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## Mind-blowing

Archery, flutes and model airplanes are all the same at a certain aerodynamic level. Leading flute maker Michael Botha says there's a way of understanding arcane things that goes beyond mechanical sensitivity.

IF YOU WANT TO BE A FLUTE MAKER, you have to be a bit OC, if you don't have OCD. In fact, flautists say that when you blow across the hole, you lose your mind.

'It's the start of the madness,' says Johannesburg flute maker Michael Botha. His knack of modifying the proportions of a flute's asymmetric embouchure hole ('that you blow over like a sophisticated beer bottle') and optimising the instrument to produce 'that sound' has led to world renown for this labour lawyer.

Flute making, however, is not his only passion. Botha began building model aircraft at the age of four and was a budding archer by 10. His skill with a bow and arrow made him a world-record holder and the World Indoor Veterans Champion in 2011. A fascination with the wind instrument came later, at 15, after he saw a picture of a 'guy who looked like John Denver playing the flute. I thought he looked cool.' When he heard musicians like Ian Anderson, leader and flautist of British rock band Jethro Tull, he was hooked. 'It's something to do with the purity of sound, the resonance that's created with the breath coming out of your body and the feeling of air flowing under your fingers,' he says.

Classical music followed in the late seventies when Botha studied music at Rhodes University and quickly established that he was by far no threat to the maestros of the day. Meanwhile, he'd met Albert Honey, a senior lecturer who had been one of the London Flute Players. 'They were enormously influential. Honey had studied in France, the spiritual home of the modern flute, and had taught two of today's eminent flute players, James Galway and William Bennett,' says Botha.

In addition, Botha had enjoyed an informal apprenticeship in instrument repair courtesy of the then South African government. As a member of the SA Army band during his national service, he'd discovered a room full of broken instruments waiting to be fixed.

From a flute-making perspective, however, it was Honey's friendship with Londoner Albert Cooper, whom Botha met in 1988, that was most beneficial. Cooper, who developed the Cooper Scale and revolutionised the modern flute and its head joint (voicebox) to suit industry trends, taught Botha the basics of making flute head joints.

The key? Aerodynamics – what air does and how it behaves. And it's Botha's understanding and application of these principles that gives

him the edge. He says it goes beyond the mechanical, that there has to be a sensitivity to these things... 'I have a reasonable ear for pitch – frequency or height – but an incredible ear for timbre – the "colour" of sound. That's very important for head-joint making. You can blow a flute in tune but if the harmonics are incorrect it will sound funny. You have to get both right.'

The big things for Botha are experimentation and research. He's currently developing a new head joint utilising the Coanda aerodynamic effect.

Because it takes about 200 hours to build a flute, and the local market for new high-quality instruments is poor, Botha concentrates on flute modifications, overhauls and head-joint making, on request by professional and wealthy amateur players around the world.

Other contributors to achieving 'that sound' are Botha's padding of the flute and specification of the crown weight – the 'little bit of jewellery on the end of the flute'.

He fiddles with flutes most days but on Saturdays he runs free. 'I disappear with my SUV full of model aircraft and bows and arrows so I that can be mellow and mild the rest of the week.' □