

STUDIES OF ANCIENT EGYPTIAN FOOTWEAR. TECHNOLOGICAL ASPECTS.  
PART XIII. SIDE-COVERING LEATHER SANDALS

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1. *Introduction*

Ancient Egyptian footwear is very varied. Most categories consist of several types and usually these types include several variants; even details within these variants still differ. Several types of footwear, however, are less well represented by the archaeological record. The sandal that is discussed in the present paper (Egyptian Museum Cairo Temporary Number [TR] 14 1 & 26 11) is the only example of this type and is extraordinary in many respects. Focussing on the manufacturing technology, as is the intention of this series of papers representing the first phase of the Ancient Egyptian Footwear Project (AEFP; see [www.leatherandshoes.nl](http://www.leatherandshoes.nl)), the large side flaps, covering much of the foot, are the most striking element and hitherto unknown from ancient Egypt. The sandal was recovered from Meir, which is written in large red letters at the ventral surface of the treadsole. The museum archive mentions a date to the 12<sup>th</sup> Dynasty.

Footwear terminology in the present paper follows Goubitz *et al.* (2001) but with adjustments as suggested by Veldmeijer (2010a).

2. *Description*

2.1. *The Sole*

The sole (figure 1) consists of an insole and treadsole with a rounded heel that slightly tapers at the posteriormost edge (resulting in a shape best described as somewhere between U and V-shaped?). The sandal's waist is distinctly constricted. From here, the sole widens towards the front. The lateral edge has a distinct curvature; the medial edge, however, is nearly straight and thus the sole can be referred to as swayed.

The insole's edge is covered with a narrow strip of leather of which one edge is sandwiched between the insole and treadsole (figure 2). This makes sense: if it also covered the edge of the treadsole, it would be prone to wear and the construction would disintegrate more quickly.<sup>1</sup> The colour of this strip is faded, but patches of red can still be seen. One might expect that the dorsal surface of the insole would have had a different, contrasting colour, but although it is predominantly brown now, patches indicate a red colour originally. The sole layers are secured with running stitches made of sinew which in some areas, mainly the heel, touch each other. Indeed, at the dorsal surface of the insole some of the stitch holes seem to have been passed twice. The ventral surface of the treadsole, however, shows relatively

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<sup>1</sup> Note, however, that such a construction is not uncommon (e.g. Veldmeijer, 2009a; 2009b).

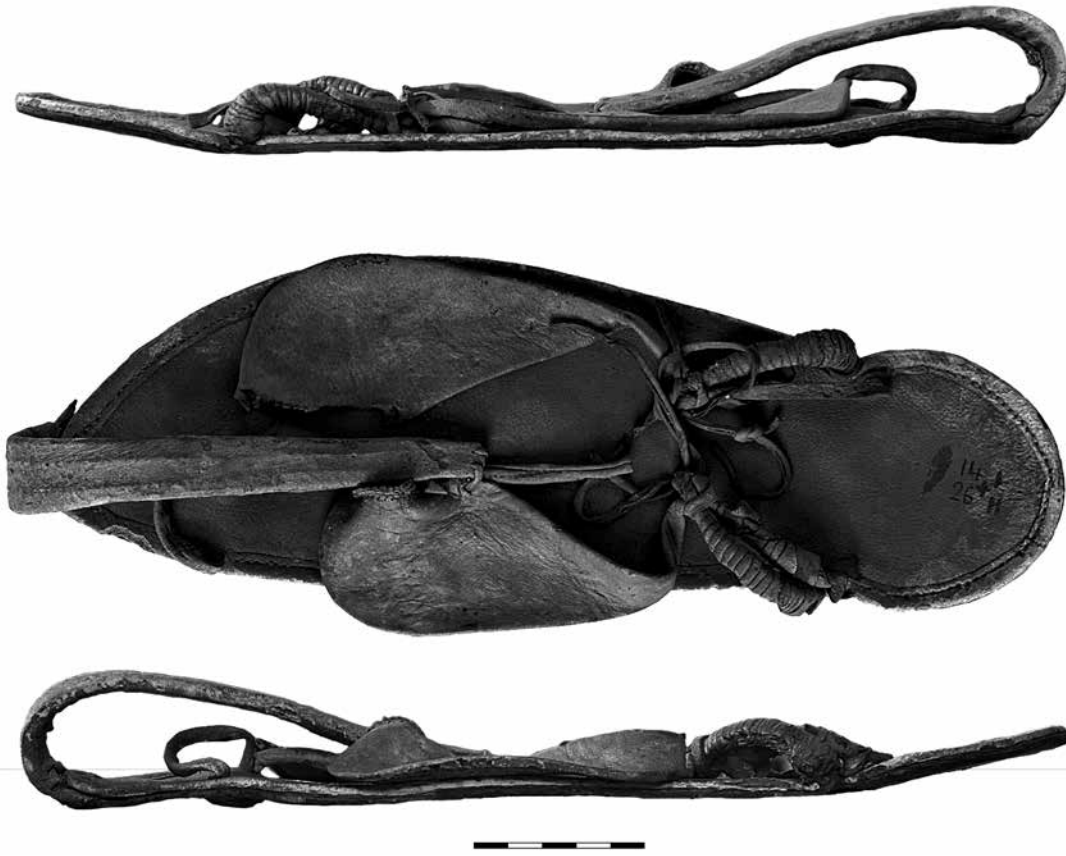


Figure 1. Egyptian Museum Cairo TR 14 1 & 26 11 in A) lateral; B) dorsal and C) medial view. Scale bar is 50 mm. Photography by A.J. Veldmeijer. Courtesy of the Ministry of State for Antiquities/Egyptian Museum Authorities.

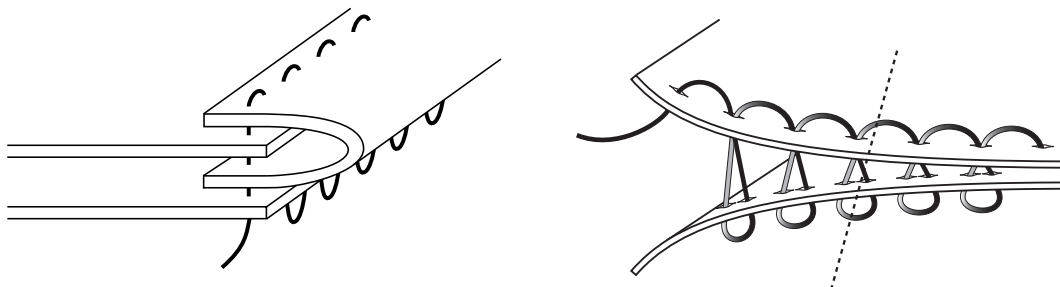


Figure 2. The insole's edge is covered with a narrow strip of leather of which one edge is sandwiched between the in- and treadsole. The inset shows the stitching at the heel. Not to scale. Drawings by E. Endenburg/A.J. Veldmeijer.

widely-spaced stitches, leaving no doubt about the type of stitching<sup>2</sup>: the stitching is done diagonally (dashed arrow in figure 2 inset). Possibly the close stitching at the heel was done to reinforce this part of the sandal.

At the front, a backward curling extension is attached, extending for just over half the distance between the front and the pre-straps. This toe-extension consists of a core, which is clad lengthwise with red leather (figure 3A). Due to the pristine condition of this cladding, the nature of the core cannot be established, but comparable extensions in Curled-Toe Ankle Shoes (Veldmeijer, 2009a) have a leather core and this might be the case here too rather than vegetable material. The cladding must have been glued (figure 3A, B), because no stitches or remnants of them can be seen at the seam. The core is inserted between the two sole layers, evidenced by the bump in the insole (figure 3C). The dorsal surface of the cladding is also inserted between the two sole layers but the ventral surface is pulled over the edge of the treadsole. At this edge the extension is worn through, a clear sign of use. The wear is so severe that nothing remains any longer of the attachment but a slightly lighter coloured area here (figure 3D) suggests that the attachment area had a comparable shape as in the aforementioned Curled-Toe Ankle Shoes, i.e. quarter-of-a-circle-shaped (*cf.* figures 3 and 14 in Veldmeijer, 2009a; hence the dashed lines in figure 3A inset). Remnants of several relatively coarse stitches made of leather thong, which secured the extension, can be seen at the edge of the insole (arrow in figure 3A).

The convex terminal end has two big leather thong stitches that attach the toe extension to the side flaps (figure 3E), discussed below. Note the two lines lengthwise along the dorsal surface of the extension that appear as bumps (figure 1B; clearly visible in figure 4C [arrow]).

## 2.2. *The Strap Complex*

### 2.2.1. The Front Strap

The front strap is a narrow, lengthwise folded strip of leather (figure 4A) that is pulled through both sole layers and which is secured at the treadsole's ventral surface by means of a button. Such a button is the enlarged terminal end of the front strap to prevent the strap from slipping through the hole.<sup>3</sup> The front strap runs towards the pre-straps, but stops short of them. However, it extends beyond the toe extension. The terminal end is pierced by two narrow, lengthwise folded leather strips (figure 4B) that form part of the back strap, as will be explained below. Next to the hole in the sole through which the front strap is pulled, is, at the medial side only, another hole that contains a shorter strip of red leather (double arrow in figure 4C), which is also folded lengthwise. Its function is, however, uncertain although it is possible that the front strap consisted of two parallel leather strips. We can rule out the possibility of a loop for inserting the big toe, as there is no evidence for attachment of the loose end at the edge.

<sup>2</sup> Note that if the treadsole is absent, it would have been hard, if not impossible, to distinguish the stitch as running stitch or, alternatively, as interlocking stitching. See Veldmeijer (2010b: 21; 2011a) on the problems in identifying this type of stitching.

<sup>3</sup> An alternative to the button is a simple (overhand) knot (in which case the terminal end is not enlarged). The ventral surface of the sandal could not be photographed.

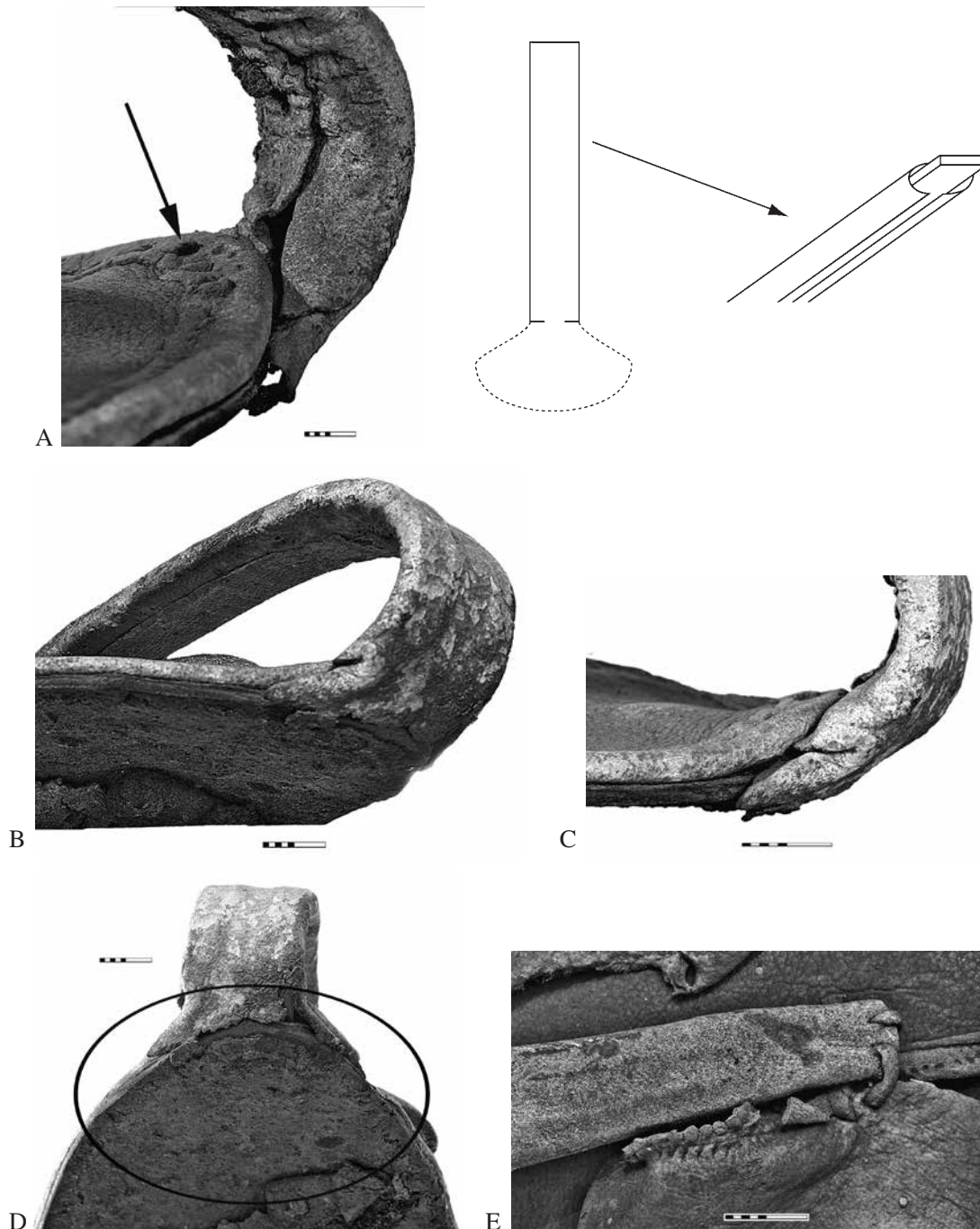


Figure 3. Details of the toe extension. A) A core is clad lengthwise. The arrow is discussed in the text. Inset: construction drawing (not to scale); B) The absence of stitching suggests that the cladding is glued; C) The core of the extension is sandwiched between the two sole layers: note the bulging; D) The discoloration suggests a construction that is comparable to Curled-Toe Ankle Shoes; E) The toe extension is secured to the side flaps. Scale bars are 10 mm. Photography by A.J. Veldmeijer. Courtesy of the Ministry of State for Antiquities/Egyptian Museum Authorities. Drawing by E. Endenburg/A.J. Veldmeijer.

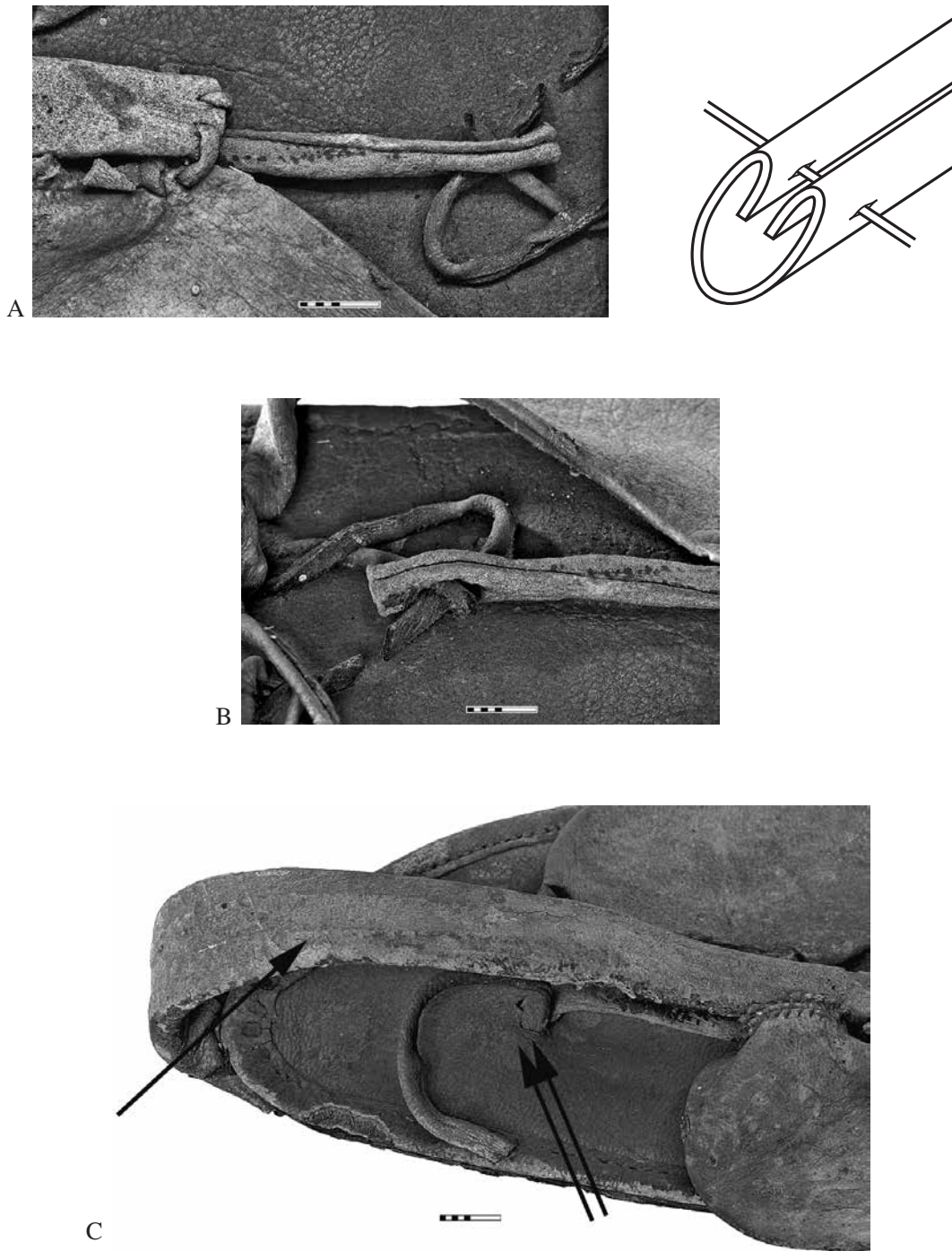


Figure 4. The front strap. A) View of the lengthwise folded front strap. The inset shows the way the folding was done (not to scale); B) The terminal end is pierced by elements of the back strap; C) A second(?) front strap is inserted next to the more complete one (double arrow). Scale bars are 10 mm. Photography by A.J. Veldmeijer. Courtesy of the Ministry of State for Antiquities/Egyptian Museum Authorities. Drawing by E. Endenburg/A.J. Veldmeijer.

### 2.2.2. The Pre-Straps

Each pre-strap (figure 5) consists of a long, tapering strip of leather, of which it is certain that at least half the length was integrally cut from the treadsole. In other words, although they appear to consist of two elements, in fact each one is a single element doubled back on itself and the terminal end secured to the sole. The cladding and the attachment of the side flaps obscure visibility on the rest of the pre-strap, but a fairly reliable deduction can be made. The decrease in width stops where the pre-straps are connected to the side flaps: from here, the strap is consistent in width. Most likely, the pre-strap is one piece that is folded: if it had consisted of two separate elements, even when held together with the cladding, it would have been a weak construction and likely to lose coherence. At the medial side of the sandal, the attachment of the pre-strap to the sole is obscured, but at the lateral side, two big stitch holes are visible in the sole, which undoubtedly were used for the attachment of the terminal end. The length of the entire pre-strap compares with the circumference of the heel (figure 5; *cf.* Van Driel-Murray, 2000: 312 who described a comparable construction for Predynastic sandals).<sup>4</sup> However, it would pose a problem at the opposite side from which the pre-strap is cut if the width were to have been consistent throughout: thus, it was cut tapering (dashed line in figure 5). In doing so, the pre-strap at the opposite side would not stand too far off from the edge of the sole and enough space was left to cut also the other pre-strap, without breaking too much of the symmetry. This resulted in a slight difference in the position of the two pre-straps, which can actually be seen at the sandal. Thus, the pre-strap is cut from the treadsole, clad and folded towards the insole. Note that the cladding of both halves was done separately, which reduced the strength. It consists of a narrow strip of leather that is wound in stair-step overlap around the pre-strap. One half of the lateral pre-strap has no binding anymore. At the fold of the pre-strap, the long, thin extensions of the side flaps are tied to the pre-straps with a mesh knot (arrow in figure 5).

### 2.2.3. The Heel Strap

The narrow, lengthwise folded strip that runs through the terminal end of the front strap continues through the terminal openings of the pre-straps. These also accommodate the fastening of the side flaps (see below). Although broken, it seems to have formed a heel strap after exiting the pre-straps. The two ends, coming from either side, are tied into a reef knot. Such a construction is seen in some fibre sandals too (Veldmeijer, 2008/2009: 129<sup>5</sup>). This construction, when putting the sandal on, would pull the pre-strap slightly up and backwards and with it the front strap and side flaps backwards. In doing so, the sandal would fit better to the foot, not least because it could be slightly adjusted by the tying of the ends of the heel strap.

<sup>4</sup> The object in figure 12.12a by Van Driel-Murray is even more comparable, but the lack of information makes it less interesting.

<sup>5</sup> Plain Plaited Sandals from Qasr Ibrim (Veldmeijer, 2008/2009): QI 72/390; QI 82.1.30/13; QI 82.2.28/90c; QI 84.1.18/27 and QU 84.2.23/114. Note that not in all of them the heel strap is tied with a reef knot.

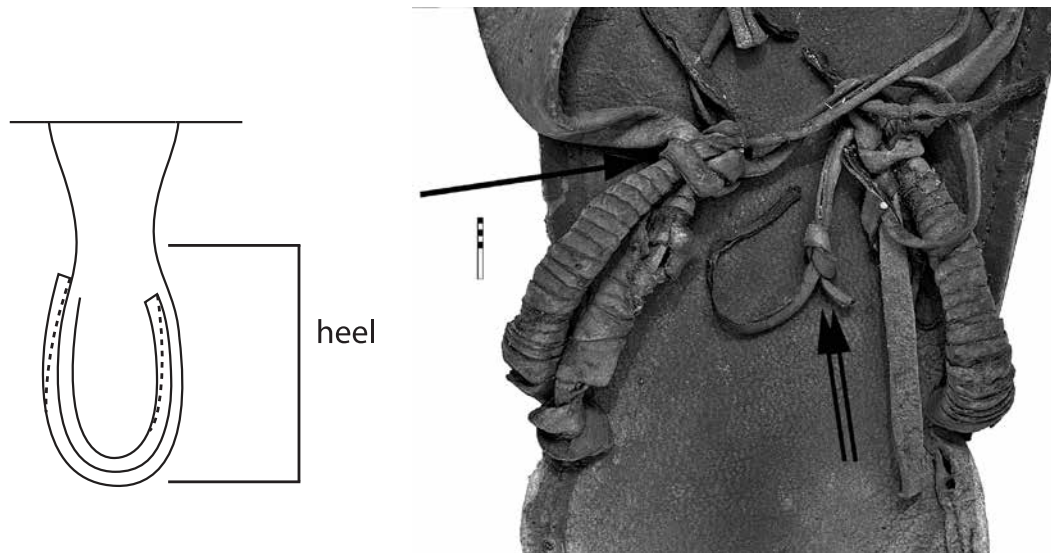


Figure 5. The pre-straps. Dorsal view. The arrows are explained in the text. Scale bar is 10 mm. Inset: the probable cutting pattern (not to scale). Photography by A.J. Veldmeijer. Courtesy of the Ministry of State for Antiquities/Egyptian Museum Authorities. Drawing by E. Endenburg/A.J. Veldmeijer.

### 2.3. *The Side Flaps*

A remarkable part of the sandal are the side flaps (figure 1B), which, if put together, roughly have the shape of a heart symbol. The elements are wide at the front and rounded. The first part of the inner edge runs straight, after which it continues diagonally to the severely tapering back part. This long, narrow extension is attached to the pre-strap by means of a mesh knot (arrow in figure 5). It is folded lengthwise; the outer edge of the body of the flap is folded as well. The flaps are detached now, but were originally stitched together at the afore-mentioned inner straight edges. The medial flap shows remnants of the seam which joined it to the other, lateral flap: it clearly indicates it was torn off (arrow in figure 6). They were attached to each other by means of whip stitches. As described above, at the back of the straight edge, the flaps are secured with leather thong stitches to the terminal end of the toe-extension (figure 3E). However, at the front of the straight edge, a big hole is visible too (double arrow in figure 6), suggesting an additional attachment (possibly to the underside of the toe-extension or perhaps it was somehow connected to the ‘second front strap’). The side flaps were not secured to the sole (there is no indication of stitching or glue), due to which they could move during walking.

### 3. *Manufacturing*

The identification of the type of leather needs specialised research: the macroscopic investigation was not adequate to suggest a particular species. Putting together a sandal like this might seem complicated, but actually is rather simple. After cutting the sole layers, the two

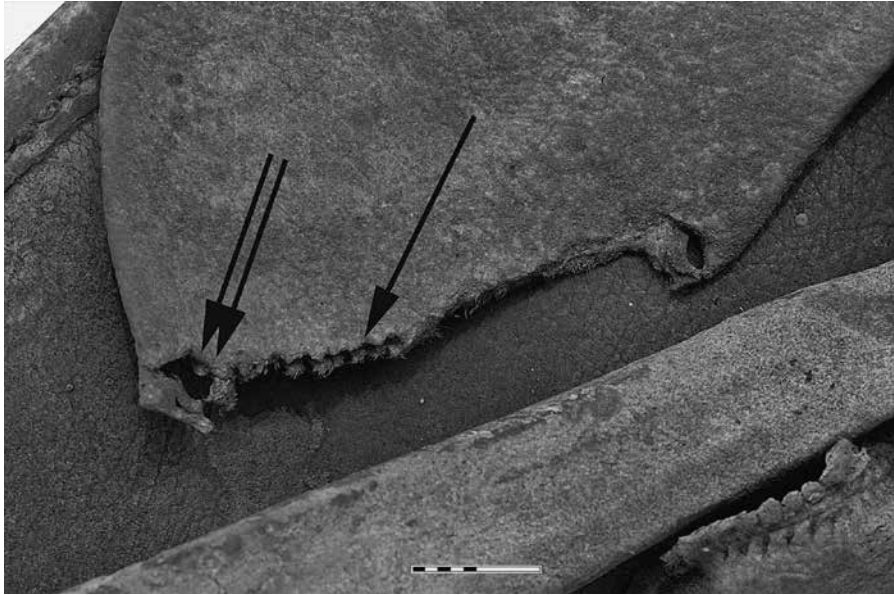


Figure 6. The two side flaps were attached to each other by means of whip stitches, but torn now. Arrows are explained in the text. Scale bar is 10 mm.

Photography by A.J. Veldmeijer. Courtesy of the Ministry of State for Antiquities/ Egyptian Museum Authorities.

were stitched together (including the strip that is sandwiched between them), leaving an opening between them at the front for the insertion of the core of the toe-extension, together with the dorsal cladding of the extension. After inserting it, the sole could be closed. The cladding of the pre-straps was done, most likely, before putting the sole layers together out of convenience, although it might have been done afterwards. The sequence of attaching the side flaps and heel strap is not clear: they could be both added as preferred by the leatherworker or sandal-maker.

#### 4. *Comparison and Discussion*

The most important trait that characterizes the Meir sandal (figure 7), and rather enigmatic, is the side flaps. Exhaustive iconographic studies of footwear, including foreign, are currently being undertaken, but to the best of my knowledge, sandals with such elements have not been depicted. We know from ancient Egypt that many other types of footwear were not depicted either: at least in the manufacturing scenes, the intention was simply to represent the production of footwear in a general sense, rather than the production of specific types. A variety of types of sandals are shown being worn (shoes are shown only ones or twice[!]) but still the variety does not match with the variety in footwear we know from the archaeological record (Veldmeijer, 2010a: 206-207). Also for the Meir sandal, iconography is not of any help. The reason of adding side flaps might stem from a need to keep the feet warm, which does not seem really necessary in Egypt since by far the largest part of ancient Egyptian footwear are





Figure 7. Artist's impression. M.H. Kriek.

sandals or open shoes. In areas such as Palestine and Mesopotamia, with different climate, closed shoes and boots were a much more common commodity (Kuckertz, 2006: 145-152. Could this, thus, point to an imported sandal? Note that similar constructions as the side flaps can be seen, up to the present day, in Pakistan (personal communication with Salima Ikram, November 2012).

So, the side panels may point to a foreign import or, perhaps more likely, influence by foreigners on Egyptian sandalmakers, who combined this trait with elements from their own footwear. The reason for such a suggestion is the construction of the toe-extension, which is strikingly similar to those described in the Curled-Toe Ankle Shoes (*cf.* Veldmeijer, 2009a). This indicates that this element was known for over 400 years. However, exactly comparable constructional features and especially the construction of the extension would be a rare coincidence if there was no link and therefore, is unlikely. Bridging a gap of some 400 years, as there is no evidence of comparable traits before the 18<sup>th</sup> Dynasty, is equally unlikely.

It is suggested that the raised-tip sandal is of Hittite influence (Bossan, 2007: 10) and this might be linked to the side panels, as suggested above. But there is no reason why the Egyptian themselves might not have invented curled toes (on various occasions): comparable extensions can be seen in footwear from around the world, from ancient times up to the present day,<sup>6</sup> which are either a continuous, 'natural' enlargement of the toe or, indeed, an individual piece that is attached to the sole. Thus, it would have been more acceptable if the extension was of a different construction. This way of reasoning leads to two possibilities: the Meir sandal is not of Middle Kingdom date but rather New Kingdom, or there are just no

<sup>6</sup> The *crakow* in Middle Age Europe is just one example (Swann, 2008); the wooden trips with extending toes from the same period another (Gaertner-Krohn & Spiong, 2008).

examples preserved from the intermediary period. This latter suggestion might seem unlikely as 400 years is a long time, but against this argument can be said that sandals like these must have been rather expensive, only worn by the higher well-to-do people and thus far less common than other types. This, of course, would limit the chance of recovering it in the archaeological record thousands of years later.

But are there other traits that can elucidate origin and age? The shape of the sole, excluding the toe extension is of common shape and also the way the sole layers are secured is not uncommon in New Kingdom Egypt (e.g. Veldmeijer, 2009b). Also a very common trait in leather sandals is the integrally cut pre-straps: there are various types of sandals that have the same construction (Veldmeijer, 2009b; 2011b). Although sandals with several sole layers and integrally cut pre-straps are known as early as the New Kingdom (but limited to fancy footwear except for the sandals from Amarna, Veldmeijer, 2011b: 12), single sole layers with the same constructional features are already known from Predynastic times (pre-straps, in Pharaonic Egypt, usually were relatively short protruding elements with a slit at the terminal end to which the straps were tied). But, longer protruding elements that were folded double have been registered as well, which were clad to reinforce them and stitched to the insole (Veldmeijer, 2009a: 16-17). These, however, are clad together.

The use of a strip to reinforce the stitching of the sole layers, is not known, as far as we are able to date sandals in museum collections, before the New Kingdom (*cf.* Veldmeijer, 2009b). It is also seen in Curled-Toe Ankle shoes that are firmly dated to the New Kingdom as well (Van Driel-Murray, 315-316; Veldmeijer, 2009a).

According to the *Journal d'Étreet*, the sandal is dated to the 12<sup>th</sup> Dynasty, which is plausible considering the importance of Meir in this period of Egypt's history. The sandal has no parallels among the footwear corpus known from ancient Egypt, but we should bear in mind that the archaeological record shows biases: the Middle Kingdom, among others, is less well represented. But this only partially offers an explanation: at the beginning of the New Kingdom a strong increase in the use of footwear can be seen, which is also visible in the archaeological record.

The variety of footwear in ancient Egypt is surprisingly large, shown time and time again. Although the Meir sandal is unique, several features resemble indigenous Egyptian footwear well-known from the New Kingdom suggesting it is not of Middle Kingdom date but rather should be dated to (early?) New Kingdom. Moreover, the comparable features together with the hitherto unknown side flaps suggest that the design was influenced by foreigners rather than a true foreign import.

##### 5. Acknowledgement

I am grateful to the Ministry of State for Antiquities and the authorities of the Egyptian Museum (Cairo) for permission to access the footwear collection and to publish my photographs. I am grateful to the responsible curator of the Egyptian Museum in Cairo, Wafaa Habib, for her collaboration and enthusiasm for the project. Erno Endenburg is thanked for his technical assistance. Thanks also to Lucy Skinner for discussion and consultation regarding the identification of the leather and conservation issues. Sue Winterbottom critically reviewed the manuscript for which I am truly grateful: it improved the manuscript considerably!

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