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Kelder, J.M.

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EARLY SHIPS AND THE SPREAD OF INDO-EUROPEAN AND ANATOLIAN LANGUAGES

Jorrit M. Kelder

This paper proposes that ships may have played a much more significant role in the spread of Proto-Indo-European speaking peoples than has hitherto been thought, and that the Black Sea served as an early conduit (and not, as previously assumed, a barrier) for these people. It will do so by highlighting the available archaeological and linguistic evidence for early ships.¹

Wheeled vehicles and the spread of Proto-Indo-European

Much ink has been spilt on the origins and distribution of Indo-European languages, and on the ways by which the speakers of Proto-Indo-European and its ancient descendants settled in Europe and Anatolia. Recent breakthroughs in palaeogenetics have rekindled old discussions as to whether they arrived in Europe via trading networks, and gradually intermarried and settled amongst indigenous farming communities, or whether the advent of Indo-European in Europe was the result of raids, conquest or even population replacement as a result of an early variant of the Plague --or a mixture of all of these.² Whereas the precise

¹ It is a great pleasure to dedicate this paper to Maarten and Jan, both of whom have been incredibly helpful and driven colleagues during my tenure as editor of this journal. Maarten, moreover, also stood at the start of my academic career, serving as one of my tutors during my 'propedeuse' at the Amsterdam Institute for Pre- and Protohistory. I hope that this paper, which combines both Maarten's love for the archaeology of ships with Jan's interest in the Black Sea region, is a suitable tribute to both. I owe a major debt to Alwin Kloekhorst, Tijmen Pronk, and Petra Goedegebuure for guiding me in the arcane world of comparative linguistics. Naturally, any mistake that this paper may contain, and all views expressed herein, are mine

² Recent genetic studies have given rise to the idea that at least in some parts of Europe, we may be dealing with incursions by mobile warbands, consisting of mostly men (an incredible 14 to 1 male/female ratio has been suggested by Goldberg e.a. 2017), who made their way to better pastures -and, apparently, women- in the west. The discovery of a very early strain of *Yersinia Pestis* in graves dating to the early 3d millennium and ranging from Sweden (Rascovan e.a. 2019) and Latvia to Rašševatskij near Stavropol in the Russian Federation (Spyrou e.a. 2018) may indicate that this rapid spread was partly facilitated (or triggered?) by an early instance of the Plague (Krause and Trappe 2019: 183-184). Yet there are indications that this early strain may have been less infectious than its successors; it appears to have been unable to be transmitted by fleas, and the most recent studies also seem to rule out an airborne transmission (cf. Susat e.a. 2021).

mechanics behind the spread of PIE and its descendants in Europe remains a matter of debate, there is little doubt as to what facilitated the rapid spread of the speakers of PIE. A range of PIE words, including **weǵhno-* (wagon), **kwekwló-* (wheel), **h₂eǵs-* (axle), and **dhwerh₁-* (to harness), demonstrate the importance of wheeled vehicles amongst the speakers of PIE. Because of this, as well as a range of other considerations (e.g., linguistic reconstructions of the natural environment of the PIE-speakers), it is now widely accepted that the speakers of late PIE must be equated with the so-called Yamnaya Culture, which flourished on the Pontic steppe between 3300 and 2600 BCE. Evidence for wheeled vehicles has been found at a remarkably wide range of mid-4th millennium BCE sites, spreading from Central Europe³ to Maykop in the northern Caucasus and Uruk in Mesopotamia, suggesting that the concept was swiftly adopted, and perhaps invented, on the steppe zone in between.⁴ Indeed, given the frequency by which wheels (as a *pars pro toto* for a wagon) accompanied their dead into the grave, the origin of the wheel may well be sought amongst the Yamnaya.⁵ Though they were not the first to domesticate and ride the horse⁶, the Yamnaya were swift in their adoption of this novel way of moving around. The combination of wheeled vehicles (probably pulled by oxen) and horseback riding would not only have greatly increased the productivity of steppe-pastoralism (seeing that one rider

³ Evidence for 4th millennium BC wheeled vehicles in Europe include representations of wagons or wheels (such as the depiction of a four-wheeled wagon on a Funnelbeaker pot from Bronocice, Poland, and a petroglyph (depicting two yoked oxen, possibly pulling a cart?) from a tomb at Züschen, Switzerland), clay models of wagons from the Carpathians (Maran 2004: 270), but also actual remains of composite cart-wheels (e.g., from Zürich, Switzerland [cf. Schlichtherle 2004: 302] and Ljubljana, Slovenia, which was carbon-dated to ca. 3160-3100 BCE [Čufar, Kromer, Tolar and Velušček 2010]), whereas wagon tracks underneath a long barrow in Flintbek, Schleswig-Holstein, have been dated remarkably precisely to about 3400 BCE (Mischka 2011: 747).

⁴ For Maikop, see Kohl 2007: 84-85; Klimscha 2018: 178. An unsurpassed overview of all early attestations of the wheel and wheeled vehicles can be found online in Klimscha 2012-2017.

⁵ Though Manco (2015: 124) rightly noted that, given the fact that wood is the major requirement to produce wheels, it would perhaps be more plausible to situate the invention of the wheel in zones that have access to both an abundance of wood and plains. The contact zone between the Russian forests and the Eurasian steppe, home to the Cucuteni-Tripolye culture (which was closely related to the Yamnaya culture), is a plausible candidate -especially given the fact that its bearers were already producing small, wheeled, toys of oxen around 3600 BCE [cf. Manco, fig. 41]. It is worth pointing out similar natural conditions in the border zones of the Caucasus, where, to this day, major forests border the vast expanse of the Eurasian steppe.

⁶ The people of the Botai culture are thought to have been the first to ride horses (cf. Outram e.a. 2009; Gaunitz e.a. 2018 have now demonstrated that Przewalski horses are the feral descendants of the Botai domesticates). The development of horseback riding amongst the Botai may have been triggered by the increasing importance and likely domestication of the horse by the people that were buried -sometimes apparently with elaborate ceremonies involving the slaughter of, e.g., horses- at Khvalynsk (see Anthony e.a. forthcoming).

can manage a much larger flock of sheep than a herdsman on foot), but it must also have greatly facilitated mobility across the Eurasian steppe.

As a result of the apparent importance of wheeled vehicles amongst the speakers of late PIE / the Yamnaya, most reconstructions of the spread of PIE and its daughter languages have focused on terrestrial routes, with arrows indicating the spread of people and their respective languages along the northern shores of the Black Sea into ‘Old Europe’ (the northern Balkan) and, from there, across the Bosphorus into Anatolia. The problem with this scenario is that the Anatolian languages, chief amongst which is Hittite, are thought to have been the first to diverge from PIE. Indeed, in recent years the old proposition that Proto-Anatolian was, in fact, a sister rather than a daughter language of PIE, has gained new adherents. This scenario pushes the emergence of Proto-Anatolian (henceforth PA) and PIE even further back in time: Kloekhorst and Pronk (2019) suggested that a common ancestor, Proto-Indo-Anatolian (henceforth PIA), must have split towards the end of the 5th millennium. In any event, the sheer antiquity of this language is difficult to reconcile with the later, attested, distribution of Indo-European and Anatolian languages –seeing that the latter are only found in Anatolia, and apparently have left no traces along their presumed route along the northern and western shores of the Black Sea –neither in the archaeological and genetic, nor in the linguistic record. There are ways around this, for example by assuming the complete obliteration of PA by the subsequent introduction of Indo-European in the Balkan, but such an explanation is not entirely satisfactory (one would expect at least some elements, be it archaeological, genetic, or linguistic, to have survived into historical times).⁷

Taking to the water

To my mind, an easier explanation for the dearth of evidence for Proto-Anatolians along the presumed route to their eventual ‘homeland’ is to shift the focus away from land-based routes, and instead propose a movement along the coast of, and perhaps even across, the Black Sea. Anthony (2007: 72) already noted that, “before wheeled vehicles were invented, really heavy things could be moved efficiently only on water, using barges or rafts”. Given the fact that PIA, regardless of whether one is inclined to view it as a very early offspring of PIE or a sister language of PIE, must have emerged in these proto-vehicle times (this

⁷ See for a recent discussion of this problem, Anthony 2020: 46. Anthony cautiously suggests that the bearers of the Suvorovo culture (a short-lived culture that emerged in the Danube delta around 4400 BCE) may have spoken an early form, or predecessor, of Proto-Anatolian. Despite its proximity to ‘Old Europe’, the culture was marked by various steppe-features, including kurgan burials and flat graves, and the appearance of types of polished stone maces that resemble Volga-Caspian steppe styles. The culture appears to have disappeared into thin air with the collapse, ca. 4200 BC, of the tell-settlement societies in the Danube valley and the Balkans.

is corroborated by the idiosyncratic ‘wagon and wheel’ vocabulary in Anatolian languages), its speakers most likely covered longer distances across the water. The vocabulary of these early PIE and PIA speakers testifies to the importance of water transport, for there are various words that refer to it. Mallory and Adams (2006: 249) identified four words pertaining to water transport, including the word for ‘boat’ (**neh₂u*) and various variants thereof such as **holdh-* (which must have meant something like a dugout canoe) and **(s)kolmo/eh_a-* (which may similarly have indicated some sort of a cut-out vessel), as well as the verb ‘to row’ (**h₁reh₁-*).⁸ There may well have been more naval terminology in PIE, though our interpretation of these words may on occasion have been skewed by scholarly focus on the invention of wheeled vehicles, and the associated emergence of pastoralism. One example may be Hittite *hissa*, which is normally translated as a pole, shaft, or thill (for harnessing draft animals to a cart). In fact, it (or its reconstructed PIE ancestor **h_{2/3}éih₁os*) may well have originated, or doubled (for some terms can be used in various ways), as a naval term. Whereas some attestations of *hissa* in Hittite texts do suggest that this ‘shaft’ was also used as a thill (it is a component of Ursa Major -a constellation that the Hittites likely recognised as a four-wheeled wagon-, and it appears, as a loanword, in an inventory of agricultural equipment at Kültepe⁹), it must be meaningful that its cognates in both Germanic (a language group that is thought to have split from PIE at a relatively early point in time) and Greek suggest a naval use, as oar or rudder (e.g., modern English ‘oar’, or Gr. *oiéion*; tiller, helm, rudderpost¹⁰). It is not impossible that it originally simply designated ‘a shaft that was meant for steering’ (a wagon, but equally a ship). Regardless of these details, the linguistic evidence is sufficient to suggest that the speakers of early PIE and PIA knew how to cross the water, and had developed the means to effectively propel and steer their vessels.

⁸ **neh₂u* is generally thought to belong to an extremely early stratum of PIE, and thus indicates at least some affinity with movement across the water when PIE was first spoken (cf. Wodtko e.a. 2008: 517). **(s)kolmo/eh_a-* and **holdh-* may belong to later developments (potentially after the dispersal of PIE). Descendants of **h₁reh₁-* are attested in Greek, Latin, Proto-Balto-Slavic, and Indo-Iranian, suggesting it belongs to an early phase of PIE (it is not attested in Anatolian or Tocharian, though this may be due to the patchy record).

⁹ Puhvel 1991: 318-319; Kloekhorst 2008: 403; for Ursa Major in IE mythology, see West 2007: 351-352. For the text from Kültepe, see Dercksen 2007.

¹⁰ Beekes [“Οἰάξ” in: Etymological Dictionary of Greek. Consulted online on 10/08/2021] suggests the nautical usage was a Greek innovation, but this seems to ignore the point that a similar nautical use is apparent in Germanic (but see the remark by Stifter (2007) that “English oar, for which Proto-Germanic **airō* can be set up on the basis of Finnish *airo*, can hardly [be a derivate of **h_{2/3}éih₁os*], unless a very early date is assumed for rhotacism”).

From the river to the seas

There are other reasons to assume some naval skills amongst the speakers of early PIE and PIA. Whereas late PIE is associated with the Yamnaya culture, its earlier development is thought to have taken place amongst the people of the preceding Khvalynsk culture (Anthony 2007: 275): it is amongst these people that one might thus expect PIA to have developed, too. A scatter of early 5th millennium BCE sites suggests that this culture initially developed along the Middle Volga, and that its bearers gradually spread south. By the mid 5th millennium BCE, Khvalynsk sites are also found along the lower Volga and along the north-western shores of the Caspian Sea in the east, to the Sea of Azov in the west. In view of the proximity of both the Caspian and the Black Sea, as well as the Volga itself (a large and navigable river), it seems almost inconceivable that these late Khvalynsk people would not have taken to the water. Indeed, there is some circumstantial evidence that supports the notion that maritime movement played a role in the spread of the Khvalynsk culture, for a group of late Khvalynsk ‘camps’ has been found in the Mangyshlak peninsula, on the eastern side of the Caspian Sea (Anthony 2007: 275). The obvious route towards this peninsula was to cross the sea (rather than to circumvent the Caspian Sea across the Caspian lowland desert).¹¹

Similarly, one might wonder about the ways by which the truly stupendous amount of copper that was found at Khvalynsk reached the site. A total of 373 objects have been recovered from 27 graves at the site, constituting the largest copper assemblage from a fifth-millennium site anywhere on the steppes (Anthony 2020: 45). The copper, moreover, is thought to have originated in the Balkans and at least five of the recovered objects appear to have been made there -reaching their eventual destination in finished form. It is not at all impossible that some, or perhaps even all, of these imports were acquired piecemeal via regional trade-routes that must have crossed the steppe, and accumulated over time at the clearly important cemetery (and cultplace) of Khvalynsk. Yet it seems hardly coincidental that Varna, the most notable of those ‘Old Europe’ sites from whence the copper is likely to have been exported (and one of the sites, moreover, where a clear genetic, as well as archaeological, link with the steppe has been established) is conspicuously situated on the shore of the Black Sea.¹² In later, Classical times, the place was an important harbour, known as

¹¹ Whilst not unsurpassable, “the Central Asian deserts functioned as a more effective cultural barrier until later in the second half of the third millennium, when the pastoralists and agriculturists of Central Asia were able to traverse the extensive arid expanses by developing more mobile economies, presumably with the help of horses and Bactrian camels” (cf. Kohl 2007: 63).

¹² Anthony 2007: 185 notes that whilst most of the copper objects are likely made locally (and are consequently of poorer workmanship), some objects, including “two thin rings and three massive spiral rings, are technically identical to Old European status objects from the cemeteries of Varna and Durankulak in Bulgaria”. See also Anthony 2010: 38.

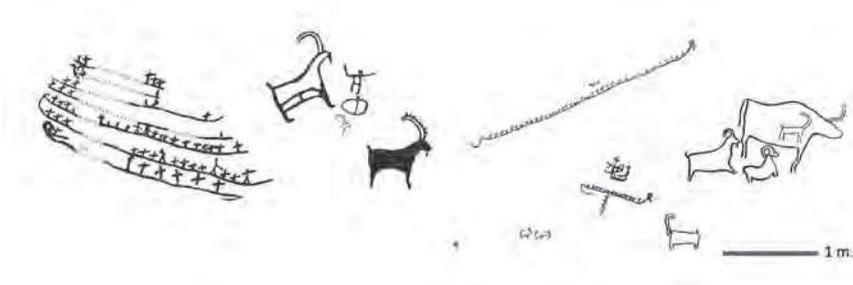


Fig. 1. Petroglyphs from a stone found the lower terrace on Beyukdash Mountain in Gobustan (Azerbaijan), showing what may be some sort of fishing activity which involved various boats -each of which appears to have held multiple people. From Farajova 2018.

Odessos. In view of all of this, I would argue that we should at least entertain the possibility of an early (i.e., mid-5th millennium BCE) trade-route along the shores of the Black Sea, up the river Don and then overland towards the Volga and its steppe-hinterland.

Into Anatolia

That ships were known and used by the speakers of early PIE and PIA is not far-fetched. In northern Europe, simple boats (such as the Pesse canoe, now in the Drents Museum, the Netherlands) are known from at least the 8th millennium BCE onwards, whereas recently discovered petroglyphs from northern Norway may now provide evidence for simple, but sea-worthy (!) skin-clad boats dating back as far as 11,000 to 10,000 BCE (Gjerde 2021). Similarly, boat-remains from the late 6th to early 5th millennium BCE site of As-Sabiyah, Kuwait (Carter 2006, 2002), as well as various depictions of ships on ceramic vessels (in some cases even sporting sails) from the Ubaid cultural horizon indicate the use of sea-going ships in Mesopotamia. In the Caucasus, the only early evidence for the use of boats that I am aware of are a number of petroglyphs from the Gobustan National Park (Azerbaijan). Dating petroglyphs is notoriously difficult, but it is likely that at least some of the depictions of boats date to the (late) Neolithic, i.e., the 7th to 4th millennium BCE, whereas some are thought to have been even older.¹³

In the Black Sea region, the evidence is, admittedly, more circumstantial. Yet it

¹³ Farajova 2012; earlier dates, suggesting a date of 14,000 to 11,000 BC seem to have been based on assumptions (e.g., that the sea-level must have reached the caves where the boat-petroglyphs were carved) or on extremely problematic stylistic considerations (Sagona 2018: 73-75; Helskog 2014: 211).

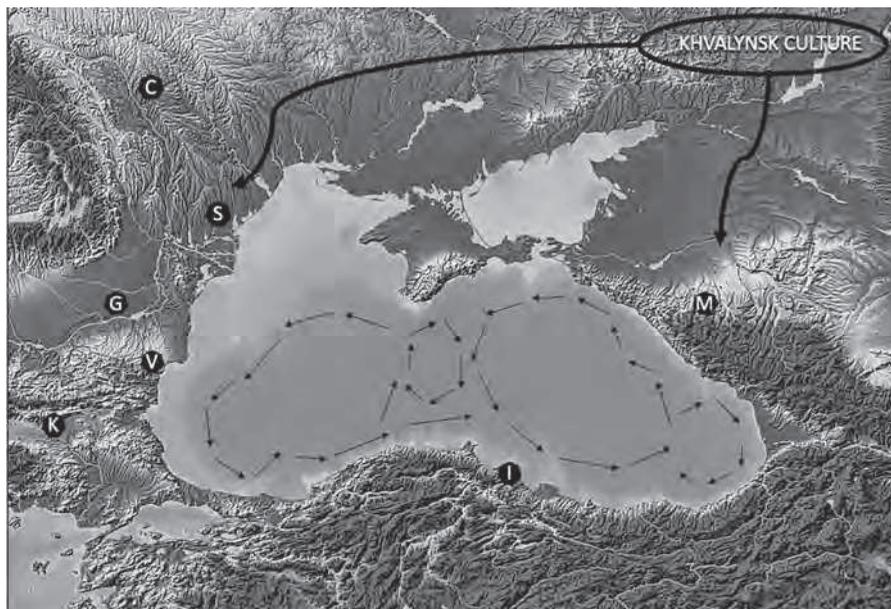


Fig. 2. The Black Sea, its surface currents, and its surroundings, with sites from the late 5th to mid 4th millennium BCE. C= Cucuteni, S= Suvorova, G= Gumelnița, V= Varna, K= Karanovo, I= İkiztepe, M= Maykop. The black arrows represent (hypothetical) movements of people associated with the Khvalynsk culture.

has long been argued that the inhabitants of “Old Europe” had trading contacts with the Aegean (think of the *Spondylus* shells that were recovered at sites such as Varna) and with western and northern Anatolia (Höckmann 2003). Clearly, at least some of this trade must have involved ships, though the precise built of these vessels must remain conjecture. Given the presence of nautical terminology in the PIE / PIA lexicon, and in view of the striking association of important sites of the Khvalynsk culture itself with major waterways (Khvalynsk itself is situated along the river Volga) or coastal zones (the camps on the Mangyshlak peninsula), and because of the steppe trade (and potentially related personal ties) with communities such as Varna on the Black Sea coast, the conclusion that the speakers of early PIE / PIA were using the major waterways of their world for the relatively swift transportation of both goods and people, seems inescapable.

The repercussions of this are significant. One major consequence is that the Black Sea, which had previously been considered a barrier for population movement, may instead have served as a conduit for the transfer of goods and peo-

ple.¹⁴ This, in turn, means that we should not necessarily have to look for (archaeological and genetic) evidence for an overland route across the Balkans to explain the introduction of Proto-Anatolian in Anatolia. Instead, there is a possibility that small, maritime, groups from the north (whose genetic footprint may have been swiftly expunged as they integrated with local communities)¹⁵ brought this language to Anatolia. Such a hypothesis will, of course, require testing: we would need to establish archaeological and / or genetic relations between the as yet unidentified point of arrival and point of departure of such a movement. The exact point of departure for such movements is difficult to gauge, and may well have involved various regions, anyway; with different but related groups coalescing as they made their way south. One region that looks promising is the Danube delta -an area that certainly required its inhabitants to hone their nautical skills. Moreover, it was, in the late 5th millennium BCE, home to the Suvorovo culture (which Anthony suggested may be associated with PIA- or early PA-speaking people; see note 6). Another plausible point of departure would be the steppe-region around the Sea of Azov. From there, one could imagine a movement towards the south –either hugging the eastern coastline of the Black Sea, or perhaps, if they followed the prevalent currents in the Black Sea¹⁶, straight south towards northern Anatolia.

It may be more than coincidence that later Hittite legends paid considerable attention to two important centres on the Black Sea coast; the cities of Nerik and Zalpa. Zalpa, in particular, is of interest, due to its role in the tale of the “Queen of Kanesh and her thirty sons and thirty daughters”. Singer (2007) suggested that this story may reflect some sort of Hittite origin story (or even a ‘return narrative’ -compare to the Greek “return of the Heraclids”):

¹⁴ Carlos Quiles has recently put forward similar ideas regarding the role of the Black Sea as a corridor (<https://indo-european.eu/2020/03/proto-anatolians-from-the-southern-caucasus-or-the-balkans/>, accessed 16 August 2021).

¹⁵ Similar processes may be observed in the Levant during the final year of the Late Bronze Age (12th century BCE). Both texts and archaeology indicate the arrival of ‘new’ people with clear Aegean affinities (amongst others; it is quite conceivable and, in my view, even likely that these newcomers themselves already were an amalgam), yet the genetic footprint of these newcomers, whilst identifiable, is small. Over the course of just two centuries, it becomes progressively smaller, until it disappears (Feldman e.a. 2019). Note though, that (unlike the situation in Early Bronze Age Anatolia) the linguistic impact of these newcomers in the LBA-EIA Levant is similarly minute.

¹⁶ Massa 2016: 91, 399 (fig 3.26), suggests that the lack of islands in the Black Sea, as opposed to the Aegean, would have meant that most voyages would have followed the shore.



Fig. 3: Some of the figurines found at İkiztepe. Their precise relation to Gumelnița traditions is debated, though clear connections between the site and the eastern Balkan cannot realistically be doubted (3 cm scale added, original illustration from <http://vici.org/vici/20839>, CC BY-SA).

“The Queen of Kanesh bore thirty sons in a single year. She said, ‘What a monster is this which I have borne? She filled baskets with fat, put her sons in them, and launched them in the river. The river carried them to the sea to the land of Zalp(uw)a. But the gods took them up out of the sea and reared them.’”

(Translation Watkins 2004)

Though Zalpa has not yet been securely identified, Alkım e.a. (1988: 196) suggested that it may be found at İkiztepe; a site consisting of four small hills that overlook the estuary of the Kızılırmak River. İkiztepe is of interest because of the presence of (probably locally made) pottery that displays clear parallels with early to middle 5th millennium BCE traditions from the southern Balkan (Schoop 2011: 160; Thissen 1993). Moreover, the site also yielded a handful of terracotta figurines that Thissen (1993: 217) identified as “of undeniably Karanovo VI / Gumelnitsa type”¹⁷. Metal “ring-pendants” have also been found at the site and

¹⁷ Hansen (2007: 107) however considers the overall appearance as well as the decoration and details (in particular the pronounced navel) of at least one of the figurines to be markedly different from the *comparanda* presented by Thissen. Whilst the site was undeniably in contact with eastern Balkan, he considers the figurines as examples of “eigenständige Plastik” (Hansen 2007: 109-110).

bear an uncanny likeness to similar objects from early to mid- 4th millennium BCE contexts in eastern and south-eastern Europe (Zimmermann 2007: 26). There can be no doubt that people at this site stood in contact with contemporary communities in south-eastern Europe during the 5th and 4th millennium BCE. Moreover, the cemetery included a number of burials whose extended, supine inhumations recall northern Pontic-Caspian burial traditions of the chalcolithic (Zimmermann 2007: 30). Bilgi (1990: 165-159) even mentions stains of ‘red soil’, which may well have been traces of ochre: a feature that is well-known from burial traditions of the Khvalynsk and subsequent Yamnaya culture.

Conclusions

Frustratingly, a recent genetic analysis of the remains of 11 persons from the site suggests that these contacts across the Black Sea were not accompanied by gene flow (Skourtanioti e.a. 2020: 1168). Instead, the population of Chalcolithic Anatolia (including İkištepe) seems to have had more in common, and indeed mixed, with groups from the Caucasus. This picture may yet change as more data become available, and there are ways to argue around it –literally (if one supposes an even more eastern route for the PIA speaking new-comers, along the coast of the Caucasus into eastern Anatolia, in which case İkištepe may just have been a trading station¹⁸), or methodologically (it may be due to very small groups of newcomers, that left no discernible genetic footprint). All of this highlights the need for more research -in particular genetic analysis of Hittite / Bronze Age Anatolian populations: without knowing the (genetic) end-result, it remains difficult to establish the precise routes, both genetically and geographically, that led to it.

Regardless of what future research may uncover, I hope to have demonstrated that ships are likely to have played a significant role in the spread of PIE- and PIA-speaking groups, and that the Black Sea must be considered a corridor, rather than a barrier, to the people that lived on its shores. I should stress that all

¹⁸ If PIA and PA speakers took such an extremely eastern road, one might wonder about their relation with the Kura-Araxes culture, and the related archaeologically observable “movement of peoples north to south across a very extensive part of the Ancient Near East during the first half to the middle of the third millennium BC” (Kohl 2007:97; see also Palumbi 2018). The idea that PIA speakers may indeed have been part of the Kura-Araxes expansion has recently gained some support. Archi (2015: 465) has tentatively identified various personal names in the archives from Ebla as ‘Anatolian’. The names belong to people from the obscure kingdom of Armi, which is thought to lie to the north of Ebla. Linguistically, “Armi belonged to a marginal, partially Semitized linguistic area different from the ethno-linguistic region dominated by Ebla”. This, as well as a number of other considerations, led Goedegebuure (2020: The Marija Gimbutas Memorial Lecture, “Anatolians on the Move”) to suggest that the Kura-Araxes culture may be the archaeological manifestation of a movement of Anatolian-speaking people.

of this does not mean that our understanding of PIE migrations across the steppe was wrong: no one can seriously question the pivotal role that the taming and riding of the horse, and the development of the wheel, must have played in the shaping of steppe communities. What this paper merely suggests is that, next to the massive arrows that cross the steppe on our ‘migration-maps’, we might perhaps, tentatively, add a few dotted lines across the Black Sea.

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Jorrit M. Kelder
Leiden
The Netherlands
jorritkelder@gmail.com