds all who hear him play.

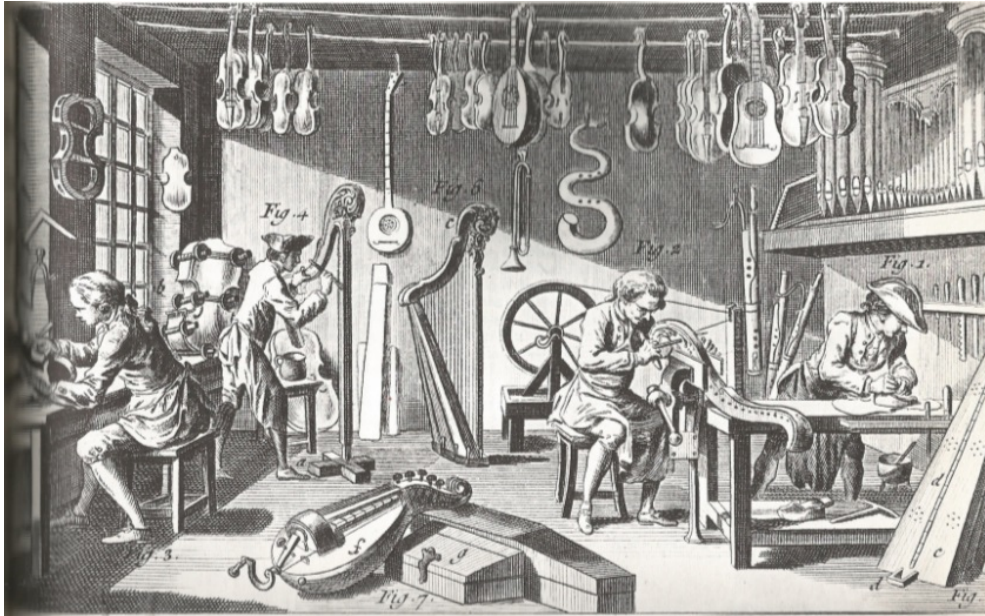
Sometime later when he tried to order a set of Cornish pipes from me, I instantly refused and insisted that he come to my workshop and make it for himself and this was the beginning of our ongoing collaboration on a host of projects.

Our first major collaboration was to develop a chanter with a three-octave range by adding a speaker key to simplify the playing of more notes in the upper octaves. The project was speeded up when we received a £500 grant from The Lowland and Border Pipers' Society. We estimated that we could achieve a workable design in one week and inevitably it took us about three weeks to succeed, but I am not sure when I would have set aside that time without that initial cash injection. Our abilities complement each other; my skills and inventiveness combine well with his focus and dazzling musical abilities and have allowed us to work on a host of other successful collaborations.

In the past eight years we have

- a. Redesigned my double smallpipe chanter
 - b. Developed the triple smallpipe chanter
(Listen to him playing *Burrito Hurricane* on Youtube and you won't believe it either!)
 - c. Expanded my range of Cornish double pipes from D, to High G and low G.
 - d. Carried on with my Iain Dall chanter project which I began in collaboration with Barnaby Brown in the late 1990's. This was to copy the oldest known surviving Scottish Highland bagpipe chanter, which belonged to Iain Dall MacKay (1656- 1754). We travelled to Halifax Nova Scotia to measure it for the first time in 1999 and since then it has been returned to Scotland and the saga of remeasuring it and the search to develop a suitable reed could easily turn into a novel. Somehow this important project drifted into the doldrums but has now been revitalised by Callum's enthusiasm, together with Robin Howell's expertise in reed making for early instruments. It's a long -term project, but one of enormous importance and it is exciting having Callum's drive and enthusiasm.

In Conclusion



Somewhere in the back of me bonse I hold a romantic mental image of a ‘golden age’ of instrument making. This is inspired by the surviving instruments and enhanced by this woodcut of an 18th century workshop of one of these family dynasties of luthiers. I like to think that each maker from this era will have inherited a skill, knowledge and instinctive understanding of their craft from previous generations without all our modern scientific ‘benefits’. I am aware that it is a typically idealised vision of the past and inevitably I have far less interest in the 19th century systematic development processes of Saxe, Sousa and Bohm.

Over the years I have worked with many other pipers trying to incorporate their individual requirements. I imagine that most instrument makers will have stories of being led down possible blind alleys, spurred on by the thought of emerging back into the sunlight. (Oh! the elation one feels at a new breakthrough.....) But this is not something that is unique to our age. Surely this ongoing interplay between the demands of musicians and the abilities of instrument makers is what has produced the instruments that we now know today?

And when I look at some of the surviving Mussette de Cours I can only try to imagine what dazzling professional musicians of the past must have kept pushing and demanding the Hotteterre family to add more keys to increase the complexity and the capabilities of those bagpipes. They were not bound by our modern (and quite admirable) search for ‘authenticity’ but were working at the forefront of instrument making that has helped create the modern instruments that we know today.

For me it has been a personal delight and enormously revitalising to work in close collaboration with such a gifted musician as Callum. My abilities have been regularly stretched by his demands and as I am now approaching 70 years old, I look forward to our partnership leading to new developments and technical advances.

Julian Goodacre 12th January 2020

Youtube viewing

***Cutty Sark** (Callum Armstrong) Double chanter.

***Burrito Hurricane.** (Callum Armstrong) Triple chanter.

***Cornish Bagpipe Sextet.** High g, C and low G Cornish double pipes.

***Bagpipes tradition and Innovation.** Extended range smallpipe chanter, Double chanter & Iain Dall chanter.