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A Warped Version: Manipulating Roman Looms for Metaphorical Effect – Potamius of Lisbon's *Epistula de Substantia* 5-9

Magdalena Ohrman
University of Wales Trinity Saint David, Faculty of Humanities
m.ohrman@uwtsd.ac.uk
https://orcid.org/0000-0003-0865-4546

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Abstract

Potamius of Lisbon's highly metaphorical explication of the indissoluble nature of the Trinity in the 4th C theological treatise *Epistula de Substantia* combines technical knowledge of textile crafts with stylistic manipulation of Latin intertexts and terminology in a metaphor for the unity of the Trinity. This paper explores several passages in *De Substantia* densely packed with textile terminology and deemed obscure in earlier Potamian criticism, and shows how, based on a detailed knowledge of the practicalities of wool-preparation as well as of weaving, Potamius enhances the effectiveness of his metaphor by carefully manipulating the presentation of technological detail and intertextual references to earlier descriptions of textile work in Latin literature. Potamius includes references to different loom types to strengthen the impact of his weaving metaphor, and to create correpondences between the set-up of a loom and crucifixion. Potamius' understanding of the workings of the warp-weighted loom is related both to intertexts in Ovid and Seneca and to the archaeological evidence for the continued contextual relevance of this loom type in Lusitania and the Iberian peninsula, and to domestic and traditional craft practices.

Keywords: Potamius of Lisbon, Epistula de Substantia, Weaving metaphors, Warp-weighted loom, Roman textile tools

The description of weaving and weavers' tools that emerges in Potamius of Lisbon's highly metaphorical explication of the indissoluble nature of the Trinity in the 4th C theological treatise *Epistula de Substantia* combines technical knowledge of textile crafts with stylistic manipulation of Latin intertexts and terminology. Such technological contexts have hitherto been largely overlooked in scholarship: the *Epistula de Substantia* has mainly attracted attention for its potential to throw light on Potamius' rejection of Arianism sometime after 360 and for its relationship to Potamius' career as bishop of Lisbon.[1] The aim of this paper is to make clear the technological – rather than theological – background of Potamius' weaving metaphor, and to resolve several passages densely packed with textile terminology which have been noted as 'particularly obscure' in Conti's recent commentary.[2] The paper will also show that, despite possessing a reasonably detailed knowledge of the practicalities of wool-preparation as well as of weaving, Potamius enhances the effectiveness of his metaphor by carefully manipulating the presentation of technological detail and intertextual references to earlier descriptions of textile work in Latin literature.

1. The shape of the cross

At the core of Potamius' metaphor for the unity of the Trinity is the cross-shape of the weave as the tunic takes shape on the loom:

> nam ipso telae patibulo feminae quasi in crucis ambitu pendere tunicas discunt. et uere ad similitudinem crucis facturae uestis insigni miraculo tela praetenditur, cuius per qualitatem spatii indiscissis pinnarum lateribus, procurante pollice praesidentis, insuitas et fila seruantur. nam et tunica ipsa quae in habitu crucis orditur, ut probat res officio [...][3]
>
> For the women learn to suspend tunic weaves on the bar of the loom as if on the beam of the cross. And truly, the web of the growing cloth is stretched out on the loom in likeness of the cross in a miraculous sign. Through the type of spacing [of the warp] with no-cut sides for the sleeves, and the care of the weaver's hands, its seamless nature and its threads are preserved. For

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[1] For a full discussion of previous work on Potamius and on the dating of *De subst*., Conti 1998: 1-40, esp. 39-40. Cf. also Montes Moreira 1975.

[2] Conti 1998: 91-92.

[3] Potam. *de Subst.* 5.

> the tunic itself is organised in the shape of a cross, so that the object itself presages its task.

Potamius' emphasis is on the fact that even a tunic with sleeves is woven in one piece and its warp so fitted on the loom that it appears like a cross. To critics not approaching the text with ancient weaving practices in mind, Potamius' metaphor appears contrived and difficult.[4] In fact, Potamius' description corresponds to information yielded by archaeological textiles and by experimental archaeology reconstructing ancient weaving processes: a completed tunic weave still hanging on the loom would indeed have the shape of a cross. Throughout Greco-Roman antiquity, clothes were woven to shape rather constructed from cut pieces sewn together as in modern practice.[5] Therefore, a tunic would be given its basic shape even as it was woven. When using an upright loom,[6] the warp would be prepared so as to create first one sleeve, working from the hand to the armpit, then the main body of the tunic, working sideways from one side of the body to the other, and finally the second sleeve, working from armpit to hand. Seams were only required at the bottom of the sleeves and along each side of the tunic.[7] To accomplish this weave and correctly set up the warp, the weaver must take into account width- and length measures (i.e. from sleeve end to sleeve end, and from neck to lower hem respectively) long before weaving actually begins. Thus, the fact that the shape of the tunic cloth must already be conceived as the warp is prepared allows Potamius to argue that it both prefigures and already *is* a sign of Christ.

Therefore, the fundamental premise of Potamius' metaphorical use of textile production is straightforward. Far more complex is his use of technical language and his choice of what weaving processes to include at different stages of his argumentation. In the first section dealing specifically with work on the loom (*De substantia* 5), Potamius focusses on the preparation and planning of the weave. He specifically indicates that the relevant traits are present in the tunic weave before the weaving itself begins: *[…] tunica*

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4 Conti 1998: 91-92.

5 Fanfani & Harlizius-Klück 2016: 69.

6 The use of the two-beam, upright loom is normally assumed for this period, cf. Ciszuk & Hammarlund 2008: 124-27. I will return to the issue of loom types referred to by Potamius presently.

7 Carroll 1985: 171. The weaving technique used for the (later) linen tunic described by Verhecken-Lammens 2010: 31-33 seems to be exceptional.

[...] prius quam organa textrini et subfarcimenta telae contigerit naturali iam tegmine est uestis Saluatoris. ("[…] the tunic is the clothing of the Saviour in its natural covering […] *already before* the weaving tools and the weft touch the loom."). In the later section (*De substantia* 9), the emphasis is on how each part of the loom and the weave (heddle-leashes, warp, and weft) form a coherent whole representative of the unity of the Trinity.

Technical details are included by Potamius primarily for their effectiveness as part of the metaphor, but also to allude to other texts. While the textile-historical background for Potamius' loom description has been understood as being weaving on the two-beam loom,[8] I will argue that technical phrases appropriate to a description of the older, warp-weighted loom occur in the text alongside references to the two-beam loom. I hope to show that this applies especially to the fifth chapter of *De Substantia*, whether due to intertextual influence from weaving descriptions in Latin texts such as Ovid's *Metamorphoses* 6. 53-69 and Seneca's *Letters* (*Ep.* 90. 20), or – a more controversial assertion – due to continued contextual relevance of this loom type in Potamius' period and area.

2. Potamius' Two-Beam Loom

Before we examine Potamius' potential conflation of different weaving techniques, the – in this respect at least – clearer chapter nine must be discussed. Here, Potamius cleverly uses recognisable features of the two-beam loom. Potamius' initial statement in chapter nine *organum telae unitum, sibimet conexum, fila retinet, omni tenacitate uincitur; alligatur et alligat.* ("the whole apparatus of the loom, fitted together, holds the threads back: it is tied with utmost tenacity. The loom is bound and it binds.") stresses how the loom with a weave in progress attached is perceived as one instrument where parts are tightly fitted together.[9]

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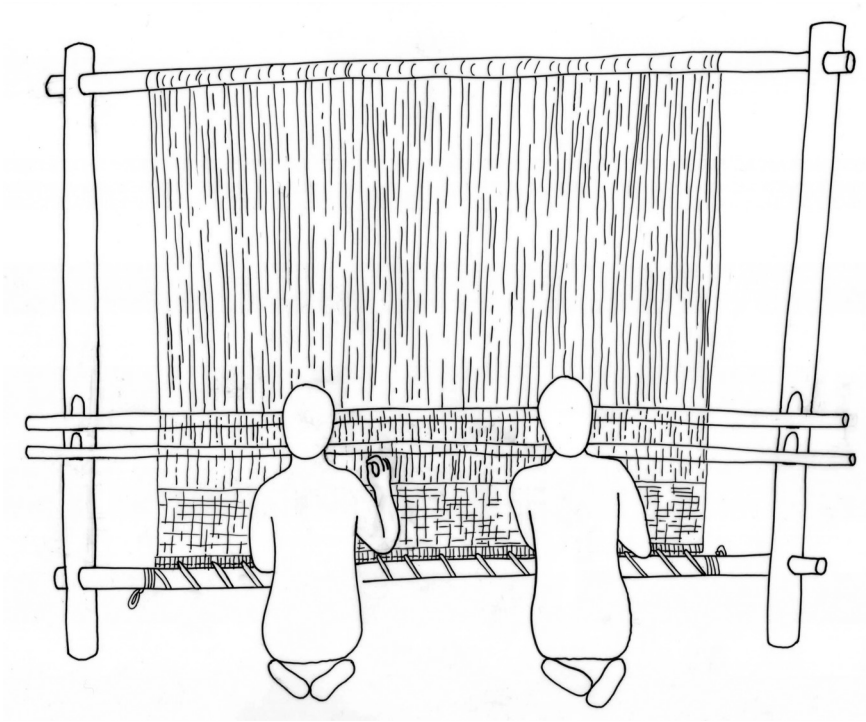
[8] Conti 1998: 99.

[9] In *de subst*. 6, Potamius' aim is different and he highlights the loose equipment (*organis*) of the loom as well. See further below.



Reconstruction of a two-beam loom with a twill weave. Drawing created for academic purposes for the Centre of Textile Research in Copenhagen.

This is consistent with pictorial representations of the two-beam loom displaying it with a heavy-looking square wooden frame and as a clunky piece of equipment.[10]

Furthermore, the emphasis on the tension of the warp in Potamius' description (*omni tenacitate uincitur*, "it is tied with utmost tenacity"; *rigentior trama* "tight warp") highlights an important feature of the two-beam loom, where the warp was stretched between an upper warp-beam and a

[10] Wild 1992: 12-17 provides a detailed survey of the evidence. This differs from literary descriptions of the warp-weighted loom, where emphasis is often placed on the loose parts that together make up the functioning loom: the frame, the heddle-rods, the loom weights, and (particularly) the implements used to insert and beat the weft into place. Cf. Lucr. 5. 1351-1353; Ov. *Met*. 4. 275; 6. 53-69; *Fast*. 3. 818-819; Sil. 14. 656-660; Claud. *Rapt*. 3. 155-163.

cloth-beam at the bottom. The clearest literary description of the two-beam loom comes from Gregor Magnus' *Moralia*:

> tela quippe infra supraque ligata duobus lignis innectitur, ut texatur; sed quo inferius texta inulouitur, eo superius texenda deplicatur; et unde se ad augmentum multiplicat, inde fit minus quod restat.[11]

> For the warp is tied at the bottom and at the top and fastened to two wooden beams so that it may be woven. But as the woven cloth is rolled up on the lower beam, then the to-be-woven warp is rolled down from the upper beam. And as the warp to be woven increases, the less there is that remains.

On the two-beam loom, the tension across the whole warp would be controlled through the cloth beam. On the warp-weighted loom the tension of the warp would instead be determined by the number and weight of the loom weights used. Even after work had begun, individual parts of the warp could be (re-)adjusted by letting out or taking in available lengths of warp at the loom-weight.

Because there would be no such opportunity on the two-beam loom, the need to create appropriate warp-tension effectively and consistently must be more emphatically taken into account from the very beginning of the warping process. Serving to stress the insoluble unity of the Trinity by highlighting the connectedness of the different parts of the loom and weave,[12] Potamius' emphasis on warp-tension here is also consistent with the type of loom described in the chapter.

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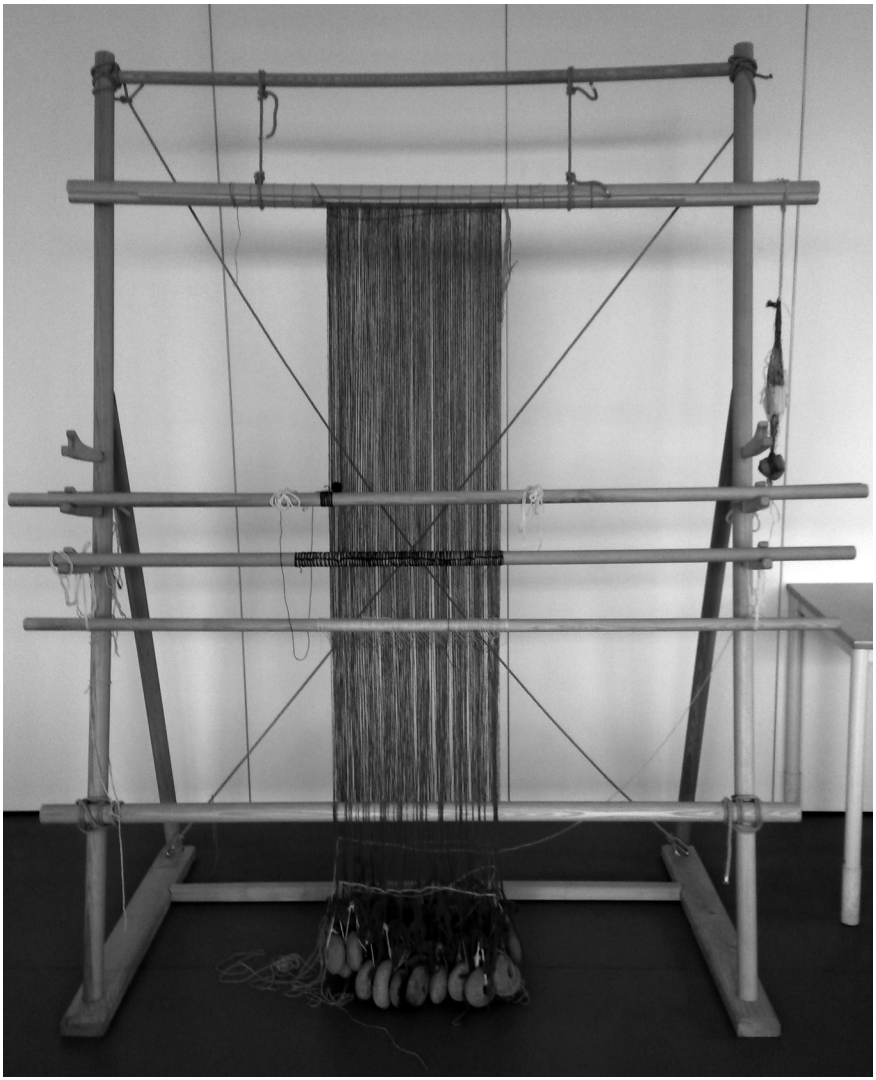
[11] Greg. M. *moral.* 8. 26.

[12] Potamius' emphasis on the tightness of the weave here makes an interesting contrast to later Christian writers' metaphorical references to spider webs as flimsy and unstable as the work of the spider lacks the foundation of Christian faith, cf. Ambr. *Psalm*. 38. 35 [CSEL 64 p. 210] and *Exam*. 1. 2. 7; 4. 4. 18. Also in Hier. *in Os*. 2. 8 [Vahlen p. 84f].



Experimental reconstruction of a warp-weighted loom with a twill weave set-up in progress. From the Centre of Textile Research in Copenhagen. Photo: the author.

Thus, Potamius' focus is first on the appearance of the loom and warp as one integral unit. In the immediately following section in *De Substantia* 9, he enlarges the metaphor of the loom to encompass the minute details of

the growing weave itself. Conti suggests that difficult-to-define technical terms make the passage obscure to the reader. The passage does indeed contain terms that occur in technical usage elsewhere (*subtegmen*, "weft--thread"; *pannicula,* "warp" or "thread"; *stamen*, "warp" or "thread", and later on *licia,* "threads" or "heddle leashes").[13] We have no parallels for the seemingly technical phrase *staminis fibula* – on which further below. However, the main difficulty is not the problem posed by use of Latin multi-purpose technical terminology but rather that Potamius strives both to achieve pleasing stylistic effects and to provide an extreme level of detail in the description of an already complex, three-dimensional technological process: the interlinking of individual threads in the growing weave. We can only resolve the meaning of the passage by adopting the perspective of a weaver observing the details of the weave as it arises in front of them.

A few words on the working of the two-beam loom are necessary at this point: this loom requires the warp to be set up so that it can be mechanically parted. From the perspective of the weaver standing or sitting in front of the loom, the warp for the most basic weave, the tabby, will appear as having a "front" and a "back" half.[14] The weaver moves one or the other half of the warp backwards or forwards by pushing or pulling a heddle rod. The heddle rod is connected to the warp threads. This is done by running loops from the heddle rod through the "front" half of the warp and around individual warp threads in the "back" half of the warp. These heddle leashes are fastened on the heddle rod that can be gripped by the weaver. As many heddle leash loops are needed as there are threads in the "back half" of the warp.

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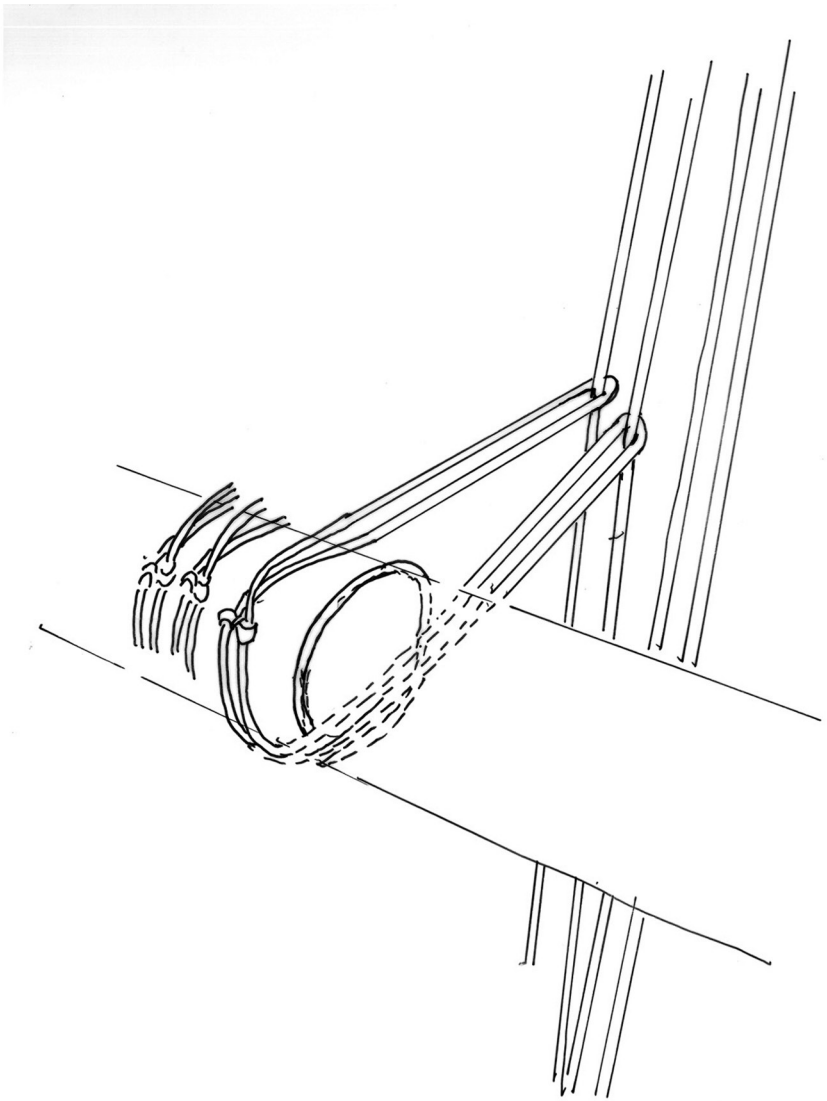
[13] For specific technical usage of these terms, cf. *subtegmen* (or *subtemen*) as "weft-thread", cf. esp. Ov. *Met*. 6. 56; Aus. *Mos*. 397; Claud. *Rapt*. 1. 259; *stamen* as "warp-thread", esp. Ov. *Met*. 6. 55; Sen. *Ep*. 90. 2; Sil. 2. 181; Claud. *Rapt*. 3. 155; *licia* as "heddle-leashes", Verg. *G*. 1. 285 and Tib. 1. 6. 79. *stamen* and *licia* are also used more broadly, cf. *ThLL* s.v. *licium*; *OLD* s.v. *stamen 3*.

[14] It is the result rather than the method of warping that is of interest here. Ciszuk & Hammarlund 2008: 124-27 discuss different methods of warping a two-beam loom.



Drawing illustrating the function of heddles and their connection to individual warp-threads. Drawing created for academic purposes for the author.

As the weaver pulls the heddle rod toward herself, she creates an opening between the two halves of warp ("the shed"), so that a new layer of

weft thread can be inserted. The weft thread is inserted first from one side, and, after the shed has been changed again, from the other. This means that in the finished weave, the weft thread passes over every other warp thread, and under every other one. The result is a three-dimensional intersection of threads. Using a new metaphor to describe Potamius', it is the traffic flow of threads in this intersection that Potamius describes.

One of the key features in the passage is Potamius' usage of pronominal adjectives (*unus, alter, alius, uter*). This gives an impression of rhetorical redundancy, but also parallels the repetitive nature of the weaver's work. Furthermore, it draws the reader's attention to the description of pairs of like items. Potamius describes first pairs of warp threads meeting and crossing above the weft thread, "locking" it in place, as the shed is changed, then the insertions of weft thread: first from one direction, then one from the other. Finally, he returns to the warp threads descending vertically and how they interlink without interrupting each other's path. My deliberately literal translation is given below with explanatory additions within square brackets:

> subtegminis[15] lineam transuersum latus exacuit staminis fibula, morsu quo tenetur adstringit. unus interuenit, alter intercipit. alius interfunditur, unus incurrit. utrumque panniculas decurrentes accipiunt. unus unum, dum per ambos curritur, adprehendit et refugit, alter alium, dum stringit, includit: ambo aeque redeunt, nec offendunt.

[15] Conti's edition has *sub tegminis*. Both *subtegminis* and *sub tegminis* are found in the *Mss*.

> The clasp of the warp[16] gives a point to[17] that part [of the warp] which has crossed the line of the weft; it ties [the newly inserted weft thread] down with a grip which holds it in place. One [weft] thread runs inbetween [the warp], another runs towards it. Yet another [weft] thread is drawn between [the two halves of the warp in the open shed], another runs into it [i.e. meets it being inserted from the opposite direction after the shed has been changed]. Both welcome the [warp-]threads running downwards. These catch and run away from each other, as the loom is run through both ways [i.e. through both of its shed settings]. One [thread] encloses another, as it tightens, both [parts of the warp] fall back evenly, and one does not hinder the other.[18]

The direction of the work of the weaver is indicated in the description of how weft threads running in either direction receive the warp-threads running from above (*utrumque panniculas decurrentes accipiunt*), implying that the supply of warp comes from the top of the loom.[19] This makes plain

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[16] There are no parallels for Potamius' use of *fibula* in a weaving context, although of course the word is commonly used to describe pins and clasps used with clothing, cf. *ThLL* s.v. *fibula* 1b. However, when the warp threads close around an inserted weft thread as a result of shed change, one might envision this as the locking of the clasp on a pin brooch. Potamius uses it metaphorically in *Epist. ad Athan*. p. 1417B. Ruggieri 1969: 146 and 151 suggests that *fibula staminis* should be taken to mean *totum stamen* ("all the warp") and explains the peculiarity of the expression with Potamius' desire to create a sense of unity across the text through recurring vocabulary. Ruggieri's estimation that this serves to strengthen Potamius' discussion of the unity of the Trinity is convincing and based on further parallels, although I believe that the image of interlocking threads, using a word drawn from the semantic field of clothing, does better justice to Potamius' seemingly careful distinction between warp and weft and the movement of individual threads than does the notion of *totum stamen.* Opt. Porph. *Carm.* 22. 7-8 also uses the notion of the weft being "locked in" by the warp, cf. […] *ponam ceu stamina normas, / quae verrant sese, quae vincula mitia curent.* ("[…] just as I set out the pattern and the warp, which ones gather together, which ones create soft chains.")

[17] Conti 1998: 98-99 suggests "setting in motion" (for which cf. *ThLL* s.v. *exacuo* 2) but it is feasible to take *exacuo* here as "give a point to", i.e. add to by one layer. My assumption is that Potamius has in mind the insertion of a weft-thread which is subsequently locked into place by the warp as the shed is changed. From a sideways perspective, it is possible to perceive this as adding a narrower "point" to the weave flattened-out by beating below.

[18] Potam. *de Subst.* 9.

[19] *decurro* is used only in one other weaving context of which I am aware, *Cod. Iust.* 11.9.4, which also places the weft to be beaten below the supply of the warp: *nulla stamina subtexantur tincta concylio, nec eiusdem infectionis arguto pectine solidanda fila*

that the loom described here is indeed a two-beam loom as the weave in a two-beam loom grows from the bottom of the loom and upwards; in a warp-weighted loom the weave grows from the top of the loom. It is reasonably easy to relate Potamius' description to the practical working of a loom, indeed a specific type of loom, highlighting some of its key features such as the importance of warp tension and direction of work.

3.1. Manipulating backgrounds for effect: intertexts

Potamius' description is not a slavish handbook account of weaving but one well suited to his rhetorical aims and the sustained metaphor of the unified workings of a loom for the unbreakable unity of the trinity. Conti suggests that Seneca's description of weaving in *Epist*. 90.2 has been particularly influential on the passage of Potamius' *de subst*. 9 discussed above: it is certainly a very close parallel in its step-by-step description of the interlinking of warp and weft. However, it has not been adopted without adjustment. Seneca's text features a warp-weighted loom[20], whereas Potamius in *De substantia* 9 draws on two-beam loom technology as it better serves his rhetorical emphasis on unity and reflects the wider spread of the latter type of loom.

In contrast to Seneca and other known descriptions of weaving in Latin literature, however, Potamius does not mention any implement used to insert the weft thread, used to tidy the opening of the shed or to pack the weft.[21]

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decurrant ("no warp may be inwoven with dyed purple, nor any threads of this same dye run down to be made dense with chattering pin-beater"). By contrast, several texts describing horizontal movement through the warp of the warp-weighted loom use the word *percurro* ("run through"), e.g. Verg. *G*. 1. 294; Ov. *Fast.* 3. 819. The later examples Auson. *Mos*. 397-398 and Claud. *Rapt.* 1. 225 may or may not refer to a warp-weighted loom. On *percurro* for the horizontal movement through the warp, cf. also Mynors 1969: 68; Horsfall 2000: 56-57; Zetzel 2001: 438 and *ThLL* s.v. *percurro* II B. Neither *percurro* nor *decurro* needs necessarily reveal the direction of movement but such a reading of *decurro* is warranted here.

[20] Cf. Sen. *Ep*. 90.2.20: *tela suspensis ponderibus rectum stamen extendat* ("the loom stretches out the vertical warp with hanging weights").

[21] A number of weaving descriptions in Latin literature mention of implements used, e.g. Lucr. 5. 1353; Verg. *Aen*. 7. 14; *Ciris* 179; the canonical description of Arachne and Minerva's contest in Ov. *Met*. 6. 56-58; Iuv. 9. 30; Symphos. 17; Sil. 14. 655; Var. *L*. 5. 113; Sen. *Ep*. 90. 20; Cassiod. Var. *hist*. 6. 11. 3. The exact use of instruments such as a *pecten* or a *radius* in the literary evidence varies from weft insertion to packing of the

Experimental archaeology and ethnographical evidence together make clear that these are a self-evident tools for work on a loom such as Potamius describes in *De substantia* 9 as well as on a warp-weighted loom.[22] Early pictorial evidence for the introduction of the two-beam loom provided by the friezes in the Forum Nervae bear this out; in a representation of the story also told by Ovid in *Metamorphoses* 6, Minerva is displayed hitting Arachne with an implement we might identify as a *radius*, a spool used to insert weft-thread.[23] Yet, such lose implements are ostensibly absent in Potamius' description. Intertextual influence from descriptions of weavers using pin-beaters, wool-combs, or spools nonetheless colours the vocabulary used in *de Substantia* 9. Potamius speaks of the "grip" or "bite" (*morsu*) of the joined warp holding the weft-thread in place: Ovid describes the *pectines* ("pin-beaters" or "wool-combs") of Minerva and Arachne as having teeth (Ov. *Met*. 6. 58).[24] In combination with the peculiar use of *exacuo* (normally "sharpen") in the same sentence, notions of gripping and biting otherwise associated with tidying or packing of the warp have been transposed to describe qualities and actions of the warp threads themselves. Shifting the focus from the interlinking of threads in the weave to the agency of the weaver using a pin-beater or a shuttle-like instrument would detract from the effectiveness of Potamius' metaphor for the unity of the Trinity. Thus, their use is omitted from his account of weaving, but the text phrased so as to acknowledge earlier literary descriptions of the art of weaving.[25]

3.2. Manipulating backgrounds for effect: technological detail

Similar manipulation of the textile-historical material provided is evident in Potamius' first section on weaving (*de Substantia* 5). We have

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weft. This is likely to reflect a multipurpose usage. Cf. Wild 1967: 154-55; Wild 2002: 11. Potamius' lack of mention of weaving implements in favour of an exclusive focus on the loom itself is paralleled in passages like Greg. M. *moral*. 8. 26 (cited above); Hier. *Ep*. 64. 10; 107. 10. 1; Verecund. *in cant*. 5. 5.

[22] Ciszuk & Hammarlund 2008: 124-27.

[23] Wild 1992: 13.

[24] The phrase is quoted in Sen. *Ep*. 90. 20. Cf. also Varro *ling*. 5. 113 and Claud. 20. 382. This corresponds well to archaeological evidence for teethed wool-combs, e.g. Gleba & Pasztokai-Szeöke 2013: 97-99. In a different context, cf. also Prud. *Perist*. 10. 931.

[25] Ruggieri shows that Potamius, despite his highly individual style, is well versed in classical authors both Greek and Roman, cf. Ruggieri 1969: 136.

already considered the passage on the inherent cross-shape of the weave (cited above). However, the more general chapter introduction (which stands immediately before the passage discussed earlier) is also shaped by Potamius' knowledge of textile-work and weaving and his careful selection of technical elements to use.

> de textrino primum, si uidetur, sumamus exordium, ut per globos dogmatis Trinitatis unitas possit ordiri, scilicet ut sub aequalitate pendentis librae, confecto tramitis sinu, iustitiae pensa ducamus.
>
> We shall take our beginning, if it pleases, from the weaver's work, so that the unity of the Trinity may be woven from the wool of dogma. We shall carry out, with the scales hanging balanced, and the loop of the warp completed, the task of righteousness.

The passage shows Potamius' preference for somewhat strained but multi-layered word games. Ruggieri explains this preference in terms of Potamius wishing to repeat individual words in different contexts in various parts of the *De Substantia* – even at the expense of sometimes peculiar phrasing – in order to enhance and underline his argument about the indivisible nature of the Trinity.[26] In order to achieve this aim, Potamius taps into the semantic field of spinning (*globus, pensum ducere*) to set up a parallel for later mentions of spinning wool in *de Substantia* 6 and 7 and, unsurprisingly, to connect to the Christian *topos* of the lamb of god. Spinning a thread serves as a metaphor for the telling – spinning – of a tale from the beginnings of Classical literature.[27] Phrases like *carmen ducere* ("tell a tale") often occur in programmatic statements at the opening of poetic works especially, likening the poet to the spinner slowly and carefully pulling out (*ducere*) the wool from the distaff or ball of prepared wool (*globus*) to be spun into thread.[28] Through such allusions to earlier literary *proemia*, Potamius requires his reader to engage with Latin literary tradition in a highly sophisticated manner, preparing the ground for such intertextual engagement as discussed in our previous section.

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[26] Ruggieri 1969: 145-46.

[27] Fanfani & Harlizius-Klück 2016: 74-95.

[28] Ovid, with whose descriptions of textile work Potamius certainly engages, famously uses this metaphor in the *proemium* of his epic the *Metamorphoses*, cf. Jouteur 2001: 71; Barchiesi & Rosati 2007: 252; Myers 1994: 79-80; Rosati 2002: 275f.

Potamius' selective manipulation of the semantic field of spinning and wool work is coupled with similarly careful use of Latin phrases connected to weaving and loom technology. The words *exordium* and *ordior* also occur in metapoetic usage, but relate to the beginning of a weave rather than spinning. Both terms are used to describe the process of setting up a weave and affixing warp-threads to the loom frame.[29] In and of itself, neither term gives away what type of loom is employed. However, other parts of Potamius' sentence points in the direction of the warp-weighted loom, so that Potamius draws on one type of loom for his metaphor in *de Substantia* 5, and on another, as we have seen, in *de Substantia* 9. On the warp-weighted loom, warp-threads are affixed to the loom frame by means of a starting border (from which the warp-threads emerge), which is sewn onto the cloth-beam of the loom frame before weights are added. The indication that Potamius in this sentence draws on technological features of the warp-weighted loom emerges from his clear reference to a pre-prepared warp (*confecto tramitis sinu,* "the completed bow of the warp"). Both the starting border itself, curving away from the cloth-beam through downwards pressure of the weight of the warp before it is firmly fixed, and, particularly, the warp-threads suspended from the cloth-beam and draped over the shed-bar are well described by *sinus*.

Furthermore, Potamius' insistence that the weave is inherently shaped like a cross (*tunica ipsa quae in habitu crucis orditur […] prius quam organa textrini et subfarcimenta telae contigerit*) also gains in punch through consideration of the fastening of a starting border to the cloth-beam on a warp-weighted loom. The starting-border, stretched out horizontally along the cloth-beam, extending a little on either side of the bundle of hanging warp, has some similarities with the iconographical representation of crucifixion. The process of crucifixion would have been well-known although crucifixion scenes are not yet part of typical Christian iconography in Potamius' period.[30] Potamius' allusion to Christ on the cross would be less effective if the two-beam loom were the only loom type thus brought to the reader's mind. As outlined above, that type of loom is either warped

[29] For *exordium* in metapoetic usage, e.g. *Rhet. Her.* 1. 3. 4; Cic. *Leg*. 2. 17; for *ordior*, e.g. Cic. *Ac*. 2. 73; Verg. *Aen*. 1. 325. Cf. also Heath 2011: 89-93. For technical usage, cf. *ThLL s.v. exordium* I.1 e.g. Non. P. 30. 22 *exordium est initium, unde et uestis ordiri dicitur cum instituitur detexenda* ("The exordium is the beginning, from which the cloth is said to be organised when the weaving is begun."); *ThLL* s.v. *ordior* I.2.b.

[30] Harley-McGowan 2011: 101-24.

from a starting border at the bottom or in a continuous loop.[31] The warping of the two-beam loom therefore provides a different visual impression, which does not lend itself to comparison with the fixing of a body to the beams of a cross in the way the warp-weighted loom does.

The technology of the warp-weighted loom may also be brought to mind by the repetition of words deriving from *pendo* (*pendentis*, *pensa*, and *pendere*) in the passage,[32] alluding to the freely hanging warp (*tela pendula* in Ov. *Ep*. 1. 10) or indeed the loom weights (*pondera* in Sen. *Ep*. 90. 2), although Potamius uses it to refer to the scales of justice, spinning and weaving respectively.[33] This, too, would be less powerful if the two-beam loom were the only loom type underlying Potamius' text. By alluding to two different looms in his two sections on weaving (*de subst*. 5 and 9 respectively), Potamius strives to make his metaphor as powerful as possible.

It is unlikely that Potamius drew on literary tradition alone for his understanding of the workings of a warp-weighted loom. Firstly, it is possible and indeed likely that the warp-weighted loom remained in use across the Roman world well into late Antiquity, despite the introduction (and more frequent iconographical representation) of the two-beam loom.[34] Secondly, the use of the warp-weighted loom prior to the potential spread of the two--beam loom is well evidenced in the area of Roman Lusitania both before

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[31] Ciszuk & Hammarlund 2008: 124.

[32] The repetition seems deliberate: Ruggieri suggests *pendo* is used in the sense of *suspendo* Conti 1998: 91.

[33] It is possible that Potamius alludes to the correspondence of fixing the warp to the cloth-beam and crucifixion later on in *de Subst*. 6: *quod et postmodum telae ad imaginem crucis cum organis suis suscipiunt, ut Dauid: 'cornua unicorniorum', quasi de uestitu domini, niualia agni uellera protensae trabes accipiunt.* ("The loom together with its different parts takes on this role serving the image of the cross, as David says 'the horns of the unicorn' – as if he were speaking of the Lord's garments – the extended beams of the loom take up the snow-white fleece of the lamb.") *telae* must be understood as "loom" here rather than "weave" or indeed "warp" in order for the reflexive *suis organis* to be readily understood. Conti also takes this as a reference to the loom frame and its beams, Conti 1998: 92-93.

[34] Wild 1992: warns against interpreting the comparatively limited amount of evidence for use of the warp-weighted loom in the Empire and late Antiquity as an indication that the two-beam loom was universally adopted. For the Iberian peninsula, one might also compare common finds of loom weights in burial contexts as late as in the 7th-8th C CE, cf. Alfaro, Gutierrez & Hierro 2014: 75.

the establishment of Roman provincial rule and into the Empire.[35] For the later part of this period, isolated loom weights have been found in 1st and 2nd C CE Lusitanian villa contexts.[36] Significantly, the warp-weighted loom may have had particular relevance in the area due to its emphasis on flax and linen production. Servius mentions that linen weavers even in his own period – roughly contemporary with Potamius – worked from a standing position, which is commensurate with the warp-weighted loom but would be inappropriate for the two-beam loom.[37] The Iberian peninsula is famous for linen production in the Roman period, although such production was far more prominent in the neighbouring provinces of Hispania.[38] Literary sources on linen weaving in Lusitania are less clear[39] but Strabo's observation that soldiers from this area wear linen armour suggests a plentiful supply,[40] which may well have continued into Potamius' period. The sophistication of cloth produced in Salacia as noted by Pliny the Elder also makes likely that craftspeople would both adopt new technologies such as the two-beam loom and retain older ones for use where most appropriate. This makes the continued use of the warp-weighted loom in areas well-known to Potamius still more likely. Significantly for our period, the find of a loom weight during the excavations of a late 4th C or early 5th C context in the forum of Aeminium also supports the assumption that the warp-weighted loom remained relevant in Lusitania well into the late Empire.[41]

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35 Alfaro 1997: 50 for iconographic evidence.

36 Teichner 2008: 21 and 111 from Monte da Nora and Cerro da Vila respectively. Excavations at Castelo da Lousa (a fort abandoned in the Augustan period) have also revealed significant finds of loom weights and spindle whorls, indicating domestic production of considerable size, cf. Vaz Pinto & Schmitt 2010: 329. Interestingly, Vaz Pinto and Schmitt also highlight the limited number of publications of loom weights from Lusitania as deriving from a lack of interest in typology (and perhaps indeed in textile technology) rather than from a lack of finds.

37 Serv. *A*. 7. 14. For the dating of Servius, cf. Murgia 2003: 45-69.

38 Plin. *Nat.* 19. 7-11, highlighting production in both Hispania citerior and in Gallaecia; for wool production in the area of Lusitania, cf. Plin. *Nat.* 8. 191.

39 Alfaro 2013: 182. Teichner 2008: 569 appears to refer to production and weaving of wool.

40 Str. 3. 3. 6.

41 The find context of the single weight, inscribed with the letters XIX, is identified as the late 4th or possible early 5th C CE, Costeira da Silva, Fernandez Fernandez & Carvalho 2015: 248. For late finds of loom weight in the wider context of the Iberian peninsula, cf. Alfaro, Gutierrez & Hierro 2014: 75, who reports a find of numerous loom weights in a Cantabrian late antique context.

Conclusions

The use of textile terminology is Potamius' *Epistula de Substantia* is highly complex and indicates an in-depth knowledge of textile technology both on the part of the author and on the part of his readership. Without consideration of the textile-historical background of Potamius' metaphors of looms and weaves, it is difficult to fully appreciate just how effectively he merges technical knowledge, linguistic flexibility, and intertextuality, to argue for the indissoluble unity of the trinity.

For the textile historian, Potamius' text is an excellent indication of the pervasiveness of textile work in the Roman world generally and in the Iberian peninsula in particular. It is noticeable that such use of knowledge of textile making is placed confidently in a context of rhetorical and literary sophistication: experience and understanding of this aspect of Roman material culture was clearly accessible to the ostensive audience of Potamius (women with hands-on experience of textile work as stated in *de Substantia* 4) as well as to the educated elite, at which Potamius' rhetorical ambition is aimed. While commercial production of textiles becomes more prominent from the 1st C CE onwards, it seems that all strata of society continued to be exposed even to the technicalities of spinning and weaving. This suggests that in trying to gain a full picture of the conditions and associations of textile work in the late Roman empire, we should be careful not to underestimate the continued domestic presence and importance of such craft.

It follows that the reader who wishes to utilise Potamius' text to throw light on Roman textile production, its technologies and its terminology, must allow for the vagaries of a highly stylised rhetorical text – and use them. Bearing in mind Potamius' aim to connect to earlier literary descriptions of weaving in canonical Roman authors but on his own terms, we may evaluate his use of terminology more accurately, bringing to the fore both the literary artifice and the technical expertise of Potamius.

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