Sometimes Standard Recording Methods are not so Standard: Recording the Kızılburun Column Wreck's Hull Remains

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J. Richard Steffy penned an article entitled Maximum Results from Minimum Remains, in which he emphasized the need to closely study even the most scant ship remains where large questions loom over construction techniques or general ships features. Large questions certainly loom over the construction of ancient stone carriers. Iconographical evidence of stone carriers from antiquity is unknown and the literary evidence is extremely limited. Many stone cargoes were lost at sea. At least 64 architectural stone cargoes have been discovered in the waters of the Mediterranean, but few have been examined thoroughly, mostly due to the paucity of hull remains.

The thesis of Steffy's article has become a sort of mantra during the recording and interpretation of the scant hull remains of the Hellenistic period marble carrier excavated at Kızılburun, Turkey from 2005 to 2009; a project under the auspices of the Institute of Nautical Archaeology (INA) and Texas A&M University with Donny L. Hamilton serving as Project Director and Deborah Carlson as archaeological director.

The labile wooden remains of the ship are not only scant, but heavily fragmented, discontinuous, and particularly friable. By employing adaptations to standard set-up and recording methods, as set forth by Steffy in his book *Wooden Ship Building and the Interpretation of Shipwrecks*, and using indirect evidence offered by in situ fasteners and 3-D models, a better, yet still incomplete understanding of the construction of the vessel is being developed. Steffy's methodology involves tracing each face of a timber on acetate, either placed directly on the timber or placed on sheet glass raised slightly above the timber.

Steffy's method works sufficiently on complete or near complete timbers, even when they are broken. However, the Kızılburun remains are less than solid and required some creative adaptations to standard methodologies in order to obtain acceptable results, as timbers could not be simply turned to record each individual face.

Often, recording the Kızılburun ship's timber fragments is only feasible in two dimensions and not always in the same two dimensions, further complicating the interpretation of a constructional puzzle with most of the pieces missing. Several hundred, mostly tiny, wooden fragments have been individually recorded from the ship. Each fragment, regardless of size, is examined, described, and drawn in 1:1 scale. Many of these fragments are stand alone bits, as they do not have adjoining pieces. However, in some cases, especially with the nearly three meter long keel portion and a number of framing elements, fragments can be temporarily reassembled into more substantial timbers by utilizing diver's notes, sketches and in situ photographs. The process of gathering these data for a single timber's reconstruction often takes days to locate, collect and evaluate before attempting to reassemble a timber section for recording. In some cases, even with the best of notes and photographs, reassembly is impossible due to the fragmented and discontinuous nature of the remains.

In instances where elements such as framing or planking are contiguous, they are still disjointed and individual pieces, which are seldom more than 20 cm in length. In order to facilitate the correct 3-D reassembly of these fragments, a long, shallow container filled with tiny marble chips was used to support and align the timber fragments such that they could be drawn as a unit (fig. 1). This was a minor, albeit essential adaptation that allowed accurate drawings to be produced.

In the case of recording the vessel's keel, even with this adaptive measure employed, results were less than satisfactory. Several attempts were made, but after recording one face and moving to another, timber fragments were not stable and resulted in non-matching drawings. The keel did, however, have a relatively well-preserved, flat inner face. Consequently, recording set-up methods were creatively adapted once more by placing the timber's inner face down on the glass to give the best alignment of the fragments in all three dimensions. This

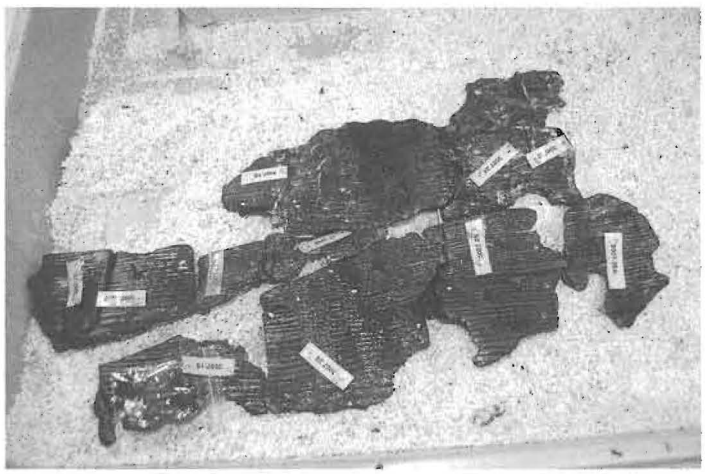

Figure 1: Timber fragments supported by marble chips. Photo: John D. Littlefield.

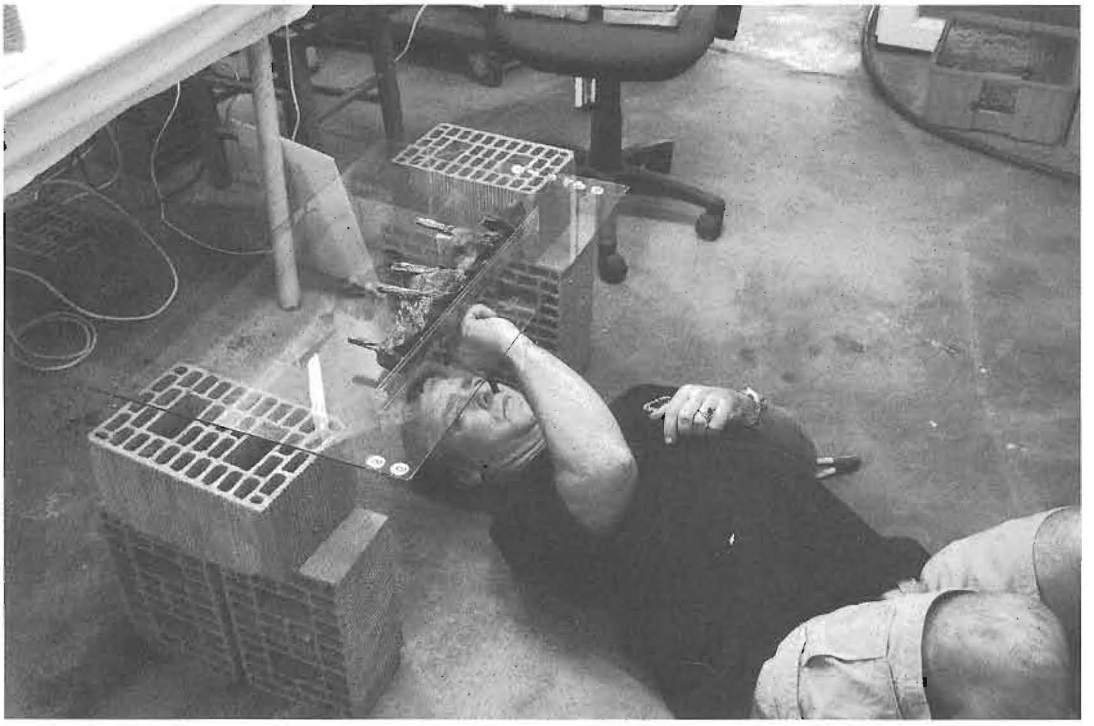

Figure 2: Recording an unstable timber section. Photo: Kimberly Rash.

modification necessitated lying on the floor and recording the timber from below (fig. 2), while the molded face was recorded by using an additional plate of glass mounted to 90° shelving brackets (fig. 3). In this manner the timber fragments were not as susceptible to movement or misalignment and resulted in a much more satisfactory drawing.

The recording of the fragmented keel's profile also presented unique problems in that the original edges of the timber did not survive. The rabbet was partially preserved on both sides of the keel, but at no single point does the rabbet survive on both sides at once, making a keel profile very difficult to obtain. In the end, 21 profiles were taken from the three meter keel section and a composite profile was produced. This composite was used to create a 3-D model of the timber in Rhinoceros 4.0 software that has proven to be very useful in the overall understanding of the timber (fig. 4).

Little of the hull's planking survives and almost all of the extant planking has been compressed by the concentrated weight of the stone cargo to the point that thickness measurements are skewed or invalid. Therefore, it is necessary to utilize indirect evidence. The cataloging of over 1000 cupreous fastener fragments proved to be valuable in determining the planking thickness. During the cataloging process, a pattern of nail breakage was discerned on fragments that retained the heads, suggesting a common weak point. Of the 1007 fragments, 39 percent retained their heads and were broken between 3.9 and 5.1 cm length. In checking diver's notes and sketches, it was found that many were found head down with no artifactual material below them, suggesting they are plank-to-frame fasteners. It has been deduced that there must be a correlation between this nail breakage pattern and planking thickness that was later supported in examining a planking fragment retaining an uncompressed knot and by the width of the back rabbet of the keel, showing a thickness

Figure 3: Recording the keel's molded face. Photo: Kimberly Rash.

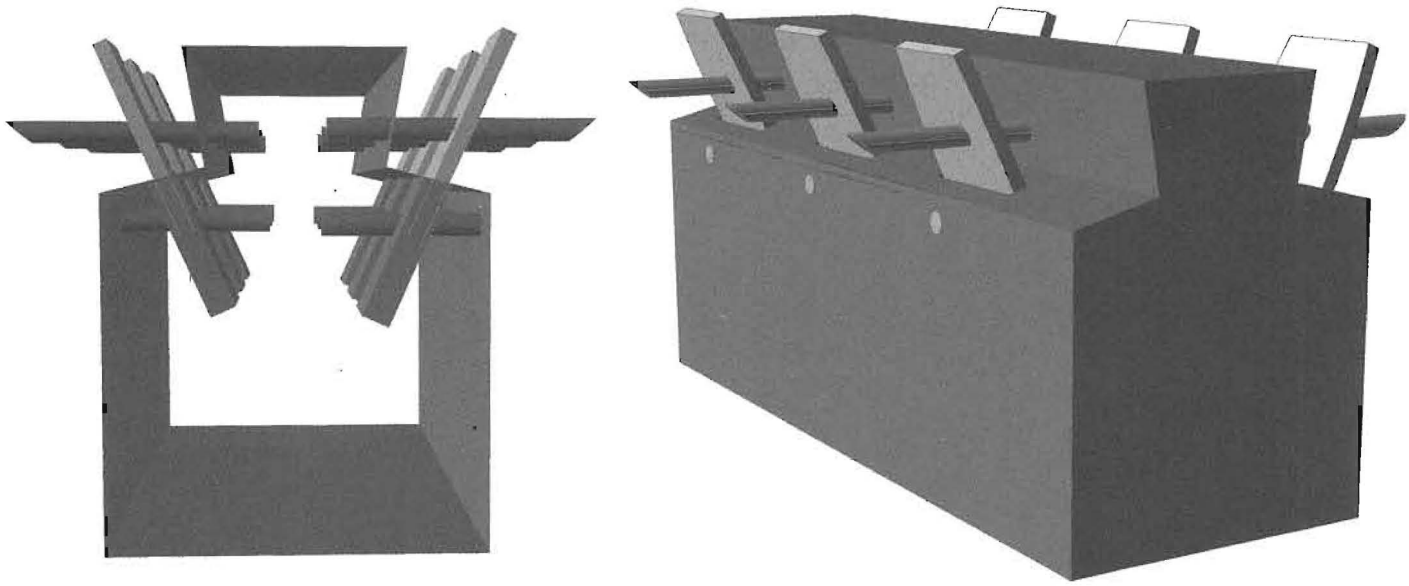

Figure 4: Three-dimensional reconstruction of the keel's profile. Image: Sheila Matthews and John D. Littlefield.

between 4.1 and 4.5 cm.

Many of the above mentioned fasteners were found in rows, stretching transversely across the site. There were eight rows of nails found directly upslope of the column drums and similar patterns found in two other nonadjacent areas. From these patterns of fasteners, frame spacing is determined at an average center-to-center distance of 25 cm. Again, this dimension is supported in the examination of a section of planking fragments where impressions of two framing elements exist.

The paucity and level of preservation of the wooden remains of the Kızılburun ship present countless enigmatic questions, many that remain unanswered. However, by examining the extant wood remains with the Steffy philosophy in mind, and using adaptive modifications to methodologies and recording set-ups, indirect evidence provided by the ships fasteners, artifact positioning and 3-D modeling, a better understanding of the construction of the Kızılburun marble carrier has been and continues to be achieved.

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Suggested Readings

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