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INTRODUCTION – INTRA-CROSS-CRAFT ANALYSIS WORKSHOP: INVESTIGATING LINKAGES WITHIN CRAFT INDUSTRIES

Cross-Craft and Intra-Cross-Craft Interaction

Cross-craft interaction is, by now, a very familiar term to archaeologists studying all manner of past production. The concept was first introduced into the archaeological literature in 1989, with the publication of the proceedings of the fourth symposium on ceramics in history and archaeology, which took place in 1987.¹ Although initially confined to ceramics, there has been an explosion in the variety of industries to which this analytical framework has been applied.

Cross-craft interaction is a tool through which the known and potential relationships between different industries can be explored, thus opening up new avenues of research. These interactions appear in many forms; what has been truly groundbreaking about the cross-craft interaction analytical framework is that scholars have been able to use it to consider other factors well beyond important but easily observed phenomena such as the sharing of motifs or tools. Such analysis is often founded upon understanding the practicalities within which past craftspeople were embedded: their daily routines, their gestures, their relationships with their clients, their opportunities for interaction with other craft specialists and thus for discursive or non-discursive knowledge transfer.² Cross-craft interaction is, therefore, one of the few mechanisms recognised by archaeologists as enabling internally inspired change within societies³ in a field that is still dominated by external forces as the explanation for innovation.

I first proposed the need for an explicit framework to tackle linkages within craft industries, namely intra-cross-craft interaction,⁴ at *Symposium Egejskie: 5th Conference in Aegean Archaeology* held in Warsaw in June 2017. This presentation was published in 2022.⁵ Of course, the potential to use the cross-craft interaction framework to study linkages within closely related material industries was acknowledged right from the very first introduction of the term.⁶ Nevertheless, the use of the expression “possibly a different ceramic craft”,⁷ points to the perceived need for a conceptual distinction between crafts in order to apply the cross-craft framework, a difference that is acknowledged by scholars through established divisions between industries based on their target material or artefact output. Indeed, the predominant trend in cross-craft studies has been to search for interactions across two or more industries clearly distinguished by target material or artefact output, and this approach has been highly successful.

Yet, the complexity and diversity presented by my own field of study, namely metallurgy, prompted what was initially just a thought experiment: could applying the cross-craft interaction framework *within* an industry yield any further insights into the realities of past production? To attempt this, it was necessary to consider each one of these monolithically defined industries as a collection of interlinked crafts. This perspective immediately highlights the existence of certain assumptions within interpretations,⁸ as well as the fact that archaeologists have often taken for granted the linkages within and between loci of production, such as workshops or resource extraction sites.⁹

¹ McGovern *et al.* 1989.

² Brysbaert 2007, 331.

³ Rebay-Salisbury *et al.* 2014, 2.

⁴ A term that I freely admit is rather unwieldy, and I welcome any suggestions for a more concise term, or at least one that requires fewer hyphens.

⁵ Aulsebrook 2022.

⁶ McGovern 1989, 1.

⁷ McGovern 1989, 1.

⁸ See, for example, Aulsebrook 2022, 111 n. 16.

⁹ Where the latter have been investigated, the focus has often been on reconstructing trade networks and establishing the existence of mechanisms of control over important resources, rather than analysing the required coordination between the needs of craftspeople and the available supply of raw materials.

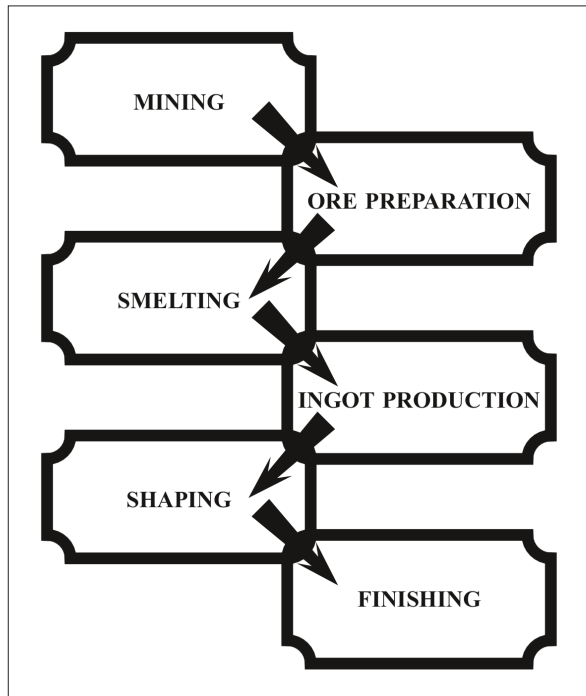


Fig. 1. The basic *chaîne opératoire* for metallurgy; each one of these stages is itself comprised of multiple steps and choices that can only be revealed through detailed artefactual analysis, an approach that has only recently become more widespread.

As with cross-craft interaction, the use of the *chaîne opératoire* model provides a way through which such linkages can be identified, but it is especially important for the intra-cross-craft approach for these to be made as detailed and individualised for each end product and community as possible (Fig. 1). This can only be achieved through in-depth analysis of artefacts, tools, resource extraction sites, *etc.*, an approach that is facilitated by recent developments in various analytical techniques, including microscopy and the now numerous means of determining elemental composition, that have enabled such investigation to be carried out at a much broader scale than hitherto possible. Returning again to metallurgy specifically, the ability to, for example, extract gold or form a vessel through completely different processes that yield almost indistinguishable outcomes underlines the need for such a detailed approach if archaeometallurgists are to move beyond generic narratives towards models of craft practice that are capable of acknowledging the unique characteristics of each society under study.

The Intra-Cross-Craft Analysis Workshop

The *Intra-Cross-Craft Analysis Workshop: Investigating Linkages within Craft Industries* was held in hybrid mode on 15th March 2022, as part of the Third Conference of the Faculty of Archaeology at the University of Warsaw: ‘Przeszłość ma przyszłość!/The Past Has a Future!’. The primary aim of the workshop was to discover whether the intra-cross-craft analytical framework, conceived within the specific sphere of archaeometallurgy, was also of use in the study of other past industries. The remit was intended to be as wide-ranging as possible, with participants representing the different knowledge domains of universities, research labs, museums and modern craft workshops. Sadly, it was not possible for all the participants to contribute to these proceedings which, nevertheless, still strongly convey the depth and breadth of the presentations and discussion.

Nikolas Papadimitriou and Akis Goumas jointly presented *Interaction among Master Artisans in Early Mycenaean Times*. They discussed the patterns of cross-craft and intra-cross-craft visible through an analysis of highly decorated Mycenaean weapons, including the famous Lion Hunt Dagger, demonstrating the range of different bodies of knowledge and advanced techniques, such as ‘gold embroidery’¹⁰ and inlay, required to manufacture these magnificent objects. Detailed examination of the Lion Hunt Dagger revealed a possible breakdown in communication between individual craftspeople working on this piece, as the attached hilt plates were made too long and caused damage to the intricate inlaid design on the blade. Reconstruction of the varied *chaînes opératoires* enabled their research team to pinpoint a change in relations between skilled artisans after the 16th century BC, when emphasis shifted from multiple craftspeople working together, probably in the same workshop setting, to make unique artefacts, to the repeated production of the same model but using different materials. They also showed how a decorative technique was repurposed for practical applications, a clear example of intra-cross-craft interaction. Finally, they emphasised how such decorative weapons were concentrated in a few tombs in specific locations around Greece, a reminder that these artefacts were likely commissioned by patrons and thus the important impact such individuals had on the production process for these high quality objects.

In his presentation, Peter Northover posed the question *How does a Workshop Work?* With so few archaeological traces of prehistoric metallurgical workshops,

¹⁰ Konstantinidi-Syvridi *et al.* 2022.

answering this is not straightforward. However, by looking to a workshop that operated during a time period that used the same basic craft technology but is historically documented, he demonstrated that it is at least possible to survey the types of variables and factors that must be considered. Through the case study of William Forbes, who supplied copper to the British navy during the 18th century AD, the nature of the premises, number of craftspeople involved and auxiliary services, such as transport, could be discussed, and analysis conducted on aspects such as wastage. Such information is vital to understand the background against which cross-craft and intra-cross-craft interactions could take place. Returning to prehistory, he then proposed that finds like the Isleham Hoard, an exceptionally well-preserved group of artefacts from east England that originated from a workshop, could provide complementary evidence through part-finished objects, rejects and repaired manufacturing defects, shedding light, for example, on the level of quality that was tolerated. His final point drew upon another find from east England that demonstrated the specificity of knowledge possessed by Bronze Age metallurgists and their ability to access rare resources to achieve their aims. Nevertheless, knowledge concerning the wider supply chains required to operate prehistoric metallurgical workshops, based on the analogy with that of Forbes, remains difficult to obtain from the currently available evidence, leaving a significant lacuna with no clear pathway towards resolving this situation.

The contribution by Nadia Ben-Marzouk and Giulia Tucci, *Foreign Imitation in Local Faience Production? (Re)Assessing the Beth Shean Level IX Stamp Seal Group through Intra-Cross-Craft Analysis*, was based upon their ongoing research into faience seal production in the Late Bronze Age southern Levant. Previously it had been accepted that Middle Bronze Age production consisted of generic imitations of Egyptian scarab stamp seals, but that into the Late Bronze Age there was a shift to using direct impressions made from imported Egyptian scarabs as models for moulds. Not only did they conclusively demonstrate that this was physically impossible, they were also able to find strong continuity between the Middle and Late Bronze Ages that had been hitherto overlooked, by considering the role of the local jewellery industry in particular. These southern Levantine scarab stamp seals were made in a multitude of different materials beyond just faience, such as bone, wood and various stones, including, most importantly for their argument, steatite. This stone was also in common use for jewellery moulds, which would have been made using the same techniques, expertise and tools. The seals themselves were often strung as amulets or set into rings, strengthening this link between seal and jewellery production.

Analysing the intra-cross-craft connections required to produce the faience scarab stamp seals revealed the need for close linkages between different material industries that would have been facilitated by the clustering of various specialised workshops within the setting of temples. Their research prompts a new perspective on long-term debates concerning local versus foreign production.

Anastasia Dakouri-Hild used the special role of the city of Thebes in the production of Mycenaean ornamental material culture to examine the importance of cross-craft fertilisation. *Jacks of all Trades: towards an Understanding of Cross-Craft Fertilization in the Mycenaean Ornamental Industries*, focused on the Kordatzi site, one of the 11 Palatial Period workshops and depots identified at Thebes. She first discussed what evidence should underpin the identification of a workshop, arguing that the more mixed the material, the less likely that a space functioned as a workshop because some level of internal coherence is required, even in multimedia settings. Indeed, she emphasised that this approach was integral to the successful production of complex objects designed to provoke a multi-sensory experience through combining materials from diverse sources. Augmented through her own personal examination of the material, she was able to identify a range of processes being carried out at the Kordatzi site that covered gold-, stone- and glassworking which showed a variety of techniques being applied within the same environment, whilst also noting certain materials, like ivory, and certain stages, like casting glass, were excluded. Burnt material deposited nearby, which predominantly featured ivory, was interpreted as the remains of an earlier workshop on the premises. This would seem to indicate that these multimedia workshops dynamically changed their specialisation based upon their commissions and available raw materials, rather than acting as static silos of separated bodies of knowledge.

Agata Ulanowska used her presentation, *How many Flax Seeds for a Shirt: Textile Production in Bronze Age Greece from an Intra-Cross-Craft Perspective*, to emphasise that the intra-cross-craft interaction approach had already been integral to textile archaeology well before 2017, at least in part due to the long-term focus on the *chaînes opératoires* for textile production. These are especially diverse and complex, requiring the integration of both *factors*, such as the material properties and processing needs of various fibres, and *decision-making agents* in order to gain a thorough understanding. She argued that higher-quality products may have required greater coordination between factors and different agents along the production sequence and that the intra-cross-craft approach is most effective when applied to end products, which is problematic for the study of Bronze Age Greece, with so few extant textiles. This, along with a lack of

evidence more broadly, means that the decision-making agents in particular are difficult to reconstruct, leading to the creation of generalised cross-cultural narratives without a clear path towards a level of specificity which can take into account the individual circumstances of each textile-producing community. Nevertheless, through her own research on Bronze Age Greek textile imprints she has been able to demonstrate a wider diversity of craft practices than hitherto expected, which potentially will shed light on intra-cross-craft interaction during this period. She concluded by answering the question set in her title: approximately 1800–2100.

Katarzyna de Lellis-Dany and Magdalena Woźniak shared their results obtained thus far with their preliminary research into the production of what is often considered a humble, yet vital, object to past communities: the spindle whorl. In their presentation *Intra-Cross-Craft Approach to Ceramic Spindle Whorls from Old Dongola, Sudan*, they discussed both the cross-craft and intra-cross-crafts aspects that lay behind their production. Generating usable spindle whorls required coordination between spinners and ceramic specialists, whereas analysis of their production sequence highlighted the repurposing of ceramic techniques. Identifying two different methods of manufacture, they concentrated on the re-use of ceramic sherds through shaping and drilling. They were able to demonstrate that the drilling technique employed for these perforated flat rounded discs was borrowed from that used to drill holes to repair pottery vessels with leather straps. The method of drilling also showed awareness of the differential hardness of the inner and outer surfaces of the ceramic. Through experimental archaeology they were able to recreate similar objects using ancient sherds, establishing that this production process could have been carried out in ordinary households because it did not require specialised tools or facilities, and the raw material was easily obtainable. Comparing the results from using the handmade Funj ware and wheelmade Makuria ware, they discovered that the latter was far harder and slower to work, but made a product whose durability probably outweighed the additional investment of time.

Laura Mazow demonstrated how the intra-cross-craft approach could generate a new perspective on a humorous didactic Akkadian text from Ur. In *Re-Examining at the Fullers UET 6/2, 414 as a Dialogue between Weaver and Fuller*, she proposed that the second unidentified figure with whom the fuller was in dialogue was a weaver, rather than, as previously suggested, a difficult customer. Thus this text was intended to capture that stressful moment when one expert craftsman must commit an unfinished object, that nevertheless embodies their investment of time, skill and effort, into the care of another expert craftsman. The weaver pompously provides very detailed instructions on how to proceed which, through their specialist knowledge, the fuller knows would result

in disaster: an itchy ill-fitting garment. Mazow identified three particular vulnerabilities, the fringe, shrinkage and nap, and illustrated how a highly skilled fuller would have controlled these factors to obtain the best possible outcome based on extensive experience, including their knowledge of different finishing techniques. The final retorts of the fuller, therefore, should be understood not as discontent with the proposed remuneration, but as the justifiable complaint of a professional whose expertise has been called into question by someone whose ignorance and lack of self-awareness is galling.

Proceedings of the Workshop

The following five papers in this special issue of *Światowit* provide a snapshot of the possibilities that are opened up by taking an explicitly intra-cross-craft led approach. It opens with Kyle Jazwa's paper *Intra-Cross-Craft Interaction, Cross-Craft Interaction, and Architectural Innovation in Mainland Greece from the Bronze Age to the Archaic Period*, which focuses on ceramic roof tiles. Astonishingly, this innovation appeared on three separate independent occasions in Greece during this study period. He considers and compares the cross-craft and intra-cross-craft processes in train during each one of these distinctive occurrences, examining the links apparent throughout the development of ceramic roofing tiles to other ceramic and architectural industries.

Next comes a rather experimental paper, a collaboration between Dawn Hoffmann and me, which looks to demystify the intricacies of metallurgy through experiential and experimental archaeology. *The Metals' Family Tree and their Separate Branches: an Experiential Journey* is a double length paper in two parts. In the first, common household objects are used to guide readers through an introduction to the differing properties of metals, which have formed the backdrop to metal production throughout the ages. In the second part, the challenges and advantages of working with multiple metals simultaneously to create artefacts is discussed and illustrated through objects Dawn Hoffmann has produced, elucidating the thought processes that lie behind these complex choices.

We return to the realm of ceramics again with Nancy Serwint's paper *The Coroplast and the Potter: Considerations on Cross-Craft Specialists*. Terracotta sculpture production in the eastern Mediterranean underwent a series of innovations during the first millennium BC. Using material from the Cypriot site of Marion, she compares the technological practices of coroplasts with potters, noting similarities and suggesting specific instances for the sharing of knowledge and resources. Within the coroplastic industry itself, she is able to document the presence of distinct types of craftspeople, indicating greater complexity in its organisation than previously acknow-

ledged. She concludes by presenting the approach being developed to take this research forward, through fingerprint analysis to trace the contribution of individuals.

The following paper, *Marble Extraction and its Industry: Case Study of the Vathi Quarry on Tinos Island* applies an intra-cross-craft approach to consider the interaction required for successful stone extraction at the primary level within the quarry, as well as the broader linkages between quarries and the end products of sculptors working across the Mediterranean. The interdisciplinary team, comprising Vasiliki Anevlavi, Frans Doperé, Alkiviadis Sideridis, Walter Prochaska and Anastasia Angelopoloulou, are currently studying the small Vathi quarry on Tinos, looking not only to understand its workings and diachronic use history, but also to use geofingerprinting techniques to trace the destinations of its marble, thus contributing to our understanding of how smaller quarries were integrated into the supra-regional marble distribution network.

This collection of papers ends with *Components as a Possible Enabler of 'Hobby' Crafters in the Mycenaean World*, which applies the intra-cross-craft approach to Mycenaean material culture to test my hypothesis that hobby crafting was practised by elites in ancient societies. Recent research has challenged the predominant belief that hobby crafting is a specifically modern phenomenon, meaning that archaeologists should now consider this possibility when discussing past material culture production. After using modern hobby crafting to establish its basic technical and social framework, the *chaîne opératoire* for Mycenaean gilded glass ornament production, a strikingly distinctive industry with several unusual features, is examined to see if it was compatible with the targeted involvement of elite 'hobby crafters'.

Acknowledgements

The intra-cross-craft analytical framework is not intended to replace the more traditional cross-craft approach, but to enhance it. On the one hand, it can be seen as an adjunct to the latter, placing the spotlight on linkages *within* as well as *between* industries, thus enabling a better understanding of certain aspects of past production using what is already a powerful and broadly applied theoretical tool. On the other hand, the need for a specific intra-cross-craft approach may be considered symptomatic of a discipline that is still constrained by the imposition of modern categories of thought. Whilst this is to be expected, as the nature of the archaeological record makes it impossible not to specialise to some degree, that certain branches, like textile archaeology, have implicitly taken an intra-cross-craft approach demonstrates that continuing to forge our own linkages between archaeological specialisms is key to obtaining a better understanding of past production.

Finally, I would like to thank the organisers of the Third Conference of the Faculty of Archaeology at the University of Warsaw: 'Przeszłość ma przyszłość!/The Past Has a Future!', Michał Przeździecki and Marcin Wagner, for agreeing to include the workshop as one of the sessions and for all the support they gave during the conference. Thanks are also due to the Światowit editors for providing the proceedings with this wonderful home and their continued support throughout the publication process. I am deeply indebted to Dr Christina Clarke, from the Australian National University at Canberra, who not only engaged in detailed discussions with me about the concept but also encouraged me to take it further, with the workshop being a direct result.

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