

Study of ancient production processes based on analysis of the archaeological record is a difficult feat, often even for veteran archaeologists. Naturally, it becomes even more complicated when studying multiple crafts. Despite the difficulty, it is worthwhile to study multiple crafts together, as there is inevitable overlap and interaction among the people, ideas, and materials involved in the production of separate materials. For instance, Miller (2007) provides examples of tools, styles, processes, and techniques being borrowed, adapted, or developed from one craft to another. As such, studying multiple production processes can tell archaeologists about the lives of craftspeople and the social significance of artifacts at the intersection of two crafts. Although the importance of comparing cross-craft production processes is clear, such comparisons are rarely made in the archaeological literature, probably for two reasons. The first is that material record that relates to multiple production processes is rare (or generally overlooked?). The second is that cross-craft analysis requires knowledge of each craft involved, and considering that acquiring expert knowledge of one production process can take a lifetime, this is a significant roadblock toward cross-craft production comparisons.

Shortland (2008) provides a review of work that follows a 1970 translation of a dozen Mesopotamian cuneiform tablets detailing methods of glass production. Shortland challenges the notion that the tablets are “useless,” as they have been called by modern scientists, by citing ethnographic work which successfully reconstructs the glass production detailed on the tablets. Of note is that the production texts are in the minority when compared to the rest of the tablet “library.” That is, the glass texts detail a manufacture process, while most are archival or ritual. As such, the tablets are uniquely situated at the intersection of two crafts: glass and ceramic production. During inscription of the tablets, three categories of people were required to have been nearby: an artisan with knowledge of clay working to make the tablet and dry or fire it once finished; an artisan with knowledge of glass

manufacture to be the subject of observation or to dictate; and a scribe to record the process. Of course, there may have been overlap between these individuals (i.e. the scribe made his own tablets). Despite this notable trigonal rendezvous of skill sets, Shortland ignores the relation between the scribe, the glassmaker, and the tablet maker, and focuses solely on deconstructing the process of glass production hinted at on the tablets. Granted, an analysis of the three Mesopotamians' interactions is most likely out of the scope of his article, but a multi-production process analysis would lead to discussion about the social and physical relationships between the scribe, the glassmaker, and the ceramicist. Shortland's further work could analyze this interaction by studying the production process of the tablets as well as the glass, the physical context of the glass remains in relation to tablet production sites (though the tablets were found in a "library," and hence moved, a provenance study of the clay could yield clues about origin), and the details of the scribe.

Thornton and Rehren's 2009 study of a fourth millennium BCE ceramic crucible from Tepe Hissar, a site in Northeast Iran, is an out of the ordinary study of a technical ceramic, or one used as a tool in a production process rather than a finished product. The authors characterize the vessel using scanning electron microscopy with an attached x-ray dispersive spectrometer (SEM-EDS) and optical microscopy of thin cross sections to deduce a "tentative reconstruction" of the artifact's manufacture and use in smelting Cu-Pb alloys. Similar to the aforementioned tablets, the "multi-craft" crucible is at the junction between ceramic production and metallurgy. With this in mind, the authors attempt to probe and reconstruct the relationship between the metal worker and ceramic worker in terms of physical proximity, shared ideas, and material transfer. For instance, the mention of metal ore gangue which entered a pore in the crucible during the manufacture of the crucible probably indicates that, while not explicitly stated in the article, the crucible was manufactured in or near a metal-working area, pointing to interactions between metal and ceramic workers. That said, despite the authors' awareness

of these interactions, it would be difficult for them to establish a robust link between their data and the people involved in ceramic production and metallurgy because of their small (one crucible) sample size.

While it is valuable to examine multiple production technologies to deduce information about the lives of ancient craftspeople and their relationships to others in different crafts, it is difficult to reliably draw conclusions from the material record about ancient people for two reasons. First is the rarity of these “multi-craft” artifacts. For instance, in the case of the glass texts, Shortland states that only a dozen out of the 25,000 tablets examined pertain to glass production. Similarly, the crucible was found in the form of shards so small that it was not even possible to reconstruct the shape of the vessel. Additional difficulty in multi-craft analysis originates from the fact that, as Miller states, there is a tradeoff for archaeologists between expertise and the understanding of more than one production process. However, a way forward is tacitly suggested by Thornton and Rehren’s discussion on the manufacture of the crucible, in which it is stated that the “crucible was the work of a professional craftsman who was quite familiar with ceramic, steatite, and metal technologies.” Interestingly, elsewhere in their article, Thornton and Rehren contradict their use of the singular “craftsman” and suggest that a group of experts in metal, steatite, and ceramic technology may have collaborated on the design of the crucible, presumably regardless of how many workers actively participated in actually fabricating the vessel. With this in mind, archaeologists can hopefully learn from the example of ancient people and form collaborations among experts in various production technologies to expand multi-craft analyses to learn about the lives of ancient craftspeople, their societies, and their relationships.

References

Miller, H. **2007**. *Archaeological Approaches to Technology*, Chapter 7, 237-246.

Shortland, A. J. **2008**. *Archaeology, History, and Science*, Chapter 3, 61-76.

Thornton, C. P.; Rehren, T. J. *Arch. Sci.* **2009**, 36, 2700-2712.

