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# Ancient Greek dyeing: a terminological approach<sup>1</sup>

Peder Flemestad

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## Introduction

The *Oxford English Dictionary* defines dyeing as: “to impregnate (any tissue or the like) with a colour, to fix a colour in the substance of, or to change the hue of by a colouring matter”.<sup>2</sup> In ancient Greek this operation is in general expressed by the verb βάπτειν, but the process of dyeing could be designated by a multitude of other terms. The following contribution provides an overview of the extensive ancient Greek terminology for the action of dyeing. The focus therefore lies primarily on the verbs designating the dyeing process itself, while wider dye terminology is only occasionally touched upon. Furthermore, the discussion does not include terms for preliminary or auxiliary processes such as e.g. the preparation of dyestuffs or mordanting.<sup>3</sup> The investigation is based on studies of ancient and modern lexica, and the terms are found throughout ancient Greek literature, both in Archaic, Classical, Hellenistic, and Imperial Greek texts, in a wide range of genres, including the lexicographers of the Second Sophistic, as

well as their successors in Byzantine lexicography. The lexicographical works of the Byzantine era must be included since they preserve valuable information on more ancient vocabulary, much of which is only attested through them. The present study makes no claim to be exhaustive, but may hopefully serve as a basis for more comprehensive future studies.

## Terminology<sup>4</sup>

### ἀνθίζειν

The verb ἀνθίζειν derives from ἄνθος, ‘flower’.<sup>5</sup> It is attested in several passages in connection to colouring, but in contexts not directly related to flowers or to dyeing: a passage in the *Electra* of Sophocles (5<sup>th</sup> century BC) speaks of a man with white hair,<sup>6</sup> in Herodotus (5<sup>th</sup> century BC) it is used of the colours of battlements,<sup>7</sup> and in a fragment of the comic poet Epicrates (4<sup>th</sup> century BC) the verb is used of the colour of roasted meat.<sup>8</sup> These diverse uses of the verb suggest that they are semantic extensions from an

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1. I thank Jerker Blomqvist, Marie-Louise Nosch, and the anonymous reviewer for their generous help and comments on an earlier version of the text; of course, any remaining errors are my own responsibility. Translations of literary texts are unless otherwise noted taken from the Loeb editions. Abbreviations to Greek authors follow those in the *LSJ*, for Latin ones the *OLD*. To avoid unnecessary repetition, the reader may, unless otherwise stated, refer to the definitions of the terms in the *LSJ*.
2. *OED* s.v.: ‘dye’.
3. See Bogensperger & Rösel-Mautendorfer 2020, this volume, for terms related to dyestuffs and mordants used in textiles attested in the Greek papyri of Egypt.
4. The terms follow in alphabetical order.
5. Beekes 2010, p. 104–105: tentatively from the Indo-European root \*h<sub>2</sub>end h<sub>2</sub>- ‘sprout’; cf. Chantraine 1999, p. 89–90.
6. *S. El.* 43: ὄδ’ ἠνθισμένον.
7. *Hdt.* 1.98: προμαχεῶνες ἠνθισμένοι φαρμάκοισι.

earlier sense of dyeing. Nevertheless, it is only explicitly attested in the sense of dyeing – with the prefix ἐξ- – in the *Suda* (c. AD 1000).<sup>9</sup> It is, however, attested together with βάπτειν in the *Historia Animalium* of Aristotle (4<sup>th</sup> century BC) where the description of the murex states that when the gland is extracted and squeezed, it dyes and imparts the lustre of its bloom to the hand.<sup>10</sup> The connotation of lustre is shared with the noun ἄνθος itself, equally used of both dyes and the sheen of colours,<sup>11</sup> as well as the adjective ἄνθως which was used of dress in the sense ‘bright-coloured’.<sup>12</sup> A precise interpretation of the verb is therefore often impossible; it and related words are regularly used in connection with colouration, but it is difficult to ascertain whether they refer to dyeing, or rather denote decorated garments, e.g. with embroidery, perhaps originally embroidered floral patterns.<sup>13</sup> Conversely, the word βαφή could also be used for the colour of flowers.<sup>14</sup>

### βάπτειν

The verb βάπτειν ‘to dip, immerse’ is clearly the default verb for ‘to dye’ in ancient Greek. It is attested

in all periods in this sense, excepting Mycenaean, and it lives on in Modern Greek βάφω. Its etymology is unclear, but has been explained as derived from \*gwh<sub>2</sub>b<sup>h</sup>-je- and connected with Proto-Germanic \*kwēbjan- ‘to suffocate, choke’.<sup>15</sup> The verb strictly speaking means ‘to dip, immerse’, and thence ‘to temper, dye, wash, soak’. It is thus not exclusively used of dyeing, and its first attestation is in the *Odyssey*, where a smith tempers iron in water, providing an early example of Greek cross-craft terminology.<sup>16</sup> The verb is widely attested in all periods, but its earliest attestation in connection to dyeing is in a fragment of the Epic Cycle (c. 7<sup>th</sup>-6<sup>th</sup> century BC) describing how Aphrodite prepares herself for the judgment of Paris and had clothed herself in garments that had been dyed in flowers of spring.<sup>17</sup> There are, moreover, compounds of βάπτειν with various prefixes and some variation in meaning:<sup>18</sup> ἐπιβάπτειν ‘to immerse; to cure, dye; to gild’; καταβάπτειν ‘to immerse; to dye, colour’; μεταβάπτειν ‘to change colour by dyeing’; the most notable one is παραβάπτειν ‘to dye at the same time and to obtain different colours’.<sup>19</sup>

8. *Epicr. fr.* 6: κρέα πυρὸς ἀκμαίς ἠνθισμένα; it is, unsurprisingly, also used of spices, e.g. Galen (2<sup>nd</sup> century AD), 19.81.

9. *Suid. s.v.*: ἐξανθίζω· τὸ βάπτω.

10. *Arist. HA* 547a: τὸ δὲ χρῶμα ἰδεῖν ὡςπερ ὑμῖν λευκός, ὃν ἀφαιροῦσιν· θλιβόμενος δὲ βάπτει καὶ ἀνθίζει τὴν χεῖρα. The interrelation between βάπτειν and ἄνθος is of course also patent in the fragment quoted below (n. 17), where the clothing of Aphrodite had been dyed in flowers of spring (ἔβαψαν ἐν ἄνθεσιν εἰαρινοῖσιν). The final lines of the fragment add an additional aspect of the dyes: they confer not only lustre and colour, but also the fragrance of the flowers: *Cypr. fr.* 5 (West), 7–8: Ἀφροδίτη ὄραις παντοίαις τεθνωμένα εἴματα ἔστο.

11. *Cf. Anecdota Graeca* (Bekker), 404, 24: ἄνθος· τὸ χρῶμα καὶ τὸ βάμμα τοῦ ἐρίου.

12. *Cf.* the sense of the corresponding Latin adjective *floridus* in e.g. *Plin. Nat.* 35, 30, xii: *Sunt autem colores austeri aut floridi. utrumque natura aut mixtura evenit*, ‘Some colours are sombre and some brilliant, the difference being due to the nature of the substances or to their mixture’.

13. The sense of embroidery is e.g. clear in Philostratus the Elder (2<sup>nd</sup>–3<sup>rd</sup> century AD), *Im.* 1.15.2. For embroidered floral patterns, cf. e.g. Plato (5<sup>th</sup>–4<sup>th</sup> century BC), *R.* 557c: ἱμάτιον ποικίλον πᾶσιν ἄνθεσι πεποικιλμένον. See Droß-Krüpe & Paetz gen. Schieck 2014 for a recent study of ancient embroidery.

14. *Lucian* (2<sup>nd</sup> century AD), *DMort.* 18.2.

15. See Beekes 2010, p. 200; Kroonen 2013, p. 315; cf. Chantraine 1999, p. 164.

16. *Hom. Od.* 9.392: ὡς δ’ ὅτ’ ἀνὴρ χαλκεὺς πέλεκυν μέγαν ἠὲ σκέπαρνον | εἰν ὕδατι ψυχρῷ βάπτῃ (...). *Cf.* e.g. βαφή in the sense of ‘dipping of red-hot iron in water’ in Sophocles, *Aj.* 651, but also ‘dye’ in Theophrastus (4<sup>th</sup>–3<sup>rd</sup> century BC), *HP* 4.6.5.

17. *Cypr. fr.* 5 (West), 1–2: εἴματα μὲν χροὶ ἔστο τά οἱ Χάριτες τε καὶ Ὀραι | ποίησαν καὶ ἔβαψαν ἐν ἄνθεσιν εἰαρινοῖσιν; cf. West 2013, p. 75.

18. The variant ἀναβάπτειν ‘to dip, dye’ is attested from the late Byzantine period onwards. Its only possible attestation in classical sources was an unnecessary variant reading in Theophrastus (*HP* 3.13.6); cf. Amigues 2003, p. 169, n. 13.

19. *Plutarch* (1<sup>st</sup>–2<sup>nd</sup> century AD): *Phoc.* 28.2–3: πρότερον μὲν οὖν ὀλίγοις ἔτεσι χρησὸν ἐξήνεγκαν αἱ Δωδωνίδες τῆ πόλει “τὰ ἀκρωτήρια τῆς Ἀρτέμιδος φυλάσσειν,” ὅπως ἄλλοι μὴ λάβωσι· τότε δὲ περὶ τὰς ἡμέρας ἐκείνας αἱ ταινίαι μὲν, αἷς περιελίττουσι τὰς μυστικὰς κοίτας, βαπτόμεναι θάψινον ἀντὶ φοινικοῦ χρῶμα καὶ νεκρῶδες ἀνήνεγκαν· ὃ δὲ μείζον ἦν, τὰ παραβαπτόμενα τῶν ἰδιωτικῶν πάντα τὸ προσήκον ἄνθος ἔσχε, “Indeed, a few years before this the Athenians had received an oracle from Dodona bidding them ‘guard the summits of Artemis,’ that strangers might not seize them; and now, during the days of the festival, when the fillets with which they entwine the mystic chests were dyed, instead of purple they showed a sallow and deathly colour, and, what was more significant still, all the articles for common use which were dyed along with the fillets took the natural hue.” This is reminiscent of the description of dyeing in Egypt in *Pliny* (1<sup>st</sup> century AD): *Nat.* 35, 150, xlii.

**γέλγει**

Another verb signifying to dye is γέλγει, whose etymology is unknown.<sup>20</sup> The Byzantine lexicographer Hesychius (c. 5<sup>th</sup>–6<sup>th</sup> century AD) glossed it as ‘dips, tinges, dyes’, and the subsequent entry informs us that γέλγη are petty wares, including dyes.<sup>21</sup> The noun γέλγη is not entirely uncommon and was explained by ancient lexicography as an Attic word corresponding to wider Hellenic ῥῶπος ‘petty wares’,<sup>22</sup> which, interestingly, could also refer to colouration.<sup>23</sup>

**δεύειν**

Ancient Greek also had δεύειν, ‘to make wet’,<sup>24</sup> which provided two verbs presumably connected to dyeing: the verbs ἐνδεύειν and δευσοποιεῖν. The etymology is unexplained, but a connection with δύνειν ‘to dive, enter’ as ‘to immerse’ has been suggested.<sup>25</sup> The earliest attestation of ἐνδεύειν, ‘to soak; to dye in’, is in Nicander (2<sup>nd</sup> century AD) who explains how one should soak a piece of textile in βάμμα, a ‘dip’, likely vinegar, and thus not used of dyeing.<sup>26</sup> Its clearest connection to dyeing is in Hesychius.<sup>27</sup> The verb δευσοποιεῖν is first attested in Origenes (2<sup>nd</sup>–3<sup>rd</sup> century AD) where it is used metaphorically of staining,<sup>28</sup> and Alciphron (2<sup>nd</sup>–3<sup>rd</sup> century AD) who writes that women “dye” their cheeks with different substances,<sup>29</sup> which once more implies that the distinction between immersion in the dye-bath and the simple application of colour is not rigid. The

same holds true of βαφή, which is also attested in the sense of make-up.<sup>30</sup> The metaphorical use of the verb in the sense of staining and colouring should be presumed to derive from an original sense of dyeing. This is clear not only from the testimony of the lexicographer Pollux of Naucratis (2<sup>nd</sup> century AD), who speaks of δευσοποιία ‘dyeing’,<sup>31</sup> but also the commonly attested adjective δευσοποιός, ‘dyeing, steeped in colour, fast’.<sup>32</sup> The later lexicographical tradition moreover glosses δευσοποιός with βαφεύς ‘dyer’ and according to Moeris this was an Attic term.<sup>33</sup>

**δολοῦν**

In our context the verb δολοῦν is curious from a semantic point of view. It derives from δόλος ‘bait, any trick or device for catching, trick’,<sup>34</sup> and its basic meaning is ‘to deceive, beguile, ensnare’. It is, however, also succinctly attested in Pollux in the sense of dyeing wool.<sup>35</sup> Following Hugo Blümner,<sup>36</sup> a likely explanation is found in Spartan moral views on dyeing and the artificial enhancement of personal appearance. In a passage from Athenaeus (c. AD 200) we are told that not only were those who make ointments and perfumes banned from Sparta,<sup>37</sup> but also those who dye wool, because they disguise and remove the whiteness of the wool.<sup>38</sup> The wool is therefore, so to say, deceived, or cheated, of its natural colour. This Lacedaemonian moral stance to dyes extended to the dyeing of

20. Beekes 2010, p. 265; cf. Chantraine 1999, p. 214. It is presumably not connected to γέλιγος ‘garlic’; see Kroonen 2012 for the etymology of γέλιγος.

21. Hsch. s.v.: γέλγει· βαπτίζει, χρωματίζει; γέλγη· ὁ ῥῶπος καὶ βάμματα. ἄτρακτοι. καὶ κτένες.

22. Moeris (2<sup>nd</sup> century AD, Γ 19): γέλγη καὶ γελγοπόλης Ἀττικοί, ῥῶπος καὶ ῥωποπόλης Ἑλληνες.

23. ῥῶπος is explained as μεῖγμα χρώματος in the scholion to Porphyrius (3<sup>rd</sup> century AD), *Abst.* 4.3.

24. Cf. e.g. the *Et. Gud.* s.v.: δεύω· τὸ βρέχω.

25. Beekes 2010, p. 320; cf. Chantraine 1999, p. 267.

26. Nic. *Alex.* 414: βάμματι δ’ ἐνδεύσαιο καὶ εὖ περὶ κόρσεα πλάσσοις.

27. Hsch. s.v.: ἐνδεύσαι· βάψαι.

28. Origenes, *Cels.* 3.65.

29. Alciphron. 2.8.3. The φῶκος was a lichen (*Rocella tinctoria*) used as a cosmetic; cf. the verb φοκοῦν ‘to be rouged’, which was in turn borrowed to Latin as *fūcō* ‘paint the face, to colour, paint, dye’.

30. Philostratus the Elder (2<sup>nd</sup>/3<sup>rd</sup> century AD), *Epist.* 22: χειλέων βαφαί.

31. Poll. 1.49.

32. E.g. Pl. *R.* 429e. Cf. Hsch. s.v.: δευσοποιόν· τὸ ἔμμονον καὶ μὴ ἐκπλυνόμενον βάμμα.

33. Moeris (Δ 12): δευσοποιόι Ἀττικοί, βαφεῖς κοινόν. Cf. Suid. s.v.: δευσοποιός· βαφεύς ‘dyer’.

34. Beekes 2010, p. 346; cf. Chantraine 1999, p. 292.

35. Poll. 7.170: δολοῦν τὰ ἔρια.

36. Blümner 1869, p. 81; cf. Blümner 1912, p. 227. A similar sentiment is found in Virgil (1<sup>st</sup> century BC), *G.* 2, 465–6: *alba neque Assyrio fucatur lana veneno, nec casia liquidi corrumpitur usus olivi*, ‘if their wool’s whiteness is not stained with Assyrian dyes or the service of their clear oil is not spoiled with cassia’.

37. Many dyestuffs were also used in the preparation of perfumes and ointments.

38. Ath. *Deipn.* 15.34 (686f): ὡς ἀφανίζοντας τὴν λευκότητα τῶν ἐρίων. Cf. Plut. *Apophth. Lac.* 227F–228E (= Lycurgus 15) and 228B (= 18–19), where dyeing is mentioned explicitly.

hair, which was also seen as deceptive and an expression of falsehood.<sup>39</sup> Spartan views of dyeing were nevertheless ambiguous,<sup>40</sup> since soldiers were apparently allowed the use of artificial “cosmetics”. The falsehood of dyeing epitomized by the Spartan phrase “treacherous garments and treacherous unguents” (δολερὰ μὲν τὰ εἴματα, δολερὰ δὲ τὰ χρίσματα)<sup>41</sup> may be countered by their perception of red as a manly colour, justified by the fact that it creates fear in the inexperienced and the notion that the colour is useful because it is identical to the one of blood and therefore disguises wounds from the opponent in battle.<sup>42</sup> This is of course equally deceitful, and so it seems that in Sparta all was fair in war, but not in love.

### ἔψειν

Another verb used of dyeing is ἔψειν ‘to boil, seethe’.<sup>43</sup> Strictly speaking, it refers to boiling, and while not attested in connection with textiles in literary sources, it is used of dyeing hair, and we should therefore presume a semantic extension from the dyeing process, since the concept of boiling does not lend itself easily to human hair, if not in wigs. Pollux, quoting an unidentified comedian, refers to it as a past expression for dyeing, implying it was no longer used in his time,<sup>44</sup> while Hesychius and Photius (9<sup>th</sup> century AD) more tersely simply gloss it with βάπτειν.<sup>45</sup> It is also attested in papyri, but it is there understood to refer to the boiling of linen.<sup>46</sup> The verb may be attested as early as Mycenaean Greek in connection with wool or textiles,<sup>47</sup> but this interpretation remains problematic, and

*e-we-pe-se-so-me-na* has also been argued to derive from ἔπειν, ‘to take care of (i.e. cloth to be finished)’, or ὑφαίνειν ‘to weave’.<sup>48</sup>

### μηλοῦν

A further verb is μηλοῦν ‘to probe’, a denominative of μήλη ‘(chirurgical) probe’.<sup>49</sup> It is also used in the sense ‘to dye’, and has the notable variant καταμηλοῦν: ‘to dye; to plunge wool in the dye bath with a ladle’.<sup>50</sup> Photius adds that καταμηλοῦν refers to when the stirred wool is pressed in the dye bath.<sup>51</sup>

### μιαίνειν

The verb μιαίνειν is generally used with the meaning ‘to stain, spoil, defile’. However, it is understood to be a technical term for colouring or dyeing in the *Iliad*,<sup>52</sup> where it is used for what is clearly a prestige object, and not defiled.<sup>53</sup> The stem may also be attested for dyed wool fabrics in the Mycenaean adjective *mi-ja-ro* corresponding to alphabetic Greek μιάρως in the sense ‘blood-red’ or ‘dyed’.<sup>54</sup>

### μολύνειν

In the same vein, there is the verb μολύνειν: ‘to soil, to stain, to defile’.<sup>55</sup> It is, however, also attested in the sense of colouring cloth in the *Septuagint* and in the *Jewish Antiquities* of Josephus (1<sup>st</sup> century AD). The interpretation is more uncertain in the first two instances, which relate the deceit of the brothers of Joseph who in their attempt to convince their father of his death took his shirt and soaked it

39. Aelian (1<sup>st</sup>–2<sup>nd</sup> century AD), *VH* 7.20.

40. This is noteworthy, since according to Pliny the best European purple came from the district of Sparta (Plin. *Nat.* 35, 45, xxvi). A Spartan dyer (ῥογυός) is attested in an inscription from the 1<sup>st</sup> century BC; cf. below under the verb ῥέζειν.

41. Cf. Clem. Al. (1<sup>st</sup>–2<sup>nd</sup> century AD), *Strom.* 1.10.48.5.

42. Plut. *Mor.* 238F (= *Inst. Lac.* 24).

43. Beekes 2010, p. 492; cf. Chantraine 1999, p. 394.

44. Poll. 2.35: ἐψήσασθαι τὴν κόμην τὸ καταχρῶσαι ἔλεγον.

45. Hsch. s.v.: ἔψειν· τὸ τὰς τρίχας βάπτειν; Phot. s.v.: ἔψειν· βάπτειν τὰς τρίχας.”

46. *P. Tebt.* III, 1.703, 99–104.

47. MY Oe 127: *pa-we-a<sub>2</sub>*, *e-we-pe-se-so-me-na*, LANA 20.

48. See Del Frio *et al.* 2010, p. 368 (cf. p. 363), for a lucid discussion and overview of interpretations.

49. Beekes 2010, p. 943; cf. Chantraine 1999, p. 694.

50. Poll. 7.169: μηλοῦν (τὰ ἔρια), καὶ καταμηλοῦν τὸ τῷ κυκλήθρῳ καταδύειν. Cf. Hsch. s.v.: μεμήλωνται· βεβαμμένοι εἰσίν.

51. Phot. s.v.: καταμηλῶν· μηλῶσαι καλοῦσιν οἱ ἱατροὶ τὸ μήλην καθεῖναι· πού· (...) λέγεται δὲ καταμηλοῦν καὶ τὸ βάπτειν ἔρια ὅτ’ ἀνπιέζηται κινούμενα.

52. Beekes 2010, p. 950–1; Chantraine 1999, p. 700–701.

53. Hom. *Il.* 141–146.

54. KN Ln 1568. See *DMIC* I, p. 451, for references to various interpretations. Cf. Del Frio *et al.* 2010, p. 364–365.

55. According to Beekes (2010, p. 965), it is a denominative verb from an unattested base form, giving the tentative root (IE?) \**mel(h<sub>2</sub>)-* ‘dirt’, cf. Sanskrit *māla-* ‘dirt, defilement’; see also Chantraine 1999, p. 710–711.

in goat's blood;<sup>56</sup> the same event is described by Josephus, who uses the same verb.<sup>57</sup> However, in the next book of the same work, Josephus uses the verb μολύνειν again, in a clear context of dyeing, and the meaning cannot be one of defilement, since we are informed that these dyed products were among the materials Moses used to build the tabernacle.<sup>58</sup> An original sense of colouring would conform to its placement in a postulated group of colour terms in various Indo-European languages.<sup>59</sup>

### ῥέζειν

Yet another verb for 'to dye' is ῥέζειν. It is attested as such in the comic poet Epicharmus (5<sup>th</sup> century BC),<sup>60</sup> and Hesychius informs us that dyestuffs could be designated by ῥέγματα<sup>61</sup>, while the *Etymologicum Magnum* (12<sup>th</sup> century AD) confirms the meaning 'to dye'.<sup>62</sup> The problem is that modern dictionaries posit two verbs: "ῥέζω 1" and "ῥέζω 2", where the first is taken to mean 'to do, make' and the

second 'to dye'. The first verb is referred to the root \**uerǵ-* 'work' and the second to \**sreg-* 'paint'.<sup>63</sup> The latter is due to the perceived Indic parallels to ῥέζειν.<sup>64</sup> The match between Old Indic and Greek would seem to indicate at least late Proto-Indo-European dialect status, but the reconstruction with absolute initial \**r-* is highly unusual and problematic.<sup>65</sup> Peter Barber states that "it seems pretty unlikely that this represents a specialization of the verb ῥέζω 'do', since within Greek we may compare ῥέγος (Anacr.), ῥῆγος 'blanket, carpet' (Hom.),"<sup>66</sup> but this is complicated by the fact that it may very well originally have designated a dyed carpet or blanket.<sup>67</sup> The problem also deserves attention from a semantic point of view: in order to *make* a colour through dyeing one must *put* the wool or cloth in the dye bath. The specialisation of the verb from the meaning 'to make (a colour)' is thus unproblematic and has parallels in Latin terms such as *inficere* 'to dye'<sup>68</sup> and *sufficere* (e.g. *suffectus* 'dyed'). The root of the Latin terms is of course

56. LXX, Ge. 37, 31: λαβόντες δὲ τὸν χιτῶνα τοῦ Ἰωσηφ ἔσφαξαν ἔριφον αἰγῶν καὶ ἐμόλυναν τὸν χιτῶνα τῷ αἵματι. The *Vulgata* uses *tingo*: *Tulerunt autem tunicam eius et in sanguinem hedi quem occiderant tinxerunt.*

57. J. AJ, 2.3.4: ἔδοξεν αὐτοῖς διασπαράξασιν αἷματι τράγου μολῦναι καὶ τῷ πατρὶ δεῖξαι φέροντας, ὡς ἂν ὑπὸ θηρίων αὐτῷ φανεῖν διεφθαρμένος.

58. J. AJ, 3. 102–3 (6.1): Οἱ δὲ χαίροντες οἷς τε ἐώρων καὶ οἷς ἤκουον τοῦ στρατηγοῦ τῆς κατὰ δύναμιν αὐτῶν σπουδῆς οὐκ ἀπελείποντο, ἀλλ' εἰσέφερον ἄργυρόν τε καὶ χρυσὸν καὶ χαλκὸν ξύλα τε τῆς καλλίστης ὕλης καὶ μηδὲν ὑπὸ τῆς σήψεως παθεῖν δυνάμενα, αἰγίους τε τρίχας καὶ δορὰς προβάτων τὰς μὲν ὑακίνθῳ βεβαμμένας τὰς δὲ φοίνικι: αἱ δὲ πορφύρας ἄνθος, ἔτεροι δὲ λευκὴν παρεῖχον τὴν χροάν: ἔρια τε τοῖς προειρημένοις ἄνθεσι μεμολυσμένα καὶ λίνου βύσσον λίθους τε τούτοις ἐνδεδεμένους, οὓς χρυσίῳ καθειργνύοντες ἄνθρωποι κόσμῳ χρῶνται πολυτελεῖ, θυμιαμάτων τε πλῆθος συνέφερον: ἐκ γὰρ τοιαύτης ὕλης κατεσκεύασε τὴν σκηνήν, "And they, rejoicing alike at what they had seen and at what they had heard from their general, failed not to show all the zeal of which they were capable. They brought their silver and gold and bronze, timber of the finest quality liable to no injury from rot, goats' hair and sheepskins, some dyed blue, others crimson, some displaying the sheen of purple, others of a pure white hue. They brought moreover wool dyed with the self-same colours and fine linen cloth, with precious stones worked into the fabrics, such as men set in gold and use as ornaments of costly price, along with a mass of spices. For of such materials did Moses construct the tabernacle."

59. Cf. Chantraine 1999, p. 711: "Tous ces mots ont été insérés [...] dans une famille (?) contenant des adjectifs de couleur comme grec μέλας, μίλτος, lat. *mulleus* 'rougeâtre', lit. *melsvas* 'bleuâtre', etc."

60. Epich. fr. 107: ἀλλὰ καὶ ῥέζει τι χρῶμα. Note that this fragment is attested (s.v.) in the *Etymologicum Gudianum* (11<sup>th</sup> century AD).

61. Hsch. s.v.: ῥέγματα: τὰ βάμματα.

62. *EM* s.v.: ῥῆγος: τὸ πορφυροῦν περιβόλαιον· ῥέζει γὰρ τὸ βάψαι. The *EM* also features further fragments with attestations of words from the same root which concern dyeing: Anacreon (6<sup>th</sup> century BC), fr. 102: ἀλπόρφυρον ῥέγος; Ibycus (6<sup>th</sup> century BC), fr. 10b: ποικίλα ῥέγματα. There are also several terms for 'dyer', not only ῥεγέυς, but also a Laconian term for 'dyer': ῥογεύς (*IG* V,1, 209, 27: Δάμπρος Ἀγαθοκλέος ῥογεύς); cf. also *Et. Gud.*: καὶ ῥηγεῖς ἔλεγον τοὺς βαφεῖς οἱ παλαιοί. A gloss in Hesychius moreover clearly confirms the semantic extension to embroidery (s.v.): χρυσοραγέες· χρυσοβαφέες ('gold-embroidered').

63. Beekes 2010, p. 1279; Chantraine 1999, p. 969.

64. *I.a.* Sanskrit *rājyati* 'to colour oneself, get red, get excited'; *raktá-* 'coloured, red', *rājaka-* (m.) 'launderer, dyer'; *rāga-* (m.) 'pigment, dyeing'. Cf. Beekes 2010, p. 1279; see further Mayrhofer 1996, p. 424–425.

65. Adams & Barber 1997, p. 572–573. See Barber 2013, p. 356–357, for problems with this reconstruction and the Indo-Iranian evidence. Interestingly, Albanian *regj* 'to tan' has been explained as related to ῥέζω 1 and 2 by respectively Mann (1950, p. 382–383) and Çabej (1986, p. 73–74), cf. Orel 1998, p. 367. See below for the pertinence of tanning.

66. Barber 2013, p. 356. For the lack of a satisfactory explanation of the long vowel in ῥῆγος, one could compare γῆρας 'gift of honour'; originally 'old age' and γέρας 'old age', both from \**ǵerh<sub>2</sub>-*; cf. Beekes 2010, p. 271; p. 267–268.

67. Cf. the *Et. Orion.*: ῥῆγος: τὸ βαπτὸν στρώμα.

68. Cf. also the nouns *infectores* 'dyers', *infectus* (-ūs): 'the action of dyeing'; Plin. *Nat.* 8.193: *de reliquarum (sc. lanarum) infectu suis locis dicemus.*

\**fak-* (i.e. giving *facere* ‘to do, make’) and it is of interest that the Latin verb forms derive from PIE \**d<sup>h</sup>eh<sub>1</sub>-* ‘to put (away), lay (down), fix, make, create’, with cognate verb forms in i.a. Greek, which mean ‘to put, place’.<sup>69</sup> Further examples may be found in the related domain of tanning, which also consists in placing and submerging the material to be treated in a chemical bath. The same root is found in terms for tanning in Latin,<sup>70</sup> and, moreover, Proto-Germanic \**garwjan-* ‘to prepare, make ready’ provided a number of words in Germanic languages for not only ‘to do, to prepare’, but also ‘to tan’;<sup>71</sup> furthermore, also \**taujan-* ‘to do, make’, later acquired the meaning ‘to tan’ and ‘to make, prepare leather’.<sup>72</sup>

### τέγγειν

A further verb τέγγειν, from the root \**teng-* ‘wet, moisten’,<sup>73</sup> is first attested in an exhortation to drink in Alcaeus (born c. 625-620 BC), although the idiom does not lend itself easily to English.<sup>74</sup> However, the verb is also used in other authors, and in his fourth Olympic ode Pindar (5<sup>th</sup> century BC) writes, as it is usually understood, that he will not “stain” (τέγξω) his speech by lying.<sup>75</sup> If this widely accepted interpretation of τέγξω is correct, we here have a dyeing metaphor, and we must assume a semantic shift from ‘to wet’ > ‘to dye’ and thence to the moral connotation of ‘to stain’, thereby implying that the verb’s sense ‘to dye’ must predate Pindar. However, a scholiast to the Pindaric passage also suggests a different interpretation, that the verb could mean ‘to soften’, and thereby ‘to make weak’, since wetness imparts weakness.<sup>76</sup> The sense of the verb would then be that Pindar will not make his account

weak through lying, equally plausible, and unproblematic. The verb τέγγειν does not, as far as I have been able to assess, appear elsewhere in the literature in the sense of dyeing. A possible exception is in Aeschylus (525-456 BC), who in connection with the death of a Persian commander writes that when he died he: πυρρσὴν ζαπληθὴ δάσκιον γενειάδα | ἔτεγγ’ ἀμείβων χρώτα πορφυρέα βαφῆ, translated in the Loeb edition by “dye his red thick and bushy beard, changing its colour in a purple bath (i.e. blood)”.<sup>77</sup> However, the translation ‘to dye’, while it does lend itself easily to us, is not strictly speaking necessary: the verb could here merely mean ‘to wet, moisten’. Of other Indo-European cognates, the Germanic inherited terms exclusively preserve the sense ‘to wet’: Old High German *thunkōn*, *dunkōn* ‘to immerse’, Swiss German *tink* ‘wet’, Modern High German *Tunke* ‘sauce’; only Latin *tingere* ‘to wet, imbue’ also has the meaning ‘to dye’.<sup>78</sup>

### φαρμάσσειν

The verb φαρμάσσειν: ‘to treat with φάρμακα, to heal, poison, enchant’, but also ‘to dye’, derives from φάρμακον ‘healing or harmful medicine, healing or poisonous herb, drug, poisonous potion, magic (potion), dye, raw material for physical or chemical processing’.<sup>79</sup> Both Schwyzer,<sup>80</sup> Chantraine,<sup>81</sup> and Beekes<sup>82</sup> advocate a non-Greek origin of the root, although Chantraine later allowed for a possible Indo-European interpretation, but concluded by stating that “En définitive, la question de l’origine de φάρμακον est insoluble en l’état présent de nos connaissances”.<sup>83</sup> The root is generally presumed to be attested also in Mycenaean Greek, but in an unclear context;<sup>84</sup> of course, materials

69. Beekes 2010, p. 1482-1483; de Vaan 2008, p. 198-199; Chantraine 1999, p. 1117.

70. Cf. e.g. Plin. *Nat.* 24.56.94: *rubiam, qua tinguntur lanae pellesque perficiuntur.*

71. Notably German *gerben* ‘to tan, to prepare’, ‘to finish, make’; see Kroonen 2013, p. 170; Kluge & Seebold 2011, p. 350: “Im Verlauf der mittelhochdeutschen Zeit wird das Verb eingeengt auf ‘Leder fertigmachen, gerben’”.

72. Cf. Middle Low German ‘to tan’; Middle Dutch ‘to make, prepare (especially leather)’; Kroonen 2013, p. 511.

73. Beekes 2010, p. 1457; cf. Chantraine 1999, p. 1098.

74. Alc. 347a: *τέγγε πλεύμονας οἴνωι.*

75. Pi. O. 4.17: *οὐ ψεύδει τέγξω λόγον.*

76. *Schol.* 28d: (*οὐ ψεύδει τέγξω*) *οὐ ποιήσω τὸν λόγον ἀσθενέστερον, ἀπὸ μεταφορᾶς τῶν βρεχομένων· ταῦτα γὰρ ἀσθενέστερα γίνεται.*

77. A. *Pers.* 316-17.

78. Beekes 2010, p. 1457; cf. de Vaan 2008, p. 620.

79. Beekes 2010, p. 1554.

80. Schwyzer 1968, p. 497: “fremd”.

81. Chantraine 1933, p. 384: “φάρμακον ‘breuvage magique’ et φαρμακός ‘magicien’ (...) est un terme religieux probablement emprunté”.

82. Beekes 2010, p. 1554; cf. Beekes 2014, p. 65-66.

83. Chantraine 1999, p. 1179.

84. PY Un 1314.1: *pa-ma-ko*, cf. *DMIC* II, p. 77: “Se admite en general la interpr. φάρμακον ‘droga medicinal’, pero el contexto es sumamente ambiguo”.

for dyeing are often unclear in ancient sources, since their use extends to food, medicine, cosmetics and perfumes, as well as cult, ritual and magic. The verb is, however, securely attested in the sense of dyeing: Pollux states that it is also used in the sense ‘to dye wool’,<sup>85</sup> and that the term *φαρμακῶνες*, ‘dye-houses’, was found in Sophocles.<sup>86</sup> Furthermore, according to Hesychius dyestuffs could also be termed *φάρμακα*.<sup>87</sup>

### Verbs related to *χρῶμα*

The basic ancient Greek word for ‘colour’ is *χρῶμα*, connected to *χρῶα* ‘surface of the body, skin, skin-colour, colour’.<sup>88</sup> Multiple candidates for dyeing verbs derive from the root; notably *χρῶζειν* ‘to colour, dye, stain’,<sup>89</sup> and *χρῶννύναι*, as well as *καταχρῶννύναι*, used for the dyeing of hair and textiles.<sup>90</sup> The root may be attested already in Mycenaean in the so-called *ko-ro-to* tablets recording wool.<sup>91</sup> The adjective *ko-ro-to* would then refer to wool dyed in a dye bath, as opposed to another Mycenaean term, *ki-ri-ta*, which would designate the simple application of colour to cloth.<sup>92</sup>

### Dyeing individual colours

There is also a range of verbs for dyeing specific colours. These are unsurprisingly mostly denominative verbs and there is a clear terminological distinction between the material used for dyeing and the resulting colour itself. The ones characterised by the material are *ἀληθίζειν*, ‘to dye with true purple’ (cf. the adjective *ἀληθινοπόρφυρος* ‘of true

purple’);<sup>93</sup> *ἐρυθροδανοῦν*, ‘to dye red’ (i.e. with *ἐρυθρόδανον*, ‘madder’);<sup>94</sup> *καλχαίνειν*, ‘to dye purple’ (with *κάλχη* ‘murex’), *κογχίζειν*, ‘to dye purple’ (*κόγχη* ‘mussel’, i.e. *murex*); as well as *πορφυρευθῆναι*, ‘to be dyed with purple’. The second group is terminologically characterised by the colour obtained through the dyeing process: *γλαυκοῦν*, ‘to dye blue-grey’; *ἐρυθθαίνειν*, ‘to dye red’; *ἐρυθραίνειν*, ‘to make red, paint or dye with red’; *καταφοινίσσειν*, ‘to dye red’; *ξανθοῦν*, ‘to dye yellow’; *πορφύρειν*, ‘to make purple, dye red’. The latter verbs highlight the problem of whether the verb derives from the colour purple itself, or from the murex used to obtain it. There are moreover numerous other words connected to dyeing specific colours, e.g. *ὑακινθινοβαφής* ‘dyed with hyacinth’ or *κροκόβαπτος* ‘saffron-dyed’.<sup>95</sup>

### Concluding observations

The large number of synonyms or near-doublings of verbs for dyeing in ancient Greek conforms to the statement of Elizabeth Barber that this phenomenon is the “most striking and productive aspect of the Greek textile vocabulary”.<sup>96</sup> This is further confirmed by the impressive number of generic terms for colourants in ancient Greek: *χρώματα*: ‘colours, dyes’, unexplained etymology; *ἄνθη* ‘flowers, dyes’, presumably from the IE root *\*h<sub>2</sub>end* <sup>h-</sup> ‘sprout’; *βάμματα* ‘dyes’, from *βάπτειν* ‘to immerse (in order to dye)’, disputed etymology; *φάρμακα*, presumably of non-Greek origin; *ρέγματα*, from *ρέζειν* ‘to dye’, problematic etymology; *γέλη*, ‘dyes’, no etymology. The fact that their etymologies are uncertain and problematic is probably due to the fact

85. Poll. 7.169: *λέγεται καὶ φαρμάττειν τὰ ἔρια*. Cf. Eust. (12<sup>th</sup> century AD), *Comm. ad Hom. Il.* 4,648: *ἐπεὶ καὶ φαρμακῶνες τὰ βαφεῖα ἐκαλοῦντο, καὶ φαρμάσσειν τὸ βάπτειν ἐλέγετο παρὰ τοῖς παλαιοῖς*.

86. S. fr. 1109 (Radt): *φαρμακῶνες*, ‘dye-houses’ (= Poll. 7.169).

87. Hsch. s.v.: *φαρμακῶνες· τὰ βαφεῖα, διὰ τὸ τὰ βάμματα φάρμακα καλεῖσθαι*.

88. Beekes 2010, p. 1650–1651; Chantraine 1999, p. 1279. The etymology is unexplained.

89. E.g. Alexis (4<sup>th</sup> century BC) fr. 141.9: *τὸ καλὸν δὲ χρῶμα δευσοποιῶ χρῶζομεν*. Cf. also *χροάζω* ‘to colour’; *χρωματίζω* ‘to colour, tinge, dye’; *χρωτίζω* ‘to colour, dye’.

90. Poll. 7.169: *χρῶννός, καταχρῶννός*, ‘dyed’; Poll. 2.35: *καταχρῶσαι τὴν κόμην*, ‘to dye the hair’.

91. See Nosch 2007, p. 54–55.

92. Cf. Del Frego *et al.* 2010, p. 368: “E. Luján has argued that the word *ki-ri-ta/k<sup>h</sup>rista*/(cf. *χρίω*, “to rub”, “to anoint”) attested on KN Ld 785.1, may have designated a technical process in which the colour was applied onto the cloth, as opposed to *ko-ro-to/khrōston*/(cf. *χρῶζω*, “to dye”) (KN Od 485, 486, 487, MY Oe 106), which would have implied the immersion of wool/cloth into a dye bath. However, he also indicates that it cannot be entirely excluded that the difference might be explained by a personal preference of the scribe, thus not necessarily corresponding to a technical difference” (referring to Luján 1996–1997, p. 351).

93. See Bogensperger 2017, p. 237–239 and Martelli 2014, p. 121–126, for discussions of true and false purple.

94. Cf. also Suid. s.v.: *ἠρυθροδανωμένον· ἐρυθρῶ βάμματι βεβαμμένον*.

95. Cf. the *κρόκου βαφάς* in Aesch. *Ag.* 239; the precise colours designated by the many ancient Greek colour words are notoriously problematic and difficult to identify; see e.g. Edgeworth 1988 for a thought-provoking discussion of the ‘saffron’-coloured terms in Aeschylus.

96. Barber 1991, p. 276.

that dyestuffs were often imported items of trade, whose terminology is likely to provide loanwords.<sup>97</sup>

The terminological characteristics are also interesting from a practical perspective.<sup>98</sup> None of the words unfortunately seem to distinguish terminologically between substantive and adjective dyeing, but several terms derive from specific stages in the dyeing process. The immersion of the cloth or fibres in the dye bath could be denoted by βάπτειν, and presumably also ἐνδεύειν, and δευσοποιεῖν. The verb ἔψειν refers to the boiling of the fibres in the dyestuffs, while μηλοῦν and καταμηλοῦν seem to originally have referred to the submersion and plunging of wool in the dye-bath with a ladle. Only one term – παραβάπτειν ‘to dye at the same time and obtain different colours’ – suggests the use of mordanting, but its rarity and context suggests that it should not be understood as a technical term. Additionally, a large group of terms is built on the generic root for the material of the dyestuff itself: φάρμακα, ἄνθη, and γέλη. The verb ἀληθίζειν, attested in Egypt where there was a plethora of substitutes for genuine purple, obliquely refers to dyeing with ‘true’ purple: the murex dye (ἀληθινοπόρφυρος); it could also be designated by πορφυρευθῆναι, καλχαίνειν, and κογχίζειν (all related to murex terms). There is furthermore the verb ἐρυθροδανοῦν which was used of dyeing with madder (ἐρυθρόδανον). Finally, and as is to be expected, many verbs simply refer to the colours obtained through the process of dyeing: γλαυκοῦν; ἐρυθραίνειν; ξανθοῦν; in addition to καταφοινίσσειν and πορφύρειν, although these may equally refer to the dyestuff.

From a semantic point of view, it is interesting that some terms for dyeing are heavily marked by ethical connotations and connected to the moral sphere. As in English, as well as other languages, defilement is connected to staining and thus also to dyeing: μυαίνειν seems to have evolved semantically from ‘to dye’ > ‘to stain’, while the meaning of μολύνειν conversely may have been extended from ‘to stain’ > ‘to dye’.<sup>99</sup> In addition, dyeing may also be expressed pejoratively by a verb originally meaning ‘to disguise, deceive, mask’ because it removes the inherent colour of wool (δολοῦν), but this expression seems limited to a peculiar Spartan context and ethos. A further semantic feature shared by several dye terms concerns their use to designate decoration, especially embroidery.<sup>100</sup>

Some terms also exhibit Ancient Greek dialectal differentiation: δευσοποιός is stated to have been an Attic term corresponding to common Greek βαφεύς ‘dye’, while the noun γέλη was an Attic term corresponding to Hellenic ῥῶπος. Moreover, the problematic verb ῥέζειν has a number of variants in various dialects (ῥεγ-, ῥαγ-, ῥηγ-, ῥογ-) which compound the difficulties of its etymological interpretation.

Ancient Greek thus had a rich terminology for dyeing and the terms are important not only *per se*, but also from a technical perspective since they shed light on practical dimensions of dyeing and complement more or less obscure passages in other sources. The ancient lexicographers are a crucial source in this regard, since they preserved fragments of authors otherwise lost, but also because they provide explanations for dyeing terms that were unusual or noteworthy in some way and attest to the terminological complexity of the craft of dyeing in the ancient world.

### Bibliography

- Adams, D.Q. & Barber, E.J.W. (1997) “Dye”, in J.P. Mallory & D.Q. Adams (eds.), *Encyclopedia of Indo-European Culture*, London – Chicago, p. 572-573.
- Amigues, S. (2003) *Théophraste. Recherches sur les plantes. Livres III et IV*. Les Belles Lettres, Paris.
- Barber, E.J.W. (1991) *Prehistoric Textiles. The Development of Cloth in the Neolithic and Bronze Ages with Special Reference to the Aegean*, Princeton.
- Barber, P.J. (2013) *Sievers’ Law and the History of Semivowel Syllabicity in Indo-European and Ancient Greek*, Oxford.
- Beekes, R.S.P. (2010) *Etymological Dictionary of Greek*, Leiden – Boston.
- Beekes, R.S.P. (2014), edited by S. Norbruis, *Pre-Greek: Phonology, Morphology, Lexicon*, Leiden.
- Blümner, H. (1869) *Die Gewerbliche Thätigkeit der Völker des Klassischen Alterthums*, Leipzig.
- Blümner, H. (1912) *Technologie und Terminologie der Gewerbe und Künste bei Griechen und Römern*, Leipzig – Berlin.
- Bogensperger, I. (2017) “Purple and its Various Kinds in Documentary Papyri”, in S. Gaspa, C. Michel & M.-L. Nosch (eds.), *Textile Terminologies from the*

97. A comprehensive study of Indo-European and further Eurasian terms for dyeing and dyestuffs (a number of which were also used as *i.a.* spices and medicine) and their transmission would shed valuable light on ancient trade.

98. Cf. Koren 2015 for the proficiency and skill of ancient dyers as evident in the modern chemistry of ancient dyeing.

99. One may compare with ἀποχραίνω: ‘to grade or tinge colours’ *versus* χραίνω ‘to besmear, sully, stain’; cf. Beekes 2010, p. 1646.

100. In addition to ἀνθίζειν one may add, on account of the material, the clear evidence for this semantic extension in connection to gold embroidery: χρυσοραγές (cf. ῥέζειν) and χρυσοβαφές (cf. βάπτειν).

- Orient to the Mediterranean and Europe 1000 BC - AD 1000*. Zea Books 56, Lincoln, p. 235-249. Available at: <https://digitalcommons.unl.edu/texterm/19/>
- Bogensperger, I. & Rösel-Mautendorfer, H. (2020) "Dyeing in Texts and Textiles: Words Expressing Ancient Technology," in M. Mossakowska-Gaubert (ed.), *Egyptian Textiles and their Production: 'Word' and 'Object' (Hellenistic, Roman and Byzantine Periods)*. Zea Books 2020, Lincoln, p. 91-105. Available at: <http://digitalcommons.unl.edu/etpwo>
- Çabej, E. (1986) *Studime gjuhësore I-VIII*. Prishtinë.
- Chantraine, P. (1933) *La formation des noms en grec ancien*. Collection linguistique de la Société de linguistique de Paris 38, Paris.
- Chantraine, P. (1999) *Dictionnaire étymologique de la langue grecque. Histoire des mots*. Avec un supplément, sous la direction de A. Blanc, Ch. de Lamberterie, J.-L. Perpillou, Paris.
- Del Freo, M., Nosch, M.-L. & Rougemont, Fr. (2010) "The Terminology of Textiles in the Linear B Tablets, including Some Considerations on Linear A Logograms and Abbreviations", in C. Michel & M.-L. Nosch (eds.), *Textile Terminologies in the Ancient Near East and Mediterranean from the Third to the First Millennia BC*. Ancient Textiles Series 8, Oxford - Oakville, p. 338-373.
- De Vaan, M. (2008) *Etymological Dictionary of Latin and the other Italic Languages*. Leiden Indo-European Etymological Dictionary Series 7, Leiden - Boston.
- DMIC = Aura Jorro, F. (1985-93) *Diccionario micénico*, Vol. I-II, Madrid.
- Droß-Krüpe, K. & Paetz gen. Schieck, A. (2014) "Unravelling the Tangled Threads of Ancient Embroidery - a Compilation of Written Sources and Archaeologically Preserved Textiles", in M. Harlow & M.-L. Nosch (eds.), *Greek and Roman Textiles and Dress. An Interdisciplinary Anthology*. Ancient Textiles Series 19, Oxford, p. 207-235.
- Edgeworth, R.J. (1988) "'Saffron-colored' Terms in Aeschylus", *Glotta* 66, p. 179-182.
- Kluge, F. & Seebold, E. (2011) *Etymologisches Wörterbuch der deutschen Sprache* (25. durchgesehene und erweiterte Auflage von Elmar Seebold), Berlin - Boston.
- Koren, Z.C. (2015) "Modern Chemistry of the Ancient Chemical Processing of Organic Dyes and Pigments", in S.C. Rasmussen (ed.), *Chemical Technology in Antiquity*. ACS Symposium Series, Washington, DC, p. 197-217.
- Kroonen, G. (2013) *Etymological Dictionary of Proto-Germanic*. Leiden Indo-European Etymological Dictionary Series 11, Leiden - Boston.
- Kroonen, G. (2012) "On the etymology of Greek ἄγλις and γέλις 'garlic': an Akkadian loanword in Pre-Greek", *Journal of Indo-European Studies* 40, p. 289-299.
- LSJ = *A Greek-English Lexicon*, edited by H.G. Liddell & R. Scott, revised and augmented throughout by Sir H.S. Jones with the assistance of R. McKenzie. With a revised supplement (Oxford, 1996).
- Luján, E.R. (1996-1997) "El léxico micénico de las telas", *Minos* 31-32, p. 335-370.
- Mann, S.E. (1950) "The Indo-European Vowels in Albanian", *Language* 26, p. 379-388.
- Mayrhofer, M. (1996) *Etymologisches Wörterbuch des Altindoarischen II*. Indogermanische Bibliothek. 2. Reihe: Wörterbücher, Heidelberg.
- Martelli, M. (2014) "Alchemical Textiles: Colourful Garments, Recipes and Dyeing Techniques in Graeco-Roman Egypt", in M. Harlow & M.-L. Nosch (eds.), *Greek and Roman Textiles and Dress, an Interdisciplinary Anthology*. Ancient Textiles Series 19, Oxford - Philadelphia, p. 111-129.
- Nosch, M.-L. (2007) *The Knossos Od Series. An Epigraphical Study*, Vienna.
- OED = *Oxford English Dictionary Online*, Oxford. Available at: [www.oed.com](http://www.oed.com)
- OLD = *Oxford Latin Dictionary*, edited by P.G.W. Glare (Oxford, 1968-82).
- Orel, V. (1998) *Albanian Etymological Dictionary*. Leiden-Boston-Köln.
- Schwyzler, E. (1968) *Griechische Grammatik I: Allgemeiner Teil, Lautlehre, Wortbildung, Flexion*, München.
- West, M.L. (2013) *The Epic Cycle: A Commentary on the Lost Troy Epics*, Oxford.