

## **Classical Weaving, Experimental Archeology on Greek Textiles and Household GDP.**

Richard Joseph Palmer

Classics

Dr. Taylor

### **Abstract**

Weaving is one of the earliest ways that humans transformed raw materials to create functional and beautiful garments. In ancient Greece, weaving was the purview of women and, as a result, the processes, skills, and time required to weave are not well studied as women's work has historically been neglected in ancient sources as well as in modern scholarship (Cadwallader 123). When scholarship does focus on textile production in the ancient Greek world, it tends to focus on fine embroidery rather than everyday weaving. Consequently, there is a significant gap in our understanding of everyday weaving in the ancient world though this can be redressed through the process of experimental archaeology.

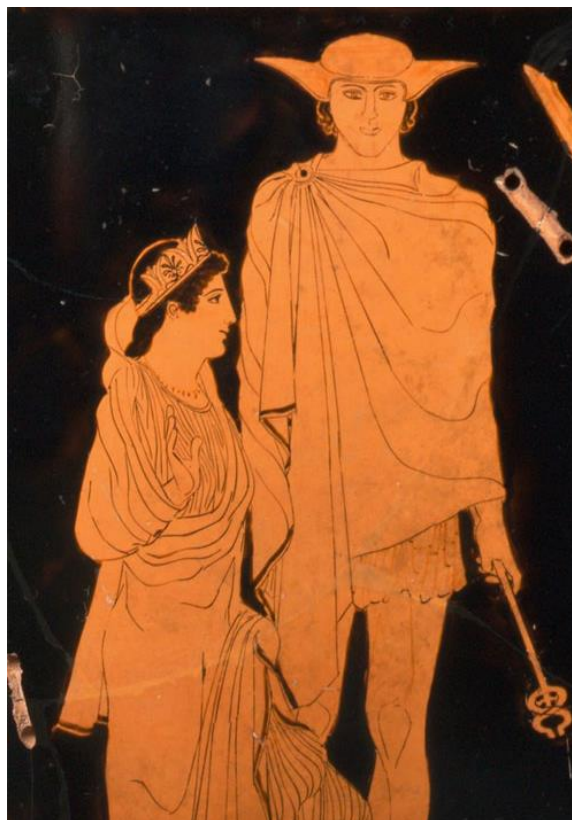
Experimental Archaeology is the replication and use of premodern artifacts, processes, materials or structures under controlled conditions. It adheres to the scientific method and is used to improve our knowledge of ancient technology. This undergraduate research project looks at the creation and production of textiles in Classical Greece, specifically using a single heddle warp weighted loom and investigates the process of making a classical chlamys, with intent to create a finished woolen textile. As textiles were a daily part of life, as well as an important economic factor within the household GDP and trade in general, the experiment can be used to determine the production value of an average household and provide a more nuanced understanding of textile production in daily life (Foxhall, Canavan). As an experimental archaeology project, this research sheds light on aspects of greek household economics, the contribution of women's unpaid labor in domestic contexts, and the requisite skills to produce this type of essential craft within the ancient Greek world.



In- process tying of warp onto the warp weights (Photo by RJ Palmer)

## Description of Research.

This project will investigate the process of weaving a classical Greek Chlamys, using a warp weighted loom. This style of loom is a single heddle warp weighted loom, or a vertical loom using hanging ceramic weights to create tension (Carroll). The heddles are a system for separating the warp threads, and allow the weft to pass through and create the textile (Hooper). A classical chlamys is a cloak that is primarily associated with travellers and hunters, and was widespread throughout the Greek world (Cadwallader 118-127). The clamys was chosen because it is a basic shape, requires only standard skills, and was commonly used. These factors will give a good understanding of daily textiles, from the production to the size. The references for the dimensions are taken off of images on red and black figure pottery from the archaic period to the 4th century B.C.E (Atsma and the Theoi Project). This is cross-referenced against a sheet which was fitted and pinned to the author, in order to get the most accurate dimensions. The image that is the biggest inspiration is the image, K14.9 Persephone and Hermes, from roughly the 440's BCE. The final products should fit similar to the K14.9 depiction, and includes a stripe similar to the depiction as well.



(K14.9 Krater depicting Clamys, 440's BCE. Housed in the Metropolitan Museum of Art, New York, and uploaded on Theoi.com).

The project will involve research into the process and method from ancient sources as well as archeology. This research will assist in hands on weaving, and the study of this process from setting up

the warp to completion. While research has been done on some individual aspects of weaving, there is little research concerning the whole process and the final product. This experiment can inform modern classics in the time required to make these garments, as well as the mathematics, skill, and physicality required. This knowledge can be used to better understand production and the amount of cloth that could be made in an average household, as well as what that cloth might be like (Foxhall, Cadwallader 118). The information from this project can give a better understanding of the daily life of women and the realities of textile production and trade which are absent from our view of the Greek world.

The loom is not based on a single specific classical example, but, rather, conforms to examples proposed by other scholars as well as an understanding of the properties of single heddle warp weighted looms (Mårtensson, Nosch, and Strand; 374, Foxhall, Carroll). My father assisted me in the construction of the loom while the loom weights were created by my friend, Liam Greer, and myself. The loom weights replicate various classical examples, and were fired to the temperatures of pit firing thus mimicking ancient firing techniques of loom weights and ensuring accurate replication<sup>1</sup>. The tools used for weaving are handmade wooden weaving tools, slightly different in shape to classical depictions, but the same in function and materials. The yarn is machine produced and was bought in a store, however, calculations have been made to determine how many hours it would take to spin the yarn (Mårtensson, Nosch, and Strand; 393). The yarn used is pure wool, and the width of yarn is based on the researcher's understanding of functional textiles as well as economic considerations (Foxhall, Hooper, and Canavan). The colors used are based off of natural wool colors as well as madder root dye, a red dye used throughout European history (Martelli 122-123, Cadwallader 115). These mimic the depictions of Clamys cloaks previously noted (Atsma and the Theoi Project). These steps are in place to ensure that the weaving experience is as close as possible to classical weaving.

---

<sup>1</sup> The loom weights are primarily based on the record and research of several authors and articles, ranging from the mycenaean period to the first and second century BCE. These authors include Linda Foxhall and Alessandro Quercia, *Loom Weights; The Chora of Metaponto 6: A Greek Settlement at Sant'Angelo Vecchio*; Francesco Meo, *New Archaeological Data for the Understanding of Weaving in Herakleia, Southern Basilicata, Italy*; and Linda Mårtensson, Nosch and Strand, *SHAPE OF THINGS: UNDERSTANDING A LOOM WEIGHT*.



Fully strung warp and loom constructed by author (Photo by RJ Palmer)



Initial weaving project (Photo by RJ Palmer)

## **Budget:**

Weaving is an incredibly time consuming and expensive process. While some of the materials have been personally funded, additional materials are needed to complete the research. I have built/bought the materials for the loom, loom weights and weaving tools, but pure wool yarn is quite expensive. Funding is not being sought by any other resources, with the exception of the time, money, and effort personally contributed..

Yarn; \$100

The style and brand of yarn that I have used is \$5.99 each a ball. For one length of textile, six or seven balls will be used (according to the weaving already done). The secondary project will double the warp length, which will double the amount of yarn required. While personal investments have funded the first phase of the project, additional resources are required to complete my research. To finish the project, at least 15 balls of worsted wool yarn are necessary to finish the experiments. This includes one additional ball to prevent shortages in materials. This amount of yarn must be shipped, and the additional 10 dollars is to cover shipping expenses.

Research Materials; \$260

There is a limited number of online resources for textile production, and certain texts are needed for research. All books purchased will remain the property of the Classics department. A list of five books that will be necessary references for publication are listed below:

“Textiles & Textile Production in Europe: From Prehistory to AD 400” by Ulla Mannering and Margarita Gleba. \$48

“First Textiles: The Beginnings of Textile Production in Europe and the Mediterranean”  
by Małgorzata Siennicka, Lorenz Rahmstorf, et al. \$60

“Fabric of Civilization: How Textiles Made the World” by Virginia Postrel \$30

“Tools, Textiles and Contexts: Textile Production in the Aegean and Eastern Mediterranean Bronze Age”  
by Eva Andersson and Marie-Louise Nosch \$67

“Textile Production in Classical Athens”  
By Stella Spantidaki \$55

Stipend: \$1500

As both weaving and research take significant time, a stipend will be needed to assist in my living expenses. I will devote a large amount of time on this experimental research, and it will be my primary focus.

Final budget

\$1860

### **Time Period**

1. Spring of 2020; initial research and weaving done, and writing the beginnings of larger paper.
2. The Summer of 2020; continuation and end of the experimental research, polishing and lengthening initial paper for publication.
3. Fall 2020; Finishing any unfinished work and preparing for publication and presentation.

### **Timetable of Research**

The eight week periods of research will be between June 15th and August 3rd.

June 22nd; start expanding initial paper and research.

July 6th; work on weaving and reading books.

July 20th; finish weaving experiments and compile notes.

August 3rd; have final research paper finished.

### **Publication Outlet**

I plan on publishing this research in the UNCA Journal of Undergraduate research, as well as during the Undergraduate Symposium in the Fall of 2020. I would also like to publish in the EXARC Journal as well as possibly present in their student symposium. I am open to publishing this research in other places, but I do not have concrete plans.

### **Bibliography;**

Atsma, Aaron J. *K14.9 PERSEPHONE & HERMES. Metropolitan Museum of Art/Theoi Project*, <https://www.theoi.com/Gallery/K14.9.html>.

Carroll, Diane Lee. "Warping the Greek Loom: A Second Method." *American Journal of Archaeology*, vol. 87, no. 1, 1983, pp. 96–99. *JSTOR*, [www.jstor.org/stable/504672](http://www.jstor.org/stable/504672). Accessed 15 Jan. 2020.

Foxhall, Lin, and Alessandro Quercia. "Loom Weights." *The Chora of Metaponto 6: A Greek Settlement at Sant'Angelo Vecchio*, by Francesca Silvestrelli and Ingrid E. M. Edlund-Berry, University of Texas Press, Austin, 2016, pp. 455–468. *JSTOR*, [www.jstor.org/stable/10.7560/309476.37](http://www.jstor.org/stable/10.7560/309476.37). Accessed 15 Jan. 2020.

Hooper, Luther. "The Technique of Greek and Roman Weaving." *The Burlington Magazine for Connoisseurs*, vol. 18, no. 95, 1911, pp. 276–284. *JSTOR*, [www.jstor.org/stable/858660](http://www.jstor.org/stable/858660). Accessed 15 Jan. 2020.

Kissell, Mary Lois. "Ancient Greek Yarn-Making." *The Metropolitan Museum of Art Bulletin*, vol. 13, no. 11, 1918, pp. 235–237. *JSTOR*, [www.jstor.org/stable/3253904](http://www.jstor.org/stable/3253904). Accessed 15 Jan. 2020.

Canavan, Rosemary. "Weaving Threads: Clothing in Colossae." *Fragments of Colossae*, by Alan H Cadwallader, ATF (Australia) Ltd., Hindmarsh, SA, 2015, pp. 111–133. *JSTOR*, [www.jstor.org/stable/j.ctt19b9mrx.10](http://www.jstor.org/stable/j.ctt19b9mrx.10). Accessed 15 Jan. 2020.

Harlow, Mary, and Marie-Louise Nosch. "Weaving the Threads: Methodologies in Textile and Dress Research for the Greek and Roman World – the State of the Art and the Case for Cross-Disciplinarity." *Greek and Roman Textiles and Dress: An Interdisciplinary Anthology*, edited by Mary Harlow and Marie-Louise Nosch, Oxbow Books, Oxford; Philadelphia, 2014, pp. 1–33. *JSTOR*, [www.jstor.org/stable/j.ctvh1dh8b.5](http://www.jstor.org/stable/j.ctvh1dh8b.5). Accessed 15 Jan. 2020.

Meo, Francesco. "New Archaeological Data for the Understanding of Weaving in Herakleia, Southern Basilicata, Italy." *Greek and Roman Textiles and Dress: An Interdisciplinary Anthology*, edited by Mary Harlow and Marie-Louise Nosch, Oxbow Books, Oxford; Philadelphia, 2014, pp. 236–259. *JSTOR*, [www.jstor.org/stable/j.ctvh1dh8b.15](http://www.jstor.org/stable/j.ctvh1dh8b.15). Accessed 15 Jan. 2020.

MÅRTENSSON, LINDA & Nosch, M-L & STRAND, EVA. (2009). SHAPE OF THINGS: UNDERSTANDING A LOOM WEIGHT. *Oxford Journal of Archaeology*. 28. 373 - 398. [10.1111/j.1468-0092.2009.00334.x](https://doi.org/10.1111/j.1468-0092.2009.00334.x).

Lin Foxhall; Webs of Knowledge: Untangling Textile Production in Ancient Greece" Youtube. Brown University, 2016.

<https://www.youtube.com/watch?v=3AAIijnCe-Y>