

2000

The Technology of Wooden Structures: Etruscan Temples and Shipbuilding

Jean Turfa
Bryn Mawr College

Follow this and additional works at: https://scholarworks.umass.edu/etruscan_studies

Recommended Citation

Turfa, Jean (2000) "The Technology of Wooden Structures: Etruscan Temples and Shipbuilding," *Etruscan Studies*: Vol. 7 , Article 14.
Available at: https://scholarworks.umass.edu/etruscan_studies/vol7/iss1/14

This Abstract of Colloquium Paper is brought to you for free and open access by ScholarWorks@UMass Amherst. It has been accepted for inclusion in Etruscan Studies by an authorized editor of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.

THE TECHNOLOGY OF WOODEN STRUCTURES: ETRUSCAN TEMPLES AND SHIPBUILDING



Jean MacIntosh Turfa

Etruscan engineering and materials science in the properties of wood were taken for granted by the time of Vitruvius and Pliny, but by then they had fostered rather daring innovations in structure.¹ In architecture, this appeared as the tie-beam truss, and in shipbuilding resulted in the early implementation of the foresail. Such technology was fundamentally different from that of the Eastern Mediterranean, although this has been hard to document because the material, wood, was organic and perishable. Some facets of Etruscan structural innovation, however, are integral even to modern engineering through the mediation of Roman builders. The forerunners of Etruscan structural expertise are to be sought in prehistoric European settlements and in the sailing vessels of the Italian archipelago.

During the later seventh century, Etruscans designed monumental structures of wood and mudbrick with wide spans, thick walls, heavy upper stories, and gabled roofs covered in tons of terracotta tiles. The idea of tiled roofing came, as in the Demaratus legend, from Greece (Corinth), but the actual building design and the implementation of tiling were unique to Italy. To achieve safety with shear-prone materials, early Etruscan builders used a tie-beam truss; this had not been needed in Greek stone structures. The formal plans of Etruscan/Italic temples (Rome Capitolium, Veii Portonaccio, Pyrgi Temple A) can be explained only by reference to tie-beams fastened with mortise-and-tenon joints. The earliest identified examples, the Orientalizing and Archaic buildings at Poggio Civitate, depended upon the tie-beam to span broad, hall-like rooms (Upper Building R5) or large structures not supported by conventional walls (Southeast Building). By the time of the planning phase of the Roman Capitolium, the beginning of the sixth century, the safety of such structures was taken for granted.

Etruscan familiarity with the techniques of engineering and maintaining large structures of wood derived from the prehistoric

Jean MacIntosh
Turfa

past of the *palafitte*, lake villages, and specialty constructions of northern Italy and the Po floodplain. Aerial platforms for villages and caissons constructed to withstand occasional flood surges, as seen at Bronze to Iron Age sites such as Fiave (Trente), Ledro, or Barche di Sofferino, incorporated carpentry and joinery techniques that would later benefit Etruscan monumental architecture.

In shipbuilding, in the seventh- to sixth-century wrecks, such as at Isola del Giglio and Bon Porté, Etruscan or Italian technology differed from Greek and Levantine models (Uluburun and Kyrenia ships), both in design and in construction methods. Fragmentary wrecks found in the Italian archipelago (Giglio, Gela) and on Etruscan trade routes (Bon Porté) are of “sewn” construction, incorporating cord ligatures rather than mortise-and-tenon joints for their planking—even though such techniques were common in terrestrial building and furniture. “Sewn boats,” like the Giglio wreck, could withstand stresses of fast sailing and even ramming. Ligature construction would support en-route repairs, while Aegean techniques necessitated shipyard repairs. Thus, sewn boats would be especially suited to entrepreneurial applications such as private trading or piracy.

The design of seafaring craft, as well as their carpentry, was different in Etruscan Italy. A Caeretan White-on-Red Ware pyxis (c. 650 B.C.) in the Louvre illustrates a foresail deployed on an Etruscan vessel, a century before the earliest Greek depiction of a foresail. The choice of an additional sail for a large, deep-hulled cargo ship probably resulted from a long tradition of boat building and sailing in Italian waters, as suggested by finds of buried prehistoric craft (Sasso di Furbara), by Sardinian bronze models, and by the resurgence/continuation of a sewn tradition for small vessels well into the Roman period (Comacchio wrecks).

When the challenges of commercial (and eventually naval) competition arrived with Greek colonists in the eighth to seventh centuries, Etruscans drew upon a prehistoric tradition of boat building; when Demaratus brought the challenge of tiled roofs, the old European traditions of the *palafitte* offered the basis of another sort of solution.

Department of Classical and Near Eastern Archaeology
Bryn Mawr College
Bryn Mawr, PA 19019

NOTES

- 114 1. J.M. Turfa and A.G. Steinmayer, Jr., “The Comparative Structure of Greek and Etruscan Monumental Buildings,” *Papers of the British*

School at Rome 64 (1996) 1-39; Turfa and Steinmayer, "The Earliest Foresail, on Another Etruscan Vase," *International Journal of Nautical Archaeology* 28 (1999) 292-296; and Turfa and Steinmayer, "Sewn Hulls and Self-Defense," *International Journal of Nautical Archaeology* 28 (1999).

Technology
of Wooden
Structures