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The Art and Science of the Rediscovery of a Nineteen-century Recorder

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Introduction

The decline of the recorder after its baroque golden age has been thoroughly analyzed by musicologists and organologists. Far less studied is its **persistence** in the later musical culture. Recorder collections contain a relevant number of instruments dated from the last decades of the 18th century and well into the 19th century, documenting this persistence and adaptation to the new musical needs [Macmillan, 2008].

In some cases, the late popularity of the recorder has been a regional circumstance, like in the case of the Viennese Csakan or of some instruments for popular or military music in the Americas. However, we also find in the collections a fair number of "traditional" late recorders, some of which of very fine craftsmanship, which document a minor but diffuse use, eventually also professional.

One of these is the remarkable Noblet alto recorder of the Bate Collection of Musical Instruments in Oxford (collection #403).



Figure 1: The original instrument

The original instrument is **not in good playing condition** and mounts a low quality block (a consumable and interchangeable part in recorders). We describe a complex process including, measurements, evaluation and tentative "reverse engineering" of wood deformation, and some artistic choices which had to be made in order to obtain a **musically meaningful result**.



Methods

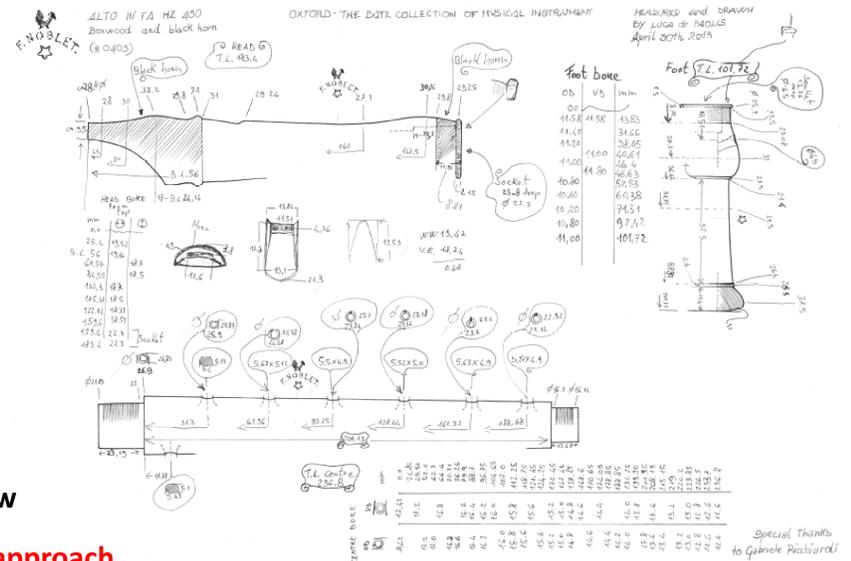
The original instrument was manually measured to an accuracy of about 0.05mm. Deformation of round parts was assumed elliptic and measurements refer to the principal axes. A digital CAD model of the instrument was made, reducing elliptic sections to round average sections.

The resulting model displayed apparent deformations which were analyzed and compared to modern construction standards. In particular, a marked decrease in the bore diameter was observed in regions of the bore where the wood was cut perpendicular to the grain direction and at the same time likely exposed to high humidity fluctuations. A refined "reverse deformed" model was drawn, and used as the basis for the construction of a first set of copies.

Fabrication of the block was done following today's knowledge, adapting it to the instrument body in order to produce the best sound and playability, as evaluated by renowned professional musicians. Fingering patterns of the original instrument were determined by the same musicians taking into account historical practice and playability, and the copies were tuned accordingly.

Results

The first set of copies, comprising three instruments, is shown in Fig.2. The instruments are naturally tuned at A=430Hz, very close to the original pitch. They are playable in the usual recorder range two octaves and a third (F'-A'''), producing a very distinctive clear timbre, relatively different from the typical baroque recorder sound. The instruments have a quick and flexible response which makes them apt to playing technically complex music. They have been used in public concerts to perform duets and trios by W.A. Mozart and F. Devienne.



A compromise workflow

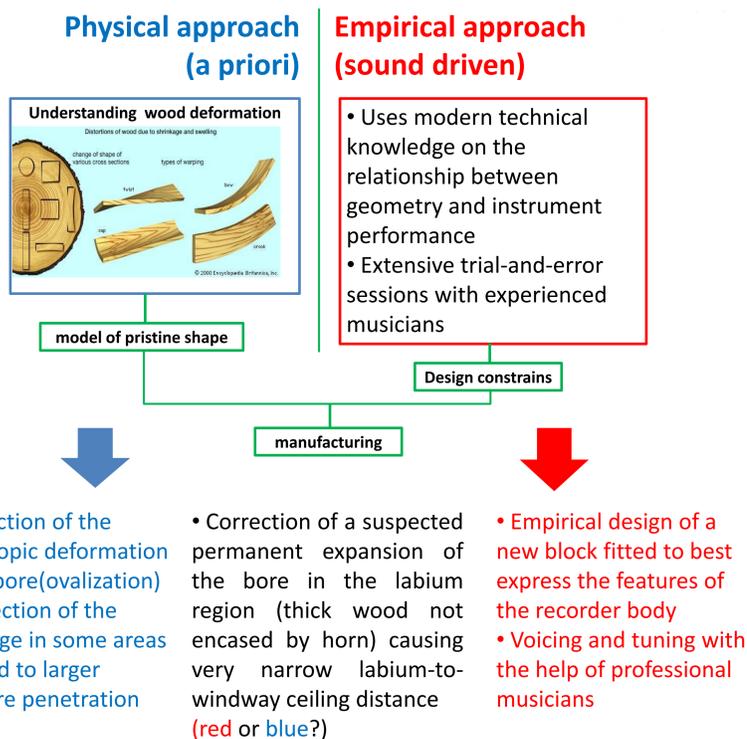


Figure2

Further work: an ideal workflow



Acknowledgements

The Bate Collection of Musical Instruments at the University of Oxford and its Curator David Lamb are gratefully acknowledged.

References

[1] D. Macmillan, *The recorder in the 19th century*, Ruxbury publications, 2008 ISBN 978-1-904846-33-8

The sound of an F-scale on the original Noblet can be heard at: <https://soundcloud.com/macariantitubu/noblet-f-scale>

A sample of a live performance with a trio of copies at: <https://soundcloud.com/macariantitubu/noblet-concert-sample>