EXARC JOURNAL 2014/3
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Unreviewed Mixed Matters Article:

Book Review: Reconstructing Ancient Linen Body Armour by Gregory S Aldrete, Scott Bartell and Alicia Aldrete

Persistent Identifier: https://exarc.net/ark:/88735/10162

EXARC Journal Issue 2014/3 | **Publication Date:** 2014-08-15

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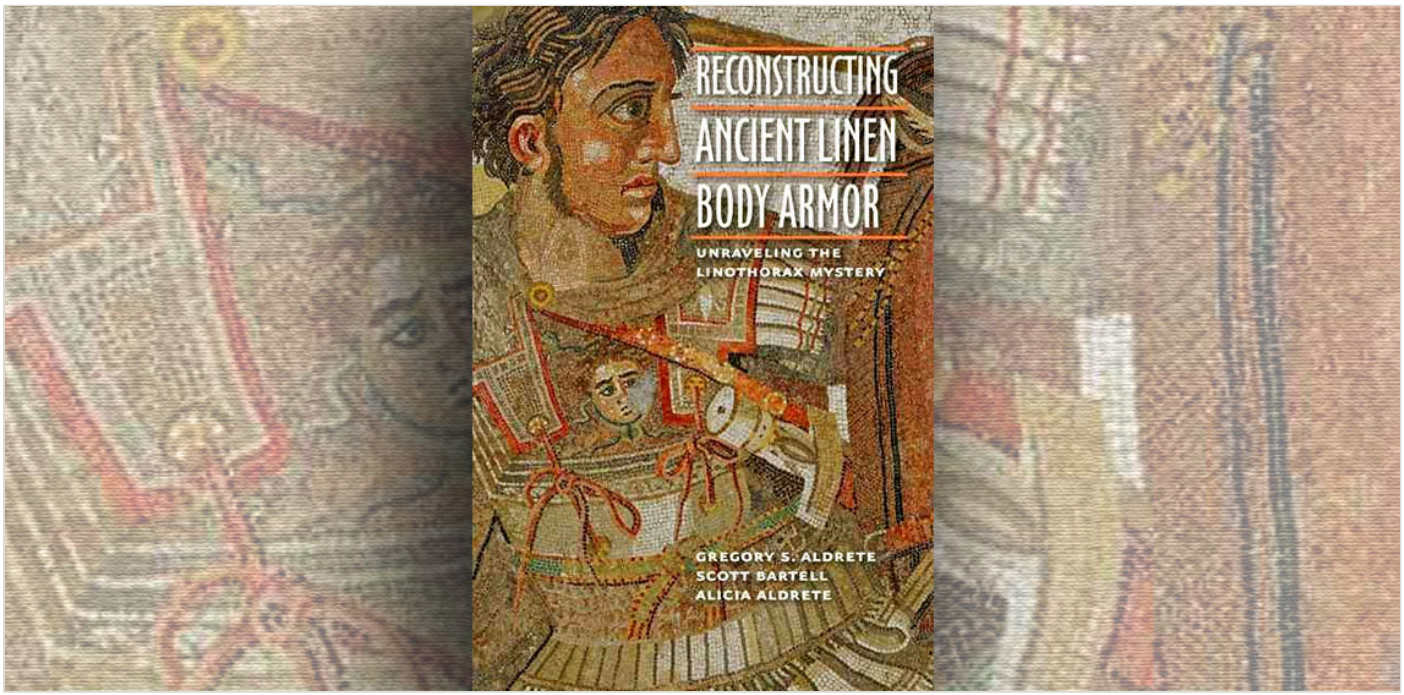

Everyone knows that the Ancient Greeks wore bronze armour. Examples have been excavated, mentioned in the literature and depicted on vases, statues et cetera. But there is also mention of something they called 'linothorax': literally, 'linen chest', meaning linen armour for the chest. The very idea of using linen as armour has been dismissed by academics for decades on the grounds that cloth is useless as armour. It took someone

willing to look at the evidence to propose the hypothesis that linen could be used to construct viable armour and what it would need to be proof against.

> The main problem for the team was getting fabric that was the same as was woven in the Mediterranean two to three thousand years ago. Modern fabrics are different in subtle but possibly important ways.

Professor Aldrete and his associates first gathered the evidence in the form of ancient texts and pictures on vases, sculptures et cetera to show that this idea was viable. They ended up with over 900 images which were compiled into a database and used to statistically determine what the different variations in appearance were and which seemed to be the most common. The basic design seems to have stayed the same for centuries, though there were minor variations on fastenings that could have been fashion or region related. What they also discovered from their analysis of texts and images from various locations was that the same design seems to have been used throughout the Mediterranean area at that time.

They next tried to consider what this armour had to be proof against. The Greeks fought in massed phalanxes protected by shields, so the obvious method of attack would be by arrow, to try to weaken them before impact. With this in mind they set about gathering data on the arrows in use in the Mediterranean and had replicas made while they considered how the armour could be made and tested.

The depictions of the Greek armour looked nothing like the Medieval Gambeson, which was quilted and/or padded. The pictures were of a smooth stiff surface (pictures of warriors arming showed the shoulder-straps standing upright before being fastened down). Others had suggested this might be leather, which can behave like this, however this does not conform with the armour's name; Linothorax. So how could you make linen behave like this? Obviously, single layers of linen will not. Multiple layers have to be fastened together. If quilting is out, how about gluing? Laminating layers of linen gave them the consistency they needed for armour very similar to that depicted in ancient times. When they tried to cut it they needed modern power-tools and therefore had cut the single layers before laminating, which brought its own problems.

The main problem for the team was getting fabric that was the same as was woven in the Mediterranean two to three thousand years ago. Modern fabrics are different in subtle but possibly important ways. They did manage to find a source of organically grown, hand-harvested and woven fabric. However, what was common then is now rather too expensive for the whole project. It was used for the critical test-pieces but modern fabric was used for the full armour, simply because it was all that could be afforded and the differences were not enough to make the experiments invalid. For the same reason they substituted a suitable modern equivalent for the rabbit-skin glue they made and used for the test-pieces.

They garnered assistance from anyone willing to help, including Discovery Channel who provided them with a ballistics dummy, which showed that their improvised archery targets were giving valid data. They came up with a plausible solution which was tested against typical weaponry of that time. The results were so convincing that some of their colleagues volunteered to be shot at from close range while wearing the armour and came away unscathed.

This well-written book clearly explains what they did and how they did it. At no point do they claim that theirs is the only way to do it or even that there was only one way to make such armour, but their solution works and has withstood testing. That they went to the trouble of making rabbit-skin glue and seeking out linen that had been made authentically for their test-pieces shows the care with which they tested their hypothesis.

The differences between authentic and modern fabrics were not marked enough to negate the data collected. Linen armour proves to be durable, comfortable and reliable. It can even take being soaked, which supports descriptions of Alexander's battles, amongst others. It is easier to fit on the human body than metal armour, which is useful for equipping an army. It was assessed that small, medium or large versions would fit anyone who turned up and this might explain some mysterious tags found on archaeological sites. They found that in Mediterranean conditions linen armour is much more practical than the flashy, but hot, bronze armour. It is cool and light while affording serious protection.

Their enthusiasm for the project comes across without detracting from the viability of their experiments. This is experimental archaeology at its best. It is a valuable insight into how reliable armour could have been made (and repaired) in any household using commonly available materials. I would recommend this book not only for the insights into ancient technology but also as a guide into how to propose and thoroughly test a hypothesis.

Book information:

ALDRETE, G.S., BARTELL, S., ALDRETE, A., 2013, *Reconstructing Ancient Linen Body Armor*. Unravelling the Linothorax Mystery, Baltimore: John Hopkins University Press, ISBN: 9781421408194.

Keywords war
book
review

Country Greece

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