# Don't Judge a Book by its Cover and Don't Judge Recorder Bores by Outside Shapes!

**Alec Loretto**

Renaissance Recorders - The Pictorial Evidence by Anthony Rowland-Jones (**RM Sept. 1994**) raises many interesting points. The final paragraph invites comments from makers. Before accepting A.R.J.'s invitation I must correct a serious error. A.R.J. rightly says that nowhere does Ganassi illustrate 'his' recorder, and then explains that the recorders illustrated in Ganassi's frontispiece 'are unlikely to achieve such a range'. Readers will recall that to meet the demand of Ganassi's musical examples, a recorder is required that covers a range of two octaves and a sixth. In 1978 Bob Marvin presented an illustrated and detailed article on making recorders extrapolated from the Ganassi frontispiece. (In working from pictures of recorders, makers can estimate measurements from other details - the size of a violin, the height of a chair, the width across the knuckles of a child's hand etc.) Using the distance between a man's eyes, Marvin calculated the size of the Ganassi recorder and proceeded to make one. It worked, and it worked well! In view of Marvin's work, I added a supplement to my 1974 Ganassi publication. In the 1982 publication of his Ganassi material Fred Morgan made no mention of Marvin's work. And now A.R.J. fails to mention it. But neither A.R.J. nor Morgan can be accused of ungenerous behaviour. As Angelo Zaniol explains. (**Woodwind Quarterly Vol.6**) 'In Morgan's article... there is no mention whatsoever of the... contribution of Marvin' and elsewhere, 'Because Marvin's article had appeared in a periodical of limited circulation, it did not, unfortunately, arouse the interest it certainly deserved.' The periodical Zaniol refers to is the **FoMRHI Quarterly of April 1978**. This Quarterly is available only to fully paid up members and is not available in any shops. I learned of Marvin's work, simply because I happen to be a member. To my knowledge Marvin is the pioneer of Ganassi Recorder making working from the frontispiece. Others, including myself and Morgan, worked from the so-called Ganassi Recorder in the Vienna Collection.

The history and development of the recorder can be studied from different angles - the German School of Making, the English School etc.; the Musical Context - Dance Music, Concerti, Consort Music etc.; and of course, the type of recorder - Medieval, Renaissance, Early Baroque and so on. For myself, I prefer to trace the recorder's development through the changes in the bore profile. The bore has many influences upon how a recorder plays including its range, its tone colour and the manner in which it imposes on makers and players which fingerings will work and which will not. This latter comment needs explaining. During the making say, of a Baroque Recorder, the maker can say to the instrument 'I know you are a Baroque Recorder, but I am going to get your lowest octave to respond to Ganassi fingering.' And s/he can. The holes can be of the correct size and suitably placed and then tuned to provide a Baroque Recorder with Ganassi fingering - in the lowest octave. But from then on, once the second octave is reached, the boot is on the other foot! The Baroque Recorder now says to the maker, 'If you try to continue Ganassi fingering into the second octave, it won't work! I am an instrument with a Baroque bore and I will play seriously out of tune if you play me using Ganassi fingering! Start again please and carefully match the fingering to the bore.' Woe betide the recorder player who learns one, and only one fingering pattern, and then attempts to apply it to different sorts of recorder! Before examining various types of bores and what they impose on makers and players, some things need to be clearly understood. First, that the outside profile of the instrument often bears some resemblance to the bore profile. But often it bears very little resemblance indeed and numerous recorders survive and instruments are being made today in which inside and outside profiles are quite dissimilar. Next, it is very difficult to find any straight surfaces on the recorder - everything about it seems to comprise curves, inside and out. Fig.1 is a simplified graph of a treble (alto) recorder in F at a-44OHz. The profile from the south end of the block cavity (a) to the end of the instrument (b) should be represented as a series of curves with subtle 'ins-and-outs'. For simplicity this graph and **all** other diagrams are drawn using straight lines to illustrate matters raised in the text. With these points in mind, consideration can now be given to the various bores used in recorder making.

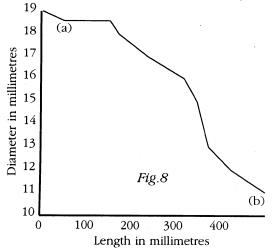
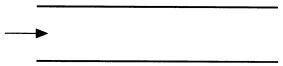


*Fig.8*

**Cylindrical Bore:**



Often referred to as a Medieval bore, after the best surviving Medieval Recorder, in The Hague Collection - the so called Dordrecht Recorder. It is in poor condition but appears to have a cylindrical bore. If the bore is large in relation to its length, the range will be limited. Higher notes are more easily produced using narrower bores. A fat bored cylindrical recorder can have a range of an octave and a fifth - from 01234567 to Ø123, with perhaps a few more notes using unusual fingerings. Sizes larger than an f alto are difficult to play - the finger holes are large and their positions require uncomfortable stretches. A cylindrically bored recorder with smaller diameter can play two octaves plus a note or two. The maker will almost certainly attempt to provide the player with accurate plain fingered notes and good octaves. But the player will need to humour, with fingerings and/or breath pressure, the forked fingered notes. Ganassi fingerings will not work in the extreme upper register. The outside profile would generally be cylindrical, as is the bore, with perhaps some delicately turned ornamental rings at the the instrument's south end - at the bell. Even with narrower boring, larger sizes are not easy to play, with large finger holes that need to be widely spaced.

**Renaissance Bore:**

*Fig.3*

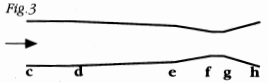



*Fig.4*

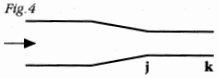
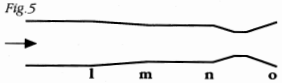



*Fig.5*




This differs markedly from the cylindrical bore with the introduction at about hole 6 of a narrowing of the bore - often referred to as 'the choke'. Introducing a choke at the correct point produces, among others three important effects.

1. Fingering 01234567 produces a note of lower pitch that produced by a cylindrical bore of the same head diameter and the same speaking length.
2. Right hand finger holes can be made smaller in diameter.
3. Right hand finger holes can be closer together.

Points 2 and 3 make the Renaissance recorder a more manageable instrument.

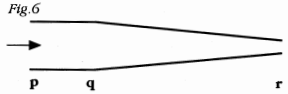
Notice in Fig.3 the more or less cylindrical head (c-d), the gentle taper (d-e), the choke (e-f), a small more or less parallel section (f-g) and finally a flare (g-h). Sometimes the more or less cylindrical section can continue to the end (j-k) in Fig.4. On the larger Renaissance recorders (Fig.5) where the left and right hands are widely spaced, a lesser taper is introduced into the bore between the hands, with the left hand holes situated between (l-m) and the right hand holes between (n and the end, o). Renaissance recorders can have a range of an octave and a sixth - from 01234567 to Ø127. Higher notes can be faked but not on all instruments. Ganassi fingerings will not work to produce very high notes. It should be noted that the bore diameter at the south end of the instrument is **smaller** than the head bore diameter. It is rare to find a Renaissance recorder that does not observe this.

**Transitional Bore:**

Not illustrated as they vary so much. Suffice to say that it is a bore that combines features of the Renaissance Bore and the Baroque Bore (see below). Makers in the past and today, often disguise this Transitional Bore with an outside shape that leads one to believe that it is something different and not a recorder with a range of two octaves plus! Transitional recorders which form the link between Renaissance and Baroque instruments can possess quite large diameter bores, and yet they function with a modern type of fingering, and not Ganassi.

**Baroque Bore**

*Fig.6*




Note the more or less cylindrical head (p-q) followed by a gentle taper (q-r) that contains the complicated 'ins-and-outs' already mentioned. They respond to a Dolmetsch type fingering with a range of two octaves and at least a note. Two octaves and a fifth can be obtained but the high notes are very shrill. There might be a slight flaring in the bore at the very south end to raise the pitch of 01234567 - it also sharpens some of the high notes.

**The Ganassi Bore:**

*Fig.7*

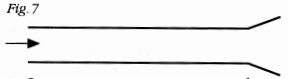
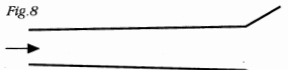



*Fig.8*




Quite the black sheep of the recorder bore family! Makers today tend to use a cylindrical bore from (s-t) followed by a marked flare from (t-u). The one known surviving recorder that responds to Ganassi fingering (Vienna Collection) has a bore that increases slightly (v-w) followed by the marked flare (w-x). The diameter of the first section (s-t)/(v-w) and its length, the length of the flare and its taper must be balanced with the voicing to produce 01234567 in tune with 01234567 and 02. It should have a range of two octaves and a sixth, and, of course, respond to Ganassi fingering. Dolmetsch type fingering will not work in the upper register. The diameter of the flare at the south end will need to be **bigger** than any other part of the bore - unlike the Renaissance recorder. The Outside shape has a simple elegance that largely reflects the bore profile.

**Future Bores:**

If there is to be a thoroughly modern recorder to take us into the twenty first century, the chances are that it will be derived from the Ganassi bore. The astonishing thing about the Ganassi Recorder is its wide range. The problem is the fiendishly difficult fingering at its extreme upper register - I drew attention to this in my 1974 publication. If the fingering could somehow be converted to a Dolmetsch system the problem would be solved. My own attempts led me to give up. It consisted of introducing some extra holes - not finger holes, but small diameter vents, something like those used by the makers of bamboo pipes. These holes, five in all, were covered by the little finger of the left hand, and the thumb of the right hand. They vented into tune the flat notes produced by playing a Ganassi bored recorder with Dolmetsch fingering. But the mental gymnastics required, to say nothing of little finger and thumb techniques were truly daunting. While purists might frown upon such experiments, a Ganassi recorder with extra holes can make Dolmetsch fingerings possible. If it does come about it will probably be the result of keywork being added to the instrument - not the Boehm system which has already been applied to the recorder, but a system designed to simplify fingerings. And perhaps to extend the Ganassi recorder's range. I have heard of three makers experimenting along these lines. Keywork will also allow a little more latitude with the bore profile including the bell flare.

Which of the above bores recorder makers use depends very much on the demands of players. Talking to other makers the greatest demand is for instruments with a Baroque bore or a Ganassi bore. It is argued that if one is to be true to the spirit of the music one should accurately match the recorder to the music being played. For those with deep pockets this might be possible. But for many recorder players, their van Eyck is played on a Baroque recorder, or maybe on a Ganassi recorder; their medieval music employs a Transitional recorder; while their viol arrangement from the 16th Century is heard on modern Dolmetsch fingered plastic instruments. A.R.J.'s plea for makers to produce a particular type of recorder and to restore some sort of balance to the market place really depends on players ordering instruments of a sort to make this possible. Some makers derive pretty well all of their income from producing Ganassi recorders. Others concentrate on making Renaissance recorders, including the 4 foot and 8 foot consorts. Others produce a wide range of instruments. But whatever they produce, it is the players who call the tune and pay the pipe makers. Or something like that. ♫