Nine Oboes from the Collection of Michel Piguet:

Measurements

Mary Kirkpatrick

This document describes the process and methodology involved in measuring nine oboes from the collection of Michel Piguet

INTRODUCTION

Each oboe is described in three pages. The first shows the three joints in half outline: on the right are the diameters in mm, and on the left are the distances from the designated points to the upper or lower end of the joint, according to the arrows. A few distances on the middle joint, given in parentheses, are taken to the upper end (or base) of the tenon. A few diameters along the straighter sections do not have a corresponding distance on the left side, because they are located by eye. Some are next to the fingerholes (numbered 1, 2, 3, etc.). The diameters given are the maximum ones; there is always some degree of ovality due to shrinkage or movement of the wood.

On the second page, the fingerholes and keys are shown by retouched rubbings. To the left of each hole, lengthwise and crosswise diameters are shown (... x ...). The profile of a hole (how it is angled or undercut) is shown by two pairs of lines. To the left of the hole tracing, the pair of lines represents the profile in lengthwise cross-section; those below, the crosswise section. (The ends of the lines nearer the hole tracing represent the outer end of the hole.) The angles are taken by eye. To the right is the distance from the indicated edge of the hole to the end of the joint, or, on the top joint, to the base of the tenon. Instrument makers should note that hole locations are measured from the edge of the hole, not its center. 'Me hole, key, and all outer measurements are taken with steel vernier calipers, adjusted to slide with very little pressure, and with the sharp edges of the jaws rounded off.

On the third page are the internal measurements, taken with fixed gauges. To explain: there are basically two methods of measuring a tapered bore. One consists of passing a gauge of a fixed size into the bore and recording how far it goes in. The other requires an adjustable gauge, which is inserted into the bore a prescribed distance, and expanded to match the diameter at that point. While the second method may directly produce a more convenient table of measurements, the first allows a simpler and lighter apparatus which gives easily both accuracy and the delicate touch needed to maintain safety for the bore. To describe the method used: a series of about 90 gauges, filed out of plexiglass to an oval shape, screw onto the end of a thin brass rod (3 x 265 mm). Ile ends of the gauges are rounded and polished to an accuracy of ±0.01 mm. The joint of an oboe is held upside down while a gauge is carefully passed into it, avoiding unneccessary rubbing of the bore, and with the gauge coming to rest against the sides of the bore under the same light pressure each time (die weight of the rod). The rod is first turned so that the gauge comes to rest at the maximum depth, then withdrawn and turned about 90 degrees so that it rests at the minimum depth. Thus for each gauge, there are usually two distances given to the end of the joint. These distances are normally accurate to within ±1.0 mm; but if the inner surface is rough or nearly cylindrical, the accuracy may be less. Plotting the resulting measurements on graph paper, with an expanded scale on the axis of the diameters of the upper two joints, will give a good view of the bore shape and facilitate comparison between instruments.

The dimensions of boxwood oboes vary with ambient humidity and with the amount of moisture received from playing. For the oboes under consideration, the humidity was unfortunately not recorded at the time of measuring, but it can be estimated. The bores of four of the oboes were measured several years ago: the Bradbury, Schlegel and Engelhard oboes in England, presumably in damp conditions, and the Grenser in Basel, probably in a less damp environment. The rest were measured in Basel in June 1987 following an unusually wet spring; the humidity can be presumed to be at least 65%.

The Bradbury oboe was measured on three occasions and can serve as an example to show the amount of variation to be expected. The measurements shown here date from the first time, when it was brought to me in England in 1979 for restoration, shortly after being discovered in an attic in the south of England. At that time the oboe had been long unplayed, resting in a relatively damp climate. In October, 1983, with the oboe well played in, but in a dryer climate, a few measurements were taken again. The narrowest point was noticeably smaller, in that the 5.8 gauge passed only as far as 194 and 190 (from the end of the top joint) and the 5.6 gauge now touched at 195. 'Me corresponding decrease in diameter was nearly 0.2 mm. at this point. However, this would appear to be a localized shrinkage, because measurements along the rest of the bore using about every other gauge, and including the middle joint, show distances to the end of the joint shortened by an average of 2.5 mm, or only about a 0.05 mm decrease in diameter (less than I%). A few measurements were taken in June 1987, when conditions were again more damp, and most of the decrease had been recovered (for example the 5.8 gauge now passed to 195 and 194.5). It is interesting that after 250 years the bore is still able to both expand and contract, also, that the movement is so small.