Making a dug out canoe: testing the efficacy of bone, antler and flint tools

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Abstract

At the late mesolithic site of Hardinxveld-Giessendam De Bruin, located not far from the present-day city of Rotterdam in the Netherlands, a complete dugout canoe was excavated in the late 1990ies. It was made of a lime tree and measured 5.50 by 0.50m. On the inside chisel marks were visible; their shape suggesting that the tool used to hollow out the canoe, must have had a somewhat curved working edge. It was postulated that this canoe was probably made with an adze of bone or antler. Microwear analysis of the bone and antler adzes from the same site indeed showed traces from wood working. Some years ago we decided to to experimentally reconstruct this canoe, using both bone and antler adzes, as well as the typical Mesolithic flint tranchet axes, comparing the efficacy of these tool types. We made a distinction between the work of experienced wood workers (one of whom, Leo Wolterbeek, made many dug out canoes) and that of inexperienced novices. All users considered the bone and antler tools to be more effective than the flint ones. Calculations of the time it took for the different tool types to remove standard chunks of wood, support the qualitative assessment of both expert and novice users that bone and antler tools were more effective. Making this canoe also showed us how the structure of the lime wood, and the way it split in sometimes rather twisted ways, had a great influence on how the work progressed. Especially in the last phases of thinning the vessel wall, there was a danger that the lime wood split "outward" leading to holes in the vessel wall. This sheds light on the repairs that were for example visible in the canoe from Tybrind Vig.

Keywords: Dugout canoe, wood working, bone adze, microwear, experimental archaeology

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