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Final Research Paper: Ancient Wood

Carpentry was a vital vocation in the ancient Mediterranean. Every ancient person relied on carpenters for their personal items, building construction, and religious items. The complex relationships between the common people of the ancient Mediterranean are still vastly unknown, and much of the focus in scholarship has been placed on art objects, the people involved in their finishing, and wealthy patrons. In this paper, I attempt to break free from the overstudied class of people and focus on the understudied craftspeople. Although the case study included in this paper comes from a massively rich burial tomb, I point out the problems with its original analysis and absence of acknowledgement of the background players involved in the Chaîne Opératoire of the assemblage.

Originally, the focus of this paper was the Chaîne Opératoire of woodworking. As I conducted research, however, I found little to no scholarship on the topic. Elizabeth Simpson, whose research I base much of this paper's information on, does not ever go into the Chaîne Opératoire of her wooden furniture assemblage, nor do other scholars, aside from the initial wood procurement step outlined by Hughes. Wood is a severely understudied material, although sparse in the archaeological record. Throughout this paper I will work to compile the minimal information to gain a comprehensive understanding of archaeological wood. I also aim to critique the Gordion furniture project, and its potential for further examination relating to its Chaîne Opératoire.

Since wood degrades easily unless deposited in ideal conditions, it is very hard to find in the archaeological record. In their article on the “Effects of biological and chemical degradation on the properties of Scots pine—part II: Wood-moisture relations and viscoelastic behaviour,” Broda, Magdalena, et al. explain the process of wood degradation. It is important to understand this process in order to understand its place in archaeological science and the scarcity of wood in the archaeological record. In the article, Broda explains that water content in wood is the most important factor in its conservation (Broda, et at. 2). An elevated water content in wood leaves it susceptible to fungal and other biological decomposition. In their project, they used FTIR analysis to examine chemically degraded pine wood, simulating natural degradation. Factors in the wood like porosity of the cell wall, and rate of the cell wall polymer degradation accelerate decomposition. Certain fungi and bacteria use cellulose as food, so wet wood is the perfect environment for those microorganisms. In many cases, fungal and bacterial decomposition occurs well before the objects are discovered, rendering them useless to archaeologists. In the case of the Gordion furniture, water was introduced after discovery, so they were saved before the degradation became too severe. This process is quick and severe, so the Chaîne Opératoire of woodworking is made difficult to analyze due to heavy damage, preventing scientific and visual analysis.

As mentioned above, wood is difficult to find in the archaeological record. In Simpson and Blanchette’s article on "Soft Rot and Wood Pseudomorphs in an Ancient Coffin (700 BC) From Tumulus MM at Gordion, Turkey," they further discuss the effects of decay on wooden objects, in the context of the Tumulus MM furniture. Broda told us that water content affects the degradation of wood, but this article discusses the two other extremes: very little water and waterlogged. When either of these conditions are met, the wood degrades very slowly, which

was the case with the Gordion furniture until Young's excavations (Blanchette & Simpson 202). Simpson used TEM and SEM in her project to analyze deteriorated wood from the coffin. In her analysis, she found non-biological decay from iron corrosion in the nails, due to the slightly wet conditions of the chamber. The tomb was covered in limestone rubble, which caused a unique condition ideal for soft rot fungi. As water passes through limestone, $CaCO_3$ undergoes dissolution into ions Ca^{2+} and CO_3^{2-}. The calcium ion does not affect pH, but the carbonate ion creates a basic solution with water, which is unsuitable for many biological decay types, but ideal for soft rot fungi. This evidence serves the same purpose as the information presented in the Broda article, but in the context of the Gordion furniture. In the case of soft rot, the process is much slower, occurring over thousands of years, leaving pseudomorphs of the wood's tracheids behind. This type of rot essentially preserves the underlying structure of the wood, but with characteristic pitting and increased fragility. This phenomenon can be seen in *Figure 1*, which shows the structure of the head region of the coffin. The furniture was not only exposed to soft rot, however, so the analysis becomes much more complicated and difficult. Certain specimens are still in good enough condition to be subject for further experimental analysis to determine the Chaîne Opératoire of the objects.

The step of raw material procurement is a very important step, as it frames the rest of the steps and the finished object. Hughes's article on "Deforestation, Erosion, and Forest Management in Ancient Greece and Rome" explains the very first step in the Chaîne Opératoire of creating wooden objects. The paper will not explore the full Chaîne Opératoire of woodworking, but it is important to understand any individual steps when possible. Hughes mentions ancient inscriptions describing woodcutters, which gives us a glimpse into the ancient people involved with this step of the Chaîne Opératoire (Hughes 62). An epitaph on Mount

Parnes states “I never saw a woodcutter better than myself,” which gives us insight into the pride that loggers took in their work. The extraction of wood from the environment is a specialized task, and these people are overlooked in their importance and relation to the final product. Each subsequent step relies on this one to be done well. Furthermore, loggers would cut trees based on many factors like location, exposure, age, and appearance of the bark. Felling of trees would usually occur during the winter, but not when trees are frosted or wet. There is also an interesting convention of felling trees during a waning moon, which Pliny tells us makes the wood last longer (Pliny the Elder, *Natural History* 16.75.194). Trees were cut with axes, saws, and wedges, while smaller ones were often uprooted by digging. After the branches were lopped off, logs were pulled out by draft animals and either shipped whole or hewn into thick beams and planks before shipment. A typical lumber port might be at the mouth of a river with a mountainous, forested area at its watershed. These details are important to the Chaîne Opératoire of woodworking because the artisan relies on the logger to supply the wood. Scholars like Elizabeth Simpson do not consider these specialized workers in relation to the assemblages that they study. The flaw in ignoring the steps prior to construction lies in the foundations of archaeology. The whole point of studying ancient objects is to understand the systems in place in ancient societies. The ways that people interact with each other and their environment cannot be gleaned simply from knowing how an ancient object looked or its religious connotations. To obtain this information, the omitted steps in the process of making a wooden object must be closely examined.

As for the uses of wood, there were many types of objects and structures that required wooden implements. Musical instruments, tableware, tools (including metal tools), and vehicles like chariots and ships, were among these objects (Hughes 64). All buildings, even those made of

stone, needed wooden scaffolding, ramps, beams, and rafters. The famously gargantuan chryselephantine statues required a wooden framework as well, to support the other expensive materials. Later in this paper, household and ceremonial furniture will also be discussed, which were fashioned by highly skilled carpenters who knew complex techniques such as in-laying and veneering. The types of objects that utilize wood as the primary material are important to know to understand the ubiquity of wood and therefore, its great importance in ancient Mediterranean society.

Gordion was the capital of the ancient kingdom of Phrygia, ruled at its height by King Midas in the 8th cent. BCE. Tumulus MM was constructed away from the citadel, around 53 meters high and a diameter of about 300 meters. The site was named MM by Young for 'Midas Mound,' although it is no longer attributed to Midas, but rather his father, King Gordios, due to Midas's suicide due to the Kimmerian invasion. Due to his disgraceful death and depleted resources from the invasion, it would be illogical to erect this massive tomb for Midas.

During the initial excavations, started in 1957 by the Penn Museum under the direction of Rodney S. Young, unskilled laborers dug a channel into the mound. The inner chamber was revealed, constructed with pine plank walls. The chamber measured about 5 by 6 by 3 meters high and contained one of the most significant archaeological finds of organic objects ever discovered. At this time, it was the oldest assemblage of wooden objects on the planet. Fifteen pieces of wooden furniture were discovered; no gold or silver objects were discovered, however. This tomb was rich in elaborate wooden furniture that was piled up with bronze objects. Most of the wood still in the chamber after Young's excavations were treated with a resin solution to preserve the severely fragile wood. The furniture got to this state due to the original tunneling, which caused a massive amount of water to flood the chamber, causing deterioration to ensue.

As previously stated, deterioration is the main reason why wood is understudied, and the original excavations contributed to the Tumulus MM wooden objects' degradation.

There are three main types of furniture in the chamber: the pagoda table, plain tables, and serving stands. There was also the coffin discussed in Simpson and Blanchette's article on soft rot. The pagoda table is the most ornate and complex table, and the focus of Simpson's article, "Reconstructing an ancient table: the pagoda table from Tumulus MM at Gordion". The table was piled with bronze tableware, which caused the rotted legs to collapse inward, with other wooden pieces scattered around the table (Simpson "Reconstructing…" 13). The frame of the table miraculously stayed intact, allowing for a much easier reconstruction. The next type of furniture is the plain tables, of which there are eight (Simpson *The Furniture…* 13). The tables are constructed similarly to the pagoda table, but much less intricate. The serving stands, originally identified as screens or throne backs, were also present in the chamber. The presence of bronze cauldrons and ladles indicated the function of the serving stands, as communal dining implements. In an attempt at preservation, Young decided to allow the screens to dry inside the chamber, which was flooded by his crew, resulting in green mold growing on the serving stands. He then decided to immerse them in a bath of alcohol to dry them out and a bath of wax dissolved in gasoline to allow the wax to penetrate the pores in the wood. These baths caused the wood to darken, warp, and crack, causing severe damage and reducing contrast between the light background wood and darker inlay.

Each face of the pagoda table has inlayed rectangles connected by double bars, giving the appearance of many pieces connected by dowels, but each was carved from one slab of wood (Simpson "Reconstructing…" 13). There are three legs with inlayed, reeded tops and abstracted animal claw feet. Young initially reconstructed the table incorrectly, so Simpson went back and

corrected his mistakes. Although her work is impressive, it fails to fully analyze the table. She goes through the process of reconstruction, gaining insight on the Chaîne Opératoire of the construction and finishing of the table, but does not even address that step as it is. The opportunity to further analyze the table using archaeological scientific and ethnoarchaeological methods, like she does when analyzing soft rot fungi in the coffin, was available to her, but she passed it up. To know what the table looks like is only one part of the complete picture.

All the tables and screens contain geometric patterns that are associated with the Phrygian's power and their patron goddess Cybele, who is also a symbol of fertility and fecundity (Simpson *The Furniture…* 52). Archaeologists often find symbols like Cybele in empires that push these ideals to further a political agenda, or to keep the public content during uncertain times, like a foreign invasion. Another aspect of the decorating process that is mostly unstudied is the political messaging behind the design. The artisan was commissioned to make the furniture, presumably with instructions on how to decorate to appeal to the King's agenda. Outside influences from the patron are potentially sources of deviation from the artisans' usual Chaîne Opératoire.

Simpson, like with her reconstruction of the pagoda table, takes a small venture into the Chaîne Opératoire of the plain tables. Young originally identified the plain tables' legs as being steam bent, although Simpson determines that the legs are constructed from naturally curved wood pieces, due to the grain pattern following the curve of the wood. Time and time again we see that Simpson gets close to answering this vital question but does not quite get there. The Chaîne Opératoire of these furniture pieces could give scholars valuable insights into the lives of ancient Phrygians, and the answers lie in the objects themselves.

The ‘screens,’ or serving stands, are made of boxwood, inlaid with juniper and walnut. The legs, like the other furniture types, are curved (Simpson *The Furniture…* 18). The geometric pattern seen on the plain tables also reappears here, but much more intricate and detailed, with thousands of inlaid diamonds and squares, and a rosette in the center. The designs on the serving stands appear to be bilaterally symmetrical, although with close inspection the design patterns are much more complicated. There are 9 design groups, and in groups 1, 2, 3, and 5, there are three design types in each group. The relationship of these designs to each other and their layout is not important for the purposes of this paper, but Simpson reports that similar design styles are employed across the ancient Near East. The designs had religious significance to the Phrygians, and the ruling political dynasty. Specifically, the rosette design on both serving stands is symbolic of Near Eastern goddesses, like Cybele, or as known by the Phrygians as Matar. The process of designing the tables and screens, as well as going through the inlay process is very important to understand, because it is the final step in the Chaîne Opératoire of the furniture. The problem with focusing on this final step is that we become ignorant to the rest of the process, including the construction of the piece, as the more ‘artistic’ aspects usually receive more attention. This problem arises commonly with the Chaîne Opératoire of ceramic objects, with emphasis being placed only on the surface decoration and its meaning.

The value of wood in ancient Phrygia is also relevant, because the significance of wooden objects in this society begs further research into the Chaîne Opératoire of carpentry. There is virtually no scholarship discussing the value of wood in the ancient Mediterranean but based on other materials in relation to other civilizations, conclusions may be drawn. Gold in the context of the ancient Minoan civilization is a good analogue for Gordion. According to the article titled “Heterogeneous production and enchained consumption: Minoan gold in a changing

world (ca. 2000 BCE)" by Borja Legarra Herrero and Marcos Martinón-Torres, gold had a unique place in funerary rites, like the unique properties of the Gordion wood (Herrero & Martinón-Torres 335). The ancient Minoans were a very rich society, with an excess of imported gold. Due to its exotic nature, it showed up in contexts where wealth would be displayed, like grave sites. The interesting part of the story, however, is the community aspect of sharing the gold pieces. The pieces were cut and transplanted in some cases and was generally abundant at these sites. In the case of Gordion, gold and silver were abundant domestically, indicating a lower value being placed on gold and silver objects. The area around and in Phrygia is identified as the gold and silver source for many other civilizations, including the ancient Minoans. Since gold and silver were not as valuable, the royal burial tombs contained lavish wooden furniture, as discussed previously. Oftentimes, domestically abundant materials are not considered valuable, so imported materials have a higher value, even if it does not correspond to modern-day notions of value. Heavily decorated wooden furniture is more representative of the wealth of the kingdom than gold or silver objects, hence the abundance of wooden furniture in Tumulus MM. Since the Phrygians presumably placed such a high value on elaborate wooden objects, it becomes apparent why the Chaîne Opératoire must be considered. This material was important to their civilization, yet scholars know nothing about the making process.

In relation to the value of wood at Gordion, the source is important to consider in corroborating the conclusion. According to the article titled "Modeling Wood Acquisition Strategies from Archaeological Charcoal Remains," many of the wood types used at Gordion are local, but the Pine wood may have come from more distant forests, if the modern landscape matches the landscape in antiquity (Marston 2198). Marston also does not consider the use of wood in a luxury item, like the Tumulus MM furniture, which has a much different purpose than

purely utilitarian objects. It is hard to say definitively where the wood is from in Tumulus MM, but I suspect distance to be a factor in its value. The source of the Gordion wood is essential to understanding the Chaîne Opératoire of carpentry, in this context, because like Hughes illustrates in his article, the acquisition of wood is an important and overlooked step in the Chaîne Opératoire. The people associated with felling the trees, preparing the timber for shipment, and transporting the wood over potentially far and demanding terrain are forgotten in Simpson's research. Archaeologists have the responsibility of investigating ancient civilizations to the furthest extent possible, but Simpson falls short in her analysis, or lack thereof, of the Chaîne Opératoire of the Tumulus MM furniture.

A considerable number of wooden objects exist to be studied, but not many get studied deeply enough to understand the full picture of carpentry in the ancient Mediterranean. Scholars know almost nothing about the Chaîne Opératoire of wooden objects, which would provide crucial evidence to help us understand the lives of forgotten ancient people. In the Hughes article, we get a brief insight into the lives of loggers, but we need more evidence to help us understand how ancient Mediterranean society functioned. Oftentimes, the elite class of people control the narrative, but most of the population consists of these types of laborers and artisans that are completely ignored. The field of experimental archaeology is also not as involved in the study of ancient wood. An approach similar to Balachandran's in her article titled "Bringing Back the (Ancient) Bodies: The Potters' Sensory Experiences and the Firing of Red, Black and Purple Greek Vases" would be appropriate for further investigation. Balachandran goes through the firing process of red, black, and purple figure vases. This process gives her powerful insight into the forgotten bodies, as she calls them, involved in the ancient firing process. I wish that

scholars like Elizabeth Simpson employed this technique in their research, because we could expand our view on ancient Mediterranean society.

Figures

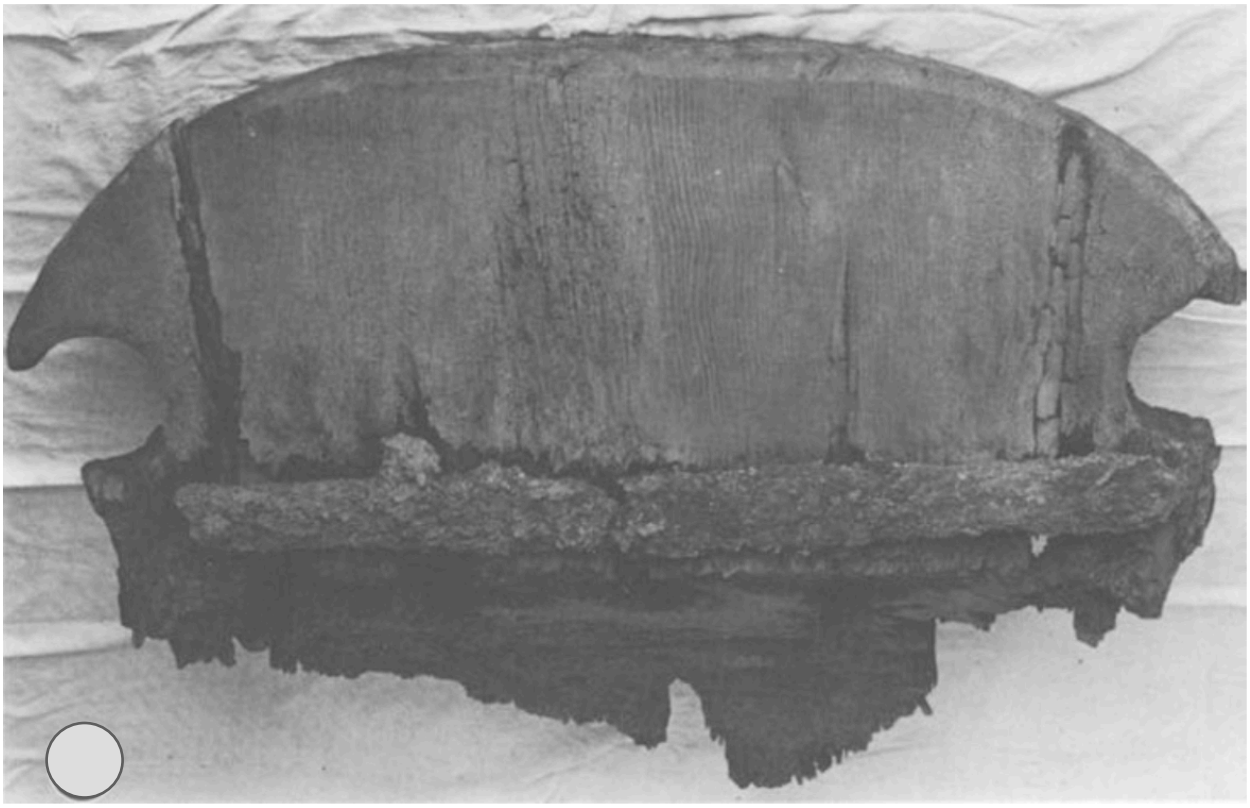

Figure 1. Ledge from the head region of the coffin as seen from above with the remains of the iron bar still attached by nails. Ledge is approximately 1 m wide (Blanchette & Simpson 203).

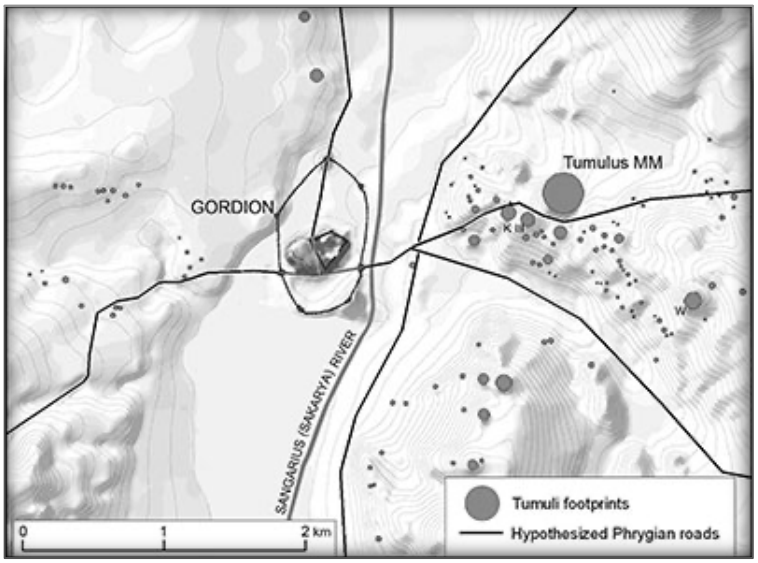

Figure 2. Site plan of Gordion with Tumulus MM labeled (Penn Museum Website).

Figure 3. Photo of Tumulus MM during the original excavations (Simpson *The Furniture… Vol 2)*.

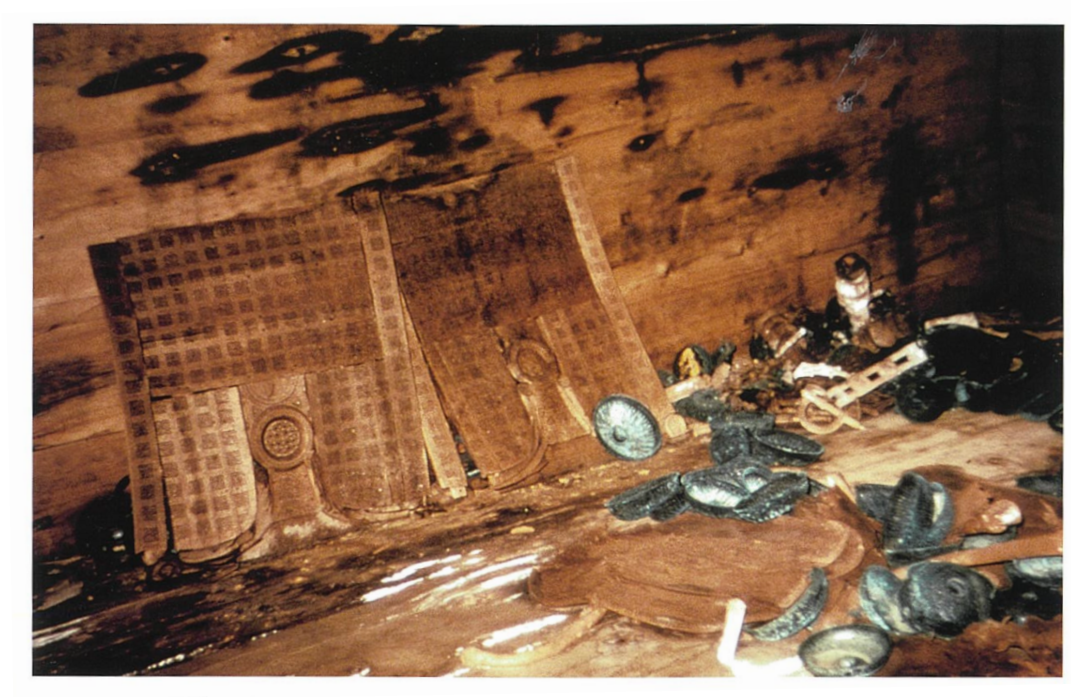

Figure 4. Serving stands photographed in situ (Simpson *The Furniture… Vol 2)*.

Figure 5. The pagoda table photographed in situ (Simpson *The Furniture… Vol 2)*.

Figure 6. The pagoda table reconstructed on display (Simpson *The Furniture… Vol 2)*.

Figure 7. Serving stand B mounted for display (front) (Simpson *The Furniture… Vol 2)*.

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Figure 8. Serving stand B mounted for display (back) (Simpson *The Furniture… Vol 2)*.

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